

Group 8.—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, but also the industries which employ to a large extent chemical processes in manufacture. The group is a complicated one and the various products differ 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.

Table 115 shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture for each of the industries included in this general group, as reported for the census of 1919.

TABLE 115.—CHEMICALS AND ALLIED PRODUCTS: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....	12, 224	427, 008	\$5, 617, 738	\$493, 744	\$3, 747, 675	\$5, 610, 299	\$1, 862, 624
Baking powders and yeast.....	88	3, 331	43, 486	3, 554	26, 635	46, 230	19, 595
Baking powders.....	67	1, 023	29, 081	1, 466	14, 880	25, 051	11, 071
Yeast.....	21	1, 708	14, 405	2, 088	11, 755	20, 279	8, 524
Blacking, stains, and dressings.....	220	2, 455	13, 081	2, 109	14, 042	25, 284	11, 242
Bluing.....	57	360	1, 228	285	1, 543	2, 731	1, 188
Bone, carbon, and lamp black.....	35	675	9, 790	808	2, 848	6, 186	3, 338
Bone black and lampblack.....	6	253	1, 613	316	895	2, 252	1, 357
Carbon black.....	29	422	8, 177	492	1, 953	3, 934	1, 981
Candles.....	19	541	4, 033	438	2, 179	3, 351	1, 172
Chemicals and acids.....	820	76, 210	710, 640	104, 167	296, 155	605, 612	309, 457
Chemicals.....	598	55, 586	484, 488	72, 848	216, 301	438, 059	222, 358
Coal-tar products.....	183	15, 063	174, 992	23, 402	63, 997	135, 482	71, 485
Sulphuric, nitric, and mixed acids.....	39	4, 961	51, 160	7, 917	15, 857	31, 471	15, 614
Cleansing and polishing preparations.....	499	1, 955	12, 979	1, 898	12, 923	26, 703	13, 780
Cleansing preparations.....	281	892	6, 354	855	6, 807	13, 297	6, 490
Metal polish.....	81	242	1, 479	239	1, 864	3, 186	1, 322
All other polishing preparations.....	137	821	5, 146	804	4, 252	10, 220	5, 968
Coke, not including gas-house coke.....	278	29, 319	365, 250	42, 299	224, 267	316, 516	92, 249
Beehive ovens.....	222	13, 766	137, 907	16, 239	78, 156	112, 024	33, 868
By-product ovens.....	56	15, 553	227, 343	26, 060	146, 111	204, 492	58, 381
Drugs, etc.....	3, 591	39, 764	293, 286	31, 420	181, 661	403, 307	221, 646
Drug grinding.....	31	1, 347	14, 991	1, 526	11, 557	16, 938	5, 381
Druggists' preparations.....	524	15, 568	102, 129	12, 162	55, 138	114, 594	59, 456
Patent medicines and compounds.....	2, 467	17, 444	143, 499	13, 749	88, 819	212, 162	123, 343
Patent and proprietary medicines.....	1, 724	13, 788	114, 152	10, 714	67, 362	169, 486	102, 124
Patent and proprietary compounds, not elsewhere specified.....	743	3, 656	29, 347	3, 035	21, 457	42, 676	21, 219
Perfumery and cosmetics.....	569	5, 405	32, 667	3, 983	26, 147	59, 613	33, 466
Dyestuffs and extracts—natural.....	144	4, 342	38, 689	4, 735	34, 593	63, 744	19, 151
Explosives.....	118	9, 249	133, 248	12, 505	45, 911	92, 475	46, 564
Fertilizers.....	600	26, 296	311, 633	25, 363	185, 041	281, 144	96, 103
Gas, illuminating and heating.....	1, 022	42, 908	1, 465, 656	52, 759	157, 551	320, 279	171, 728
Glass, not elsewhere specified.....	62	4, 264	27, 237	4, 777	19, 280	32, 134	12, 854
Glass.....	52	3, 056	20, 530	3, 151	14, 593	23, 463	8, 870
All other products.....	10	1, 208	6, 707	1, 026	4, 687	8, 671	3, 984
Greases.....	535	7, 119	42, 603	8, 524	52, 564	76, 134	23, 570
Grease and tallow, not including lubricating greases.....	482	6, 647	37, 360	7, 954	47, 756	67, 265	19, 509
Soap stock.....	233	2, 971	13, 751	3, 519	9, 572	17, 390	7, 818
Tallow.....	196	2, 863	18, 998	3, 472	32, 468	41, 905	9, 437
All other.....	53	813	4, 701	963	5, 716	7, 970	2, 254
Lubricating greases.....	53	472	5, 243	570	4, 808	8, 869	4, 061
Ink, printing.....	90	1, 988	18, 703	2, 575	14, 661	26, 244	11, 583
Ink, writing.....	61	702	4, 803	596	3, 320	6, 431	3, 114

TABLE 115.—CHEMICALS AND ALLIED PRODUCTS: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Oils.....	1,065	35,190	\$375,266	\$30,200	\$718,944	\$804,061	\$145,117
Cottonseed, and cake.....	711	26,766	203,457	20,615	495,192	581,245	86,053
Essential.....	78	321	6,380	391	3,903	5,698	1,795
Linseed.....	26	2,173	73,954	3,053	100,578	120,638	20,060
Not elsewhere specified ..	280	5,930	91,475	6,141	119,271	156,480	37,209
Vegetable.....	68	2,802	38,817	2,440	64,732	80,639	15,907
Animal.....	46	801	12,594	1,067	9,432	12,995	3,563
Mineral.....	39	240	4,697	227	5,605	7,516	1,911
Composite.....	127	1,997	35,367	2,407	39,502	55,330	15,823
Paint and varnish.....	830	21,507	239,776	24,118	217,112	340,347	123,235
Paints.....	601	17,485	177,315	19,550	165,604	256,714	91,110
Varnishes.....	229	4,022	62,461	4,568	51,508	83,633	32,125
Petroleum, refining.....	320	58,889	1,170,278	89,750	1,247,908	1,632,533	384,625
Salt.....	86	5,495	47,725	7,353	16,028	37,514	21,486
Soap.....	348	20,436	212,417	21,228	238,519	316,740	78,221
Turpentine and resin.....	1,191	28,067	33,596	16,973	13,930	53,051	39,121
Wood distillation.....	115	4,946	42,335	5,310	20,060	32,545	12,485

¹ Includes "oil, castor," and "oil, hard" to avoid disclosing individual operations.

BAKING POWDERS AND YEAST.

This classification includes various compounds for raising bread, cake, and pastry, and dry, compressed, and liquid yeast. Table 115 shows separate statistics for the establishments whose chief product was baking powders and for those making yeast as the product of chief value. Many minor products were reported by the manufacturers of baking powder, such as bluing, chocolate, coffee, spice, confectionery, flavoring extracts, food preparations, and vinegar; while those making yeast also reported stock feed and alcohol. General statistics for the industry for the census years from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, baking powders to the value of \$4,293,044 and yeast to the value of \$1,037,909 were reported in 1919 as made for sale by establishments assigned to other industries.

BLACKING, STAINS, AND DRESSINGS.

Establishments in this industry manufacture principally blackings, waxes, stains, dressings, and polishes for leather, boots and shoes, harness, and belting, stove polish, burnishing inks, and enameled carriage-top dressing, as well as pastes, washes, dyes, and gums. The industry was first reported separately at the census of 1859, and comparable statistics for that and for later censuses are given in Table 225.

In addition to the products covered by the table, blackings, stains, and dressings to the value of \$968,292 in 1919 and \$377,617 in 1914, were reported by establishments assigned to other classifications.

BLUING.

Establishments under this classification manufacture principally laundry bluing, soluble or liquid, aniline blue, etc. The usual materials used in this manufacture are indigo and Prussian blue. Statistics for the industry for the census years from 1869 to 1919, inclusive, are presented in Table 225.

In addition to the products covered by the table, bluing to the value of \$564,331 in 1919, \$269,199 in 1914, and \$350,377 in 1909, was reported by establishments assigned to other classifications.

BONE, CARBON, AND LAMP BLACK.

Establishments in this classification are engaged in the manufacture of black pigments. There are three principal methods: The carbonization of bones in retorts, producing bone black or animal charcoal, also known technically as "char"; the deposition of carbon black by the imperfect combustion of natural gas, the flame impinging upon slate or metallic slabs or revolving cylinders; and the deposition of

lampblack by the incomplete combustion of coal tar, wood tar, petroleum, rosin, etc., the dense smoke depositing the soot in chambers. Some establishments make ivory black by the carbonization of ivory scrap.

Table 115 shows statistics for "bone black and lampblack" and for "carbon black" separately, each establishment being classified according to its product of chief value. General statistics for the industry for the census years from 1849 to 1919, inclusive, are presented in Table 225. 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.

Table 116 presents the statistics of the production of bone black, carbon black, and lampblack by establishments in all industries for 1919, 1914, and 1909.

TABLE 116.—BONE, CARBON, AND LAMP BLACK: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	46	39	57
The classified industries:			
Carbon black.....	29	20	27
Bone black.....	6	7	
Lampblack.....			
Other industries.....	11	12	30
PRODUCTS.			
Total value.....	\$8,462,363	\$2,971,633	\$2,160,552
The classified industries:			
Carbon black (all products).....	\$3,934,233	\$1,463,569	\$1,003,494
Bone black.....			
Lampblack (all products).....	\$2,251,971		
Subsidiary products from other industries (fertilizers and paints)	\$2,276,159	\$1,508,064	\$1,007,058
Carbon black:			
Number of establishments.....	32	20	18
Pounds.....	52,056,940	22,869,000	
Value.....	\$3,818,000	\$918,091	\$625,514
Average value per 100 pounds.....	\$7.30	\$4.00	
Bone black:			
Number of establishments.....	9	7	7
Pounds.....	47,506,000	44,509,000	
Value.....	\$2,372,524	\$1,532,000	\$1,070,333
Average value per 100 pounds.....	\$5.00	\$3.45	
Lampblack:			
Number of establishments.....	5	12	32
Value.....	\$1,300,719	\$503,856	\$430,707
All other products.....	\$883,120	\$17,686	\$24,998

¹ Includes for 1919, \$480,387, the value of 3,393,489 pounds, and \$910,332, quantity not reported; total quantity estimated, 9,827,000 pounds; and for 1914, \$215,312, the value of 4,783,391 pounds, and \$288,644, quantity not reported; total quantity estimated, 11,200,000 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 census years from 1904 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, candles were reported in 1919 by petroleum refineries to the value of \$2,939,519 and by soap manufacturers to the value of \$818,676, while establishments assigned to other classifications reported candles to the value of \$1,319,469. In 1914 petroleum refineries reported candles to the value of \$1,402,945, soap manufacturers, \$150,492, and other industries, \$411,631. Statistics for the candle industry were not shown separately prior to the census of 1904, but were included with those for soap.

CHEMICALS AND ACIDS.

At the census of 1914 the classification "Chemicals" included "coal-tar products," and prior to the census of 1904 it included "sulphuric, nitric, and mixed acids" and "wood distillation." The general statistics for these respective industries are given separately in Table 225 and the statistics for wood distillation products are given in Table 135. The production statistics for sulphuric, nitric, and mixed acids and for coal-tar chemicals are, however, given in Table 118, the acids in Group I and the coal-tar chemicals in Group VII. Although the manufacture of sulphuric, nitric, and

mixed acids is in the main a specialized industry, there is a large production by establishments that also manufacture other chemicals, and a large quantity of sulphuric acid is made by manufacturers of fertilizers. Hence, in Table 118, which presents in detail the statistics for products for 1919 in comparison with those for 1914 and 1909, the statistics for sulphuric, nitric, and mixed acids, and coal-tar chemicals are included. At censuses prior to 1914 establishments engaged in the manufacture of supplies for calcium lights, chiefly lime cylinders and oxygen gas, constituted a separate industry, but these are now included under chemicals.

The chemical products are classified under 10 groups: (I) Acids; (II) Ammonium and cyanogen compounds; (III) Sodas, sodium, and compounds; (IV) Potash, potassium, and compounds; (V) Alums, aluminum, and compounds; (VI) Bleaching compounds; (VII) Coal-tar chemicals; (VIII) Plastics; (IX) Compressed and liquefied gases; and (X) Chemicals, not elsewhere specified.

The schedule used in taking the census listed the chemicals with considerable detail, and provided for the reporting in detail of any chemicals not listed. In some cases, however, manufacturers did not separately report all products, considerable in the aggregate, which may include some of those for which detail figures are given and undoubtedly includes others which could have been shown if they had been separately reported. The production is shown for all chemicals that can be separately given without the disclosure of individual operations, and those separately returned, but which can not be individually given, are mentioned as a rule.

Many establishments distilling coal tar consume part of the product in the manufacture of roofing paper, roofing felt, etc., and are classified under other industries, and their coal-tar production is not included under Group VII. The detail statistics of coal-tar products will be found in the report of the United States Tariff Commission, "Census of Dyes and Coal-Tar Chemicals, 1919."

Under plastics (Group VIII) there is included pyroxylin plastics, sold under such trade names as celluloid, fiberloid, viscoloid, pegamoid, pyrolin, xylonite, etc.; pyroxylin or soluble cotton; viscose; artificial silk; phenolic condensation plastics, such as bakelite, and condensite; rubber substitutes; and all plastics formed by using caoutchouc, gutta-percha, casein, fibrin, gluten, gums, and glue, or other cementing material by which sawdust, wood pulp, bone dust, zinc oxide, antimony, kaolin, and other fillers are held in solid aggregations which may be molded or shaped. The value of the products reported includes the value of finished goods, such as combs, brushes, other toilet articles, collars and cuffs, buttons, talking-machine records, etc., manufactured in the establishments making the plastic material, but does not include that of finished plastic goods made from purchased plastic stock.

Table 117 gives comparative statistics of products by group totals for 1919, 1914, and 1909.

TABLE 117.—CHEMICALS—PRODUCTS BY GROUP TOTALS: 1919, 1914, AND 1909.

	1919	1914	1909
Total value	\$685,268,285	\$200,195,835	\$150,580,149
The chemical and coal-tar products industries.....	{ 438,658,889 135,482,161 }	{ 158,053,602 15,215,474 }	{ 117,741,103 9,384,087 }
Sulphuric, nitric and mixed acids.....	31,470,480	26,920,759	22,954,989
Chemicals, subsidiary products of other industries.....	79,656,775		
Group:			
I.—Acids.....	86,194,195	32,837,254	26,068,617
II.—Ammonium and cyanogen compounds.....	23,067,553	8,064,913	(1)
III.—Sodas, sodium, and compounds.....	99,689,828	32,626,335	25,048,019
IV.—Potash, potassium, and compounds.....	18,407,253	7,905,744	(1)
V.—Alums, aluminum, and compounds ²	43,433,482	(1)	(1)
VI.—Bleaching compounds.....	12,392,806	5,302,359	3,215,726
VII.—Coal-tar chemicals.....	133,499,742	13,492,453	7,969,672
VIII.—Plastics.....	77,477,041	13,895,784	7,472,732
IX.—Compressed and liquefied gases.....	43,263,918	10,415,325	(1)
X.—Chemicals, not elsewhere specified.....	156,672,155	52,898,172	48,851,270
Group total, gross	694,097,973	(1)	(1)
Intergroup duplications.....	50,105,073	(1)	(1)
Total chemicals, net	643,992,900	191,895,404	142,488,463
By-products and residues of chemical operations.....	25,028,661	4,409,620	5,884,608
By-products, not chemical.....	14,870,876	3,702,017	2,209,078
Amount received for contract work.....	480,848	188,734	

¹ Comparable figures not available.² Alums—1910, \$17,055,891; 1914, \$3,467,969; 1909, \$3,022,355.

Table 118 gives the statistics of production by commodities with as much detail as the returns permit. The figures aim to give the total production with respect to any item, irrespective of the industry under which the establishment is classified, or whether it is a principal or subsidiary product of the establishment reporting. Except as stated, where production made and consumed is given, the figures refer to the quantity and value of the product made for sale.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP I.—ACIDS.			
Total value.....	\$86,194,195	\$32,837,254	\$26,068,617
Inorganic acids, value.....	\$59,875,958	\$25,082,873	(1)
Arsenic and arsenious acids:			
Number of establishments.....	6		
Total production, pounds.....	2,622,389		
For sale—			
Pounds.....	1,076,000	(1)	(1)
Value.....	\$108,233		
Made and consumed, pounds.....	1,546,389		
Boric (boracic) acid:			
Number of establishments.....	6	5	5
Pounds.....	13,454,100	8,584,311	5,554,914
Value.....	\$1,754,632	\$588,981	\$295,776
Carbonic acid (carbon dioxide CO ₂):			
Number of establishments.....	42	38	35
Pounds.....	59,771,411	50,445,779	47,953,291
Value.....	\$6,574,250	\$2,320,685	\$2,345,743
Hydrochloric (muriatic) acid:			
Number of establishments.....	40	31	38
Total production, tons.....	221,749	168,584	122,367
For sale—			
Tons.....	150,000	85,438	101,607
Value.....	\$4,312,253	\$1,348,805	\$1,758,335
Made and consumed, tons.....	71,659	83,146	20,760
Hydrofluoric acid:			
Number of establishments.....	6	9	10
Total production, pounds.....	5,732,198	7,209,248	8,027,290
For sale—			
Pounds.....	4,320,017	5,373,657	6,842,014
Value.....	\$410,184	\$325,540	\$204,379
Made and consumed, pounds.....	1,412,181	1,835,591	1,184,376
Mixed acid (sulphuric-nitric):			
Number of establishments.....	42	37	14
Total production, tons.....	114,886	112,124	(2)
For sale—			
Tons.....	46,428	42,725	28,501
Value.....	\$4,426,637	\$2,204,480	\$1,800,787
Made and consumed, tons.....	68,458	69,399	(2)
Nitric acid:			
Number of establishments.....	50	52	25
Total production, tons.....	86,992	78,589	68,717
For sale—			
Tons.....	19,436	14,085	13,693
Value.....	\$2,976,005	\$1,591,625	\$1,357,098
Made and consumed, tons.....	67,556	63,904	55,054
Phosphoric acid:			
Number of establishments.....	9	7	9
Total production, pounds.....	22,109,302	(2)	(2)
For sale—			
Pounds.....	13,379,501	12,420,191	(2)
Value.....	\$1,711,148	\$680,239	\$607,505
Made and consumed, pounds.....	8,729,801	(2)	(2)
Sulphuric acid:			
Number of establishments.....	216	194	183
Total production reduced to 50° Baume, tons.....	5,532,581	4,071,566	2,764,455
For sale—			
Tons.....	3,331,362	2,338,284	1,479,200
Value.....	\$35,932,605	\$15,395,133	\$10,103,425
Made and consumed, tons.....	2,221,219	1,733,282	1,285,255
Production according to strength:			
For sale—			
50° Baume—			
Tons.....	839,780	451,121	528,293
Value.....	\$9,543,118	\$2,700,350	\$3,176,430

¹ Not separately reported.

² Figures not available.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1910, 1914, AND 1909—Continued.
(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP I.—ACIDS—Continued.			
<i>Production according to strength—Continued.</i>			
<i>For sale—Continued.</i>			
60° Baume—			
Tons.....	¹ 949,371	545,562	177,414
Value.....	¹ \$9,498,800	\$3,754,866	\$1,038,358
66° Baume—			
Tons.....	707,303	732,186	453,370
Value.....	\$13,521,316	\$8,042,422	\$5,454,002
Oleum or fuming—			
Tons.....	² 133,655	62,354	28,594
Value.....	\$3,369,371	\$888,495	\$434,635
Made and consumed, tons—			
50° Baume.....	1,910,332	1,250,112	1,115,018
60° Baume.....	70,681	249,927	11,970
66° Baume.....	126,892	96,280	99,249
Oleum.....	18,149	15,404	3,743
Sulphuric acid, reclaimed:			
Number of establishments.....	65	14	(³)
Total production, tons.....	473,555	(³)	(³)
For sale—			
Tons.....	95,119	130,360	7,069
Value.....	\$803,144	\$518,800	\$62,935
Made and consumed, tons.....	378,436	(³)	(³)
Organic acids, value.....	\$26,318,237	\$7,754,381	(⁴)
Acetic acids, value.....	\$4,204,044		
Acetic, dilute and pyroligneous—			
Number of establishments.....	13		
Total production, pounds.....	42,248,803		
For sale—			
Pounds.....	33,087,776		
Value.....	\$1,359,521		
Made and consumed, pounds.....	9,161,027		
Acetic, glacial—			
Number of establishments.....	6	13	13
Total production, pounds.....	20,131,487	75,303,375	58,000,602
For sale—			
Pounds.....	19,244,960	70,617,037	56,923,773
Value.....	\$2,325,927	\$1,272,294	\$1,336,874
Made and consumed, pounds.....	886,527	4,685,738	1,076,829
Acetic anhydride—			
Number of establishments.....	7		
Total production, pounds.....	1,794,985		
For sale—			
Pounds.....	1,213,861		
Value.....	\$578,596		
Made and consumed, pounds.....	581,124		
Citric acid:			
Number of establishments.....	6	3	5
Total production, pounds.....	3,260,482	2,729,943	(³)
For sale—			
Pounds.....	3,163,076	2,657,840	2,102,256
Value.....	\$3,047,371	\$1,516,336	\$777,235
Made and consumed, pounds.....	96,806	72,103	(³)
Lactic acid:			
Number of establishments.....	4	(³)	(³)
Value.....	\$781,828	(³)	(³)
Oleic acid:			
Number of establishments.....	15	7	8
Total production, pounds.....	44,895,463	23,187,579	(³)
For sale—			
Pounds.....	44,350,574	21,932,736	16,377,063
Value.....	\$6,548,564	\$1,301,353	\$845,100
Made and consumed, pounds.....	544,879	1,254,843	(³)
Stearic acid:			
Number of establishments.....	9	10	11
Total production, pounds.....	17,048,421	14,960,109	(³)
For sale—			
Pounds.....	16,969,878	14,351,404	(³)
Value.....	\$3,796,439	\$1,242,492	\$1,143,213
Made and consumed, pounds.....	78,543	608,705	(³)
Tannic acid:			
Number of establishments.....	4	5	(³)
Pounds.....	845,065	853,830	(³)
Value.....	\$746,825	\$287,142	(³)

¹ Includes a large production under a long-term, low-priced contract.² Includes sulphur-trioxide, "battery acid" and "electrolyte sulphuric," 74,533 tons.³ Figures not available.⁴ Not separately reported.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP I.—ACIDS—Continued.			
Tartaric acid:			
Number of establishments.....	4	(1)	(1)
Pounds.....	5,312,965		
Value.....	\$4,262,373		
Other acids:			
Inorganic ²	\$836,777	\$108,405	\$3,220,206
Organic ³	\$2,870,790	\$2,134,764	
GROUP II.—AMMONIUM AND CYANOGEN COMPOUNDS.			
Total value.....	\$23,067,553	\$8,064,913	(1)
Ammonia, anhydrous: ⁴			
Number of establishments.....	38	14	15
Total production, pounds.....	27,957,000	(1)	(1)
For sale—			
Pounds.....	27,530,000	16,659,789	11,969,846
Value.....	\$7,221,473	\$3,140,848	\$2,544,238
Made and consumed, pounds.....	427,000	(1)	(1)
Ammonia, aqua:			
Number of establishments.....	27	(1)	(1)
Total production, pounds.....	45,467,000	(1)	(1)
For sale—			
Pounds.....	30,918,000	35,544,246	20,983,470
Value.....	\$2,241,321	\$1,412,236	\$839,820
Made and consumed, pounds.....	14,549,000	(1)	(1)
Ammonium chloride (sal ammoniac):			
Number of establishments.....	8	3	(1)
Pounds.....	13,212,619	11,511,934	
Value.....	\$1,565,340	\$611,040	
Ammonium sulphate: ⁵			
Number of establishments.....	16	(1)	(1)
Total production, pounds.....	33,401,000	(1)	(1)
For sale—			
Pounds.....	32,873,000	8,846,616	(1)
Value.....	\$1,598,447	\$211,311	
Made and consumed, pounds.....	528,000	(1)	(1)
Ammonium bromide and iodide:			
Number of establishments.....	4	(1)	(1)
Value.....	\$160,523		
Ammonium fluoride:			
Number of establishments.....	3	(1)	(1)
Pounds.....	340,156		
Value.....	\$94,276		
Cyanogen compounds:			
Ferro and ferri cyanides of sodium, potassium (Prussian blue) and calcium—			
Number of establishments.....	14	(1)	(1)
Pounds.....	4,684,611		
Value.....	\$1,467,665		
Other: Hydrocyanic (Prussic) acid, cyanides of copper, gold, mercury, nickel, potassium, silver, sodium, and zinc; cyanogen, chloride, dicyandiamine, thiocyanates of ammonium, barium, and sodium, value.....	\$5,647,777	\$2,308,674	\$1,941,893
Other ammonium compounds:			
Inorganic.—Ammonium alums, ammonium chrome alums; carbonate, hypophosphate, nitrate, persulfate, phosphate, sulfide, vanadate, and miscellaneous.....	\$2,759,616	\$260,801	(1)
Organic.—Acetate, benzoate, dimethylamine, hexamethylenetetramine, oxalate, and valerate.....	\$311,115		

¹ Figures not available.² Includes for 1919, chlorosulphonic, chromic, hydrobromic, hydrofluosilicic, hypophosphorous, molybdic, silicic, sulphurous, tungstic, vanadic, etc., and for 1914, sulphurous, hypophosphorous, arsenic, and hydrofluosilicic.³ Includes for 1919, butyric, caproic, carbolic, cresylic, formic, gallic, glycerophosphoric, hydrocyanic, monochloroacetic, oxalic, phthalic anhydride, propionic, pyrogallic, thymic, valeric, etc.⁴ Product of the chemical and manufactured gas industries. The production of anhydrous ammonia by the by-product coke ovens, as reported by the Geological Survey (mainly ammoniacal liquor and sulphate sold on pound basis of N 11⁸) was as follows: 1919, 34 establishments, 51,646,764 pounds, value, \$5,602,950; 1914, 25,370,509 pounds, value, \$2,300,137.⁵ Product of the chemical, fertilizer, and manufactured gas industries. The production of ammonium sulphate by the by-product coke ovens, as reported by the Geological Survey, was as follows: 1919, 36 establishments, 544,231,985 pounds; sales, 557,619,631 pounds, value, \$21,075,718; 1914, ammonium sulphate or reduced to equivalent in sulphate, 170,763,906 pounds, value, \$1,090,590.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP III.—SODAS, SODIUM, AND COMPOUNDS.			
Total value.....	\$99,629,828	\$32,626,335	\$25,048,019
<i>Inorganic.</i>			
Sodium:			
Borate (borax)—			
Number of establishments.....	8	7	(²)
Tons.....	20,635	26,501	20,154
Value.....	\$4,622,286	\$2,071,774	\$1,756,922
Bichromate—			
Number of establishments.....	5	4	
Total production, tons.....	324,081	(²)	
For sale—			
Tons.....	22,992	11,824	
Value.....	\$5,337,380	\$1,125,398	(²)
Made and consumed, tons.....	1,089	(²)	
Bromide—			
Number of establishments.....	5	(²)	
Pounds.....	1,242,443	(²)	
Value.....	\$511,812	(²)	
Carbonates—			
Soda ash—			
Number of establishments.....	18	10	11
Total production, tons.....	1,507,424	(²)	(²)
For sale—			
Tons.....	1,033,480	935,305	646,057
Value.....	\$31,195,149	\$10,937,945	\$10,362,656
Made and consumed, tons.....	473,044	(²)	(²)
Sal soda (including monohydrate crystals)—			
Number of establishments.....	41	50	50
Tons.....	82,992	106,591	86,644
Value.....	\$2,272,770	\$1,510,449	\$1,156,882
Bicarbonate—			
Number of establishments.....	10	5	7
Total production, tons.....	190,894	(²)	(²)
For sale—			
Tons.....	141,556	99,169	82,800
Value.....	\$3,695,417	\$1,439,014	\$1,515,045
Made and consumed, tons.....	49,338		
Sesquicarbonate—			
Number of establishments.....	5		
Tons.....	37,854	(²)	(²)
Value.....	\$685,500	(²)	(²)
Fluoride—			
Number of establishments.....	4		
Pounds.....	1,364,441		
Value.....	\$177,420		
Hydroxide (caustic soda) ⁴ —			
Number of establishments.....	29	25	17
Total production, tons.....	333,361	(²)	(²)
For sale—			
Tons.....	322,746	291,539	131,612
Value.....	\$20,792,695	\$9,104,920	\$5,264,887
Made and consumed, tons.....	10,615		
Iodide—			
Number of establishments.....	7		
Pounds.....	20,284	(²)	(²)
Value.....	\$103,868	(²)	(²)
Nitrate, refined—			
Number of establishments.....	7		
Tons.....	10,153		
Value.....	\$934,643		
Phosphate—			
Number of establishments.....	10	6	(²)
Total production, tons.....	23,867	(²)	(²)
Monobasic (4 establishments).....	4,321		
Dibasic (9 establishments).....	9,663		
Tribasic (5 establishments).....	9,883		
For sale—			
Tons.....	22,351	15,397	12,290
Value.....	\$2,438,917	\$853,528	\$540,282
Made and consumed, tons.....	1,516	(²)	(²)

¹ The totals for items reported for 1914, \$32,626,335, and for 1909, \$25,048,019, are not comparable with total for 1919. The total for 1909 includes \$3,312,117 of unclassified sodium products.

² Figures not available.

³ Includes neutral chromate.

⁴ Includes caustic liquor and soda lye.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
GROUP III.—SODAS, SODIUM, AND COMPOUNDS—Contd.			
<i>Inorganic—Continued.</i>			
Sodium—Continued.			
Silicate—			
Number of establishments.....	21	(1)	(1)
Total production, tons.....	336,003	190,648	(1)
For sale—			
Tons.....	286,791	169,619	34,170
Value.....	\$6,052,318	\$1,648,851	\$366,621
Made and consumed, tons.....	49,302	21,599	(1)
Sulphates—			
Niter cake—			
Number of establishments.....	38	31	24
Total production, tons.....	97,836	46,143	(1)
For sale—			
Tons.....	81,170	24,129	27,546
Value.....	\$281,476	\$31,580	\$53,093
Made and consumed, tons.....	16,666	22,014	
Salt cake—			
Number of establishments.....	34	29	
Total production, tons.....	179,003	110,263	(1)
For sale—			
Tons.....	122,908	90,442	
Value.....	\$1,930,139	\$311,887	
Made and consumed, tons.....	56,095	19,821	
Glanber's salt—			
Number of establishments.....	27	20	(1)
Total production, tons.....	42,206	(1)	(1)
For sale—			
Tons.....	38,330	34,537	46,471
Value.....	\$864,264	\$427,808	\$512,464
Made and consumed, tons.....	3,876		
Refined, anhydrous—			
Number of establishments.....	6		
Total production, tons.....	2,770		
For sale—			
Tons.....	2,708		
Value.....	\$221,232		
Made and consumed, tons.....	68	(1)	(1)
Thiosulphate (Hypo)—			
Number of establishments.....	9		
Total production, tons.....	29,818		
For sale—			
Tons.....	29,678		
Value.....	\$1,541,087		
Made and consumed, tons.....	140		
Sulphide—			
Number of establishments.....	17	5	(1)
Total production, tons.....	39,735	(1)	(1)
For sale—			
Tons.....	35,178	20,263	7,673
Value.....	\$2,316,253	\$516,644	\$206,450
Made and consumed, tons.....	4,557	(1)	(1)
Sulphite—			
Number of establishments.....	8	5	
Total production, tons.....	8,666	(1)	
For sale—			
Tons.....	7,209	(1)	
Value.....	\$539,636	\$66,649	
Made and consumed, tons.....	1,457	(1)	(1)
Washing compounds (not containing soap)—			
Number of establishments.....	3	7	
Tons.....	861	12,441	
Value.....	\$71,021	\$204,230	
Other inorganic sodium compounds ¹	\$7,021,278	\$1,703,535	

¹ Figures not available.² Includes for 1919, sodium metal, sodium chlorate, hypophosphite, manganate, nitrite, silicofluoride, burnt chrome and sodium alums, aluminate, aluminum fluoride (refined cryolite), arsenate, arsenite, bisulphite, gold chloride, hypochlorite, perborate, peroxide, titanium sulphate, uranate, uranium nitrate, etc.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP III.—SODAS, SODIUM, AND COMPOUNDS—Contd.			
<i>Organic.</i>			
Sodium:			
Acetate—			
Number of establishments.....	12		
Total production, pounds.....	2,260,459		
For sale—			
Pounds.....	2,196,113	(1)	(1)
Value.....	\$165,505		
Made and consumed, pounds.....	64,346		
Benzate—			
Number of establishments.....	4		
Pounds.....	120,447		
Value.....	\$68,004	\$61,490	(1)
Citrate—			
Number of establishments.....	6		
Pounds.....	118,417	(1)	(1)
Value.....	\$143,386		
Other organic sodium compounds ¹	\$5,706,363	\$80,630	(1)
GROUP IV.—POTASH, POTASSIUM, AND COMPOUNDS.			
Total value.....	\$18,407,253	\$7,905,744	(1)
Potash from original sources:			
Number of establishments.....	65		
Tons.....	109,737		
Value.....	\$7,215,164	(1)	(1)
Carbonate, crude—			
Number of establishments.....	44		
Pounds.....	48,664,478		
Value.....	\$2,300,027	\$49,651	\$88,940
Chloride, crude—			
Number of establishments.....	26		
Pounds.....	144,435,589		
Value.....	\$4,169,333		
Sulphate, crude—			
Number of establishments.....	7		
Pounds.....	26,374,661		
Value.....	\$745,804		
Acetate:			
Number of establishments.....	6		
Pounds.....	69,095		
Value.....	\$47,473		
Bromate, bromide, chlorate, chloride (refined), and iodate:			
Number of establishments.....	9		
Pounds.....	3,324,268		
Value.....	\$1,258,507		
Carbonate and bicarbonate, refined:			
Number of establishments.....	7		
Pounds.....	401,140	(1)	(1)
Value.....	\$154,844		
Citrate:			
Number of establishments.....	6		
Pounds.....	64,088		
Value.....	\$100,754		
Hydroxide (caustic):			
Number of establishments.....	13		
Pounds.....	8,358,834		
Value.....	\$2,200,008		
Iodide:			
Number of establishments.....	7		
Pounds.....	388,678		
Value.....	\$1,298,980		
Sulphate, refined; persulphate; sulphide; bisulphite; and metabisulphite:			
Number of establishments.....	11		
Pounds.....	877,178		
Value.....	\$100,751		
Tartrate, Bi- (cream of tartar):			
Number of establishments.....	6	8	5
Pounds.....	4,854,550	12,646,120	15,592,937
Value.....	\$2,620,351	\$3,124,958	\$2,925,883
Other potassium compounds:			
<i>Inorganic</i> —bichromate and chromate, refined nitrate, permanganate, phosphate, etc.....	\$2,548,114		
<i>Organic</i> —binoxalate and oxalate, and Rochelle salts....	\$856,307	\$4,731,135	(1)

¹ Figures not available.² Includes for 1919, sodium butyrate, formate, oxalate, propionate, sulphocarbonate, cyanide, and ferrocyanide, formaldehyde, hydrosulphite, potassium tartrate, thiocyanate, uranium acetate, etc.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ten, 2,000 pounds.)

	1919	1914	1909
GROUP V.—ALUMS, ALUMINUM, AND COMPOUNDS.			
Total value	\$43,423,482	(1)	(1)
Alums	\$17,055,891	\$3,467,969	\$3,022,355
Ammonium alum—			
Number of establishments.....	8		
Total production, tons.....	3,949		
For sale—			
Tons.....	3,797	(1)	(1)
Value.....	\$301,018		
Made and consumed, tons.....	152		
Potash alum—			
Number of establishments.....	4	5	(1)
Tons.....	393	6,382	5,127
Value.....	\$65,745	\$219,968	\$155,319
Sulphate (concentrated alum)—			
Number of establishments.....	19	11	(1)
Total production, tons.....	312,872	(1)	(1)
For sale—			
Tons.....	312,759	92,500	77,737
Value.....	\$15,665,526	\$1,728,566	\$1,312,751
Made and consumed, tons.....	113	(1)	(1)
Other alums ² —			
Number of establishments.....	12	(1)	(1)
Total production, tons.....	15,337	(1)	(1)
For sale—			
Tons.....	15,322	57,593	55,283
Value.....	\$1,020,602	\$1,519,435	\$1,554,285
Made and consumed, tons.....	15	(1)	(1)
Aluminous abrasives:			
Number of establishments.....	3		
Tons.....	11,306		
Value.....	\$2,032,588		
Aluminum chloride:			
Number of establishments.....	7		
Total production, tons.....	4,411		
For sale—			
Tons.....	4,265		
Value.....	\$362,415		
Made and consumed, tons.....	146		
Aluminum hydroxide and oxide, refined:			
Number of establishments.....	5	(1)	(1)
Total production, tons.....	6,375		
For sale—			
Tons.....	3,847		
Value.....	\$514,649		
Made and consumed, tons.....	2,528		
All other—Aluminum and alloys, aluminum acetate, sodium aluminate, aluminum nitrate, calcined bauxite, refined cryolite, etc., value.....	\$23,467,909		
GROUP VI.—BLEACHING COMPOUNDS.			
Total value	\$12,392,806	\$5,302,359	\$3,215,728
Chlorine bleaches:			
Chlorine—			
Number of establishments.....	14	7	
Total production, pounds.....	91,141,000	(1)	
For sale—			
Pounds.....	34,392,000	12,217,000	(1)
Value.....	\$1,425,917	\$472,836	
Made and consumed, pounds.....	56,749,000	(1)	
Hypochlorites (calcium and sodium)—			
Number of establishments.....	16	14	9
Pounds.....	252,850,000	310,380,000	116,802,000
Value.....	\$1,781,350	\$2,916,225	\$1,786,846
Peroxide bleaches:			
Barium peroxide—			
Number of establishments.....	3		
Pounds.....	3,134,000	(1)	(1)
Value.....	\$569,483		
Hydrogen peroxide—			
Number of establishments.....	11	20	17
Pounds.....	31,515,000	32,595,000	9,926,000
Value.....	\$2,257,282	\$1,303,596	\$870,541
Other peroxide bleaches, value.....	\$612,045	(1)	(1)

¹ Figures not available.² 1919—burnt chrome and soda alums; 1914—burnt and soda alums, porous, excelsior pearl, ammonium, alum cake, etc.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP VI.—BLEACHING COMPOUNDS—Continued.			
Sulphur bleaches:			
Bisulphite of calcium, soda, potassium, etc.,			
Number of establishments.....	14	14	15
Pounds.....	39,225,000	26,346,000	31,718,000
Value.....	\$961,284	\$243,559	\$226,154
Sulphur dioxide—			
Number of establishments.....	3	(¹)	(¹)
Pounds.....	856,000	(¹)	(¹)
Value.....	\$99,896		
Other sulphur bleaches.....	\$1,073,404	\$360,143	\$332,187
Other bleaching compounds, not specified.....	\$612,085		
GROUP VII.—COAL-TAR CHEMICALS.			
Total value.....	\$133,499,742	\$13,492,453	\$7,969,672
Crudes:			
Number of establishments.....	56	40	42
Value.....	\$21,148,814		
Intermediates:			
Number of establishments.....	100	² \$8,065,156	² \$4,057,591
Pounds.....	117,470,901		
Value.....	\$28,250,517		
Dyes and color lakes:			
Number of establishments.....	106	(¹)	(¹)
Pounds.....	66,179,250	³ 12,169,635	³ 12,658,770
Value.....	\$69,318,785	\$4,652,947	\$3,683,553
Photographic chemicals:			
Number of establishments.....	11		
Pounds.....	384,181		
Value.....	\$1,189,995		
Medicinals:			
Number of establishments.....	25		
Pounds.....	5,724,245		
Value.....	\$8,679,277		
Flavors and perfumes:			
Number of establishments.....	13	⁴ \$774,350	⁴ \$228,528
Pounds.....	861,143		
Value.....	\$2,643,698		
Synthetic phenolic resins:			
Number of establishments.....	6		
Pounds.....	3,606,757		
Value.....	\$2,208,656		
GROUP VIII.—PLASTICS.			
Total value.....	\$77,477,041	\$13,895,784	\$7,472,732
In form for further manufacture (rods, sheets, blocks, etc.):			
Pyroxylin (including products sold under trade names)—			
Number of establishments.....	4	(¹)	
Total production, pounds.....	20,752,950	(¹)	
For sale—			
Pounds.....	16,743,064	(¹)	
Value.....	\$20,855,988	\$3,778,374	
Made and consumed, pounds.....	4,009,886		
Cellulose and liquid solutions of pyroxylin—			
Number of establishments.....	10		
Total production, pounds.....	10,343,463		
For sale—			
Pounds.....	17,171,313	(¹)	
Value.....	\$3,810,187		
Made and consumed, pounds.....	2,172,150		(¹)
Rubber substitutes—			
Number of establishments.....	11		
Total production, pounds.....	7,755,476		
For sale—			
Pounds.....	7,291,776		
Value.....	\$1,309,644		
Made and consumed, pounds.....	463,700		
Finished articles of pyroxylin and rubber substitutes (made in the producing establishment) and nitrocellulose, value.....	\$9,870,395	\$5,626,740	
Other plastics, viscose, etc., including artificial silk, value.....	\$41,630,827	\$4,590,670	

¹ Figures not available.² Reported as "Coal-tar distillery products."³ Coal-tar dyes and intermediates made largely from stock of foreign origin.⁴ Reported as "Chemicals or medicinal preparations from coal-tar."⁵ Not including establishments primarily engaged in the manufacture of motion-picture films (not exposed); viz., 18 establishments in 1919, with products valued at \$72,152,797.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP IX.—COMPRESSED AND LIQUEFIED GASES. (Cubic feet at atmospheric pressure.)			
Total value.....	\$43,263,918	\$10,415,325	(1)
Acetylene: ²			
Number of establishments.....	49	40	
Total production, cubic feet.....	313,558,000	(1)	
For sale—			
Cubic feet.....	311,390,000	121,696,000	(1)
Value.....	\$7,140,757	\$2,317,605	
Made and consumed, cubic feet.....	2,168,000	(1)	
Ammonia, anhydrous (see Group II).....	87,224,473	34,140,548	\$2,544,298
Carbon dioxide (see Group I).....	\$6,574,250	\$2,329,085	\$2,345,743
Chlorine (see Group VII).....	\$1,425,917	\$472,836	
Hydrogen:			
Number of establishments.....	40	6	
Total production, cubic feet.....	138,177,000	(1)	
For sale—			
Cubic feet.....	137,082,000	1,699,000	(1)
Value.....	\$851,397	\$16,671	
Made and consumed, cubic feet.....	1,095,000		
Nitrogen:			
Number of establishments.....	8	(1)	
Cubic feet.....	2,162,000		
Value.....	\$15,416		
Nitrous oxide (laughing gas):			
Number of establishments.....	8	7	5
Gallons.....	25,740,000	17,838,000	497,175
Value.....	\$515,164	\$213,009	\$38,589
Oxygen:			
Number of establishments.....	94	51	20
Electrolytic.....	39	(1)	(1)
Other.....	55	(1)	(1)
Cubic feet.....	1,173,414,000	104,714,000	3,814,000
Electrolytic.....	131,477,000	(1)	(1)
Other.....	1,043,937,000	(1)	(1)
Value.....	\$16,577,389	\$1,829,416	\$177,409
Other gases.—(1) Sulphur trioxide; (2) blaugas, oil, and carbohydrogen; (3) argon; (4) sulphur dioxide; and (5) carbon monoxide, name in order of their value.....	\$2,900,155	\$104,135	\$59,756
GROUP X.—CHEMICALS, NOT ELSEWHERE SPECIFIED.			
Total value.....	\$156,672,155	\$52,898,172	\$48,851,270
Organic.....	\$72,141,512	\$16,377,955	\$14,039,748
Alcohols: ³			
Amyl alcohol—			
Number of establishments.....	5		
Total production, gallons.....	241,254		
For sale—			
Gallons.....	141,535		
Value.....	\$197,906	(6)	(6)
Made and consumed, gallons.....	99,719		
Glycerin (glycerol)—			
Crude—			
Number of establishments.....	91		
For sale—			
Pounds.....	21,402,735	16,568,020	
Value.....	\$2,061,583	\$2,278,076	
Made and consumed in soap industry, pounds.....	38,350,994	(1)	
Refined—			
Number of establishments.....	31	(1)	79,677,490
Total production, pounds.....	69,461,208	60,944,709	\$11,752,580
For sale—			
Pounds.....	67,342,822	59,810,405	
Value.....	\$20,724,033	\$10,779,294	
Made and consumed, pounds.....	2,121,476	1,134,304	(1)
Other.—Butyl, diacetone, limone and propyl alcohols, dextro citronellol, geraniol, gunitacol, iso-eugenol, linalool, norol, resorcinol, rhodinol, terpineol and some ethyl alcohol (\$126,290) and methyl alcohol (\$5,763) produced by chemical establishments.....	\$553,234	(6)	(6)

¹ Figures not available.² Not including acetylene distributed through mains by public service companies; in 1919, 37 establishments, 5,077,000 cubic feet, value \$69,647; in 1914, 125 establishments, 14,868,000 cubic feet, value \$194,019.³ Equivalents in cubic feet: 1919, 3,432,000; 1914, 2,378,400.⁴ Quantity reported in pounds.⁵ Not including (except as noted under "other alcohol:") ethyl or grain alcohol, the product of distilleries; nor methyl or wood alcohol, for which see "Wood distillation."⁶ Figures not available; included with unclassified.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP X.—CHEMICALS, NOT ELSEWHERE SPECIFIED—Con.			
Aldehydes:			
Formaldehyde—			
Number of establishments.....	6	3	3
Total production, pounds.....	25,000,815	(1)	(1)
For sale—			
Pounds.....	19,063,753	8,426,247	3,794,486
Value.....	\$3,938,322	\$655,174	\$363,717
Made and consumed, pounds.....	5,243,062	(1)	(1)
Vanillin—			
Number of establishments.....	4	(1)	(1)
Pounds.....	134,687	120,619	(1)
Value.....	\$1,305,941	\$525,219	(2)
Other, including acetic,安息, citral, and decyl aldehydes, chloral hydrate, formaldehyde, hydrosulphite, helio-tropin and miscellaneous.....	\$1,794,265		
Carbon and hydrocarbon compounds—			
Carbon bisulphide—			
Number of establishments.....	8		
Total production, pounds.....	15,409,567		
For sale—		(2)	(2)
Pounds.....	11,607,163		
Value.....	\$640,346		
Made and consumed, pounds.....	3,803,374		
Other acetylene, blast gas, oil gas, calcium carbide, silicon carbide, thymene, etc.....	\$28,362,198		
Esters:			
Amyl acetate—			
Number of establishments.....	8	(1)	(1)
Total production, pounds.....	906,764	(1)	(1)
For sale—			
Pounds.....	693,383	1,300,052	1,470,568
Value.....	\$350,573	\$465,664	\$442,771
Made and consumed, pounds.....	213,381		
Ethyl acetate—			
Number of establishments.....	7		
Total production, pounds.....	5,780,549		
For sale—			
Pounds.....	2,657,947		
Value.....	\$340,011	(2)	(2)
Made and consumed, pounds.....	3,122,602		
Other—Amyl and ethyl butyrate, amyl valerate, butyl acetate, ethyl formate, etc.....	\$1,007,794		
Ethers:			
Ethyl ether (sulphuric ether)—			
Number of establishments.....	10		
Total production, pounds.....	4,875,255		
For sale—			
Pounds.....	4,111,755	2,120,082	1,168,631
Value.....	\$1,103,676	\$278,816	\$190,164
Made and consumed, pounds.....	763,500		
Ethyl nitrate (nitrous ether)—			
Number of establishments.....	5		
Pounds.....	43,153		
Value.....	\$30,856		
Other—Methyl ether, etc.....	\$22,570		
Halogen compounds:		(2)	(2)
Carbon tetrachloride—			
Number of establishments.....	5		
Total production, pounds.....	11,908,704		
For sale—			
Pounds.....	9,811,779		
Value.....	\$803,648		
Made and consumed, pounds.....	2,096,925		
Chloroform—		(1)	(1)
Number of establishments.....	6		
Pounds.....	1,677,641	1,333,954	1,869,685
Value.....	\$516,625	\$295,317	\$477,538
Ethyl chloride—			
Number of establishments.....	6		
Pounds.....	248,103		
Value.....	\$166,235	(2)	(2)
Other—Chlor acetyl and ethylene chloride, ethyl bromide, ethyl iodide, iodoform, monobrom benzene, monobrom camphor, tetrachlorethane and thymol iodide.....	\$254,248		

1 Figures not available.

2 Figures not available; included with unclassified.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP X.—CHEMICALS, NOT ELSEWHERE SPECIFIED—Con.			
Ketones:			
Acetone—			
Number of establishments.....	4	8	8
Pounds.....	6,045,914	10,425,817	7,761,606
Value.....	\$767,012	\$1,000,585	\$812,978
Acetone oil—			
Number of establishments.....	3		
Gallons.....	99,692		
Value.....	\$127,831		
Methyl ethyl ketone (methyl acetone)—			
Number of establishments.....	6		
Pounds.....	1,158,032		
Value.....	\$167,734	(1)	(1)
Other—Violet ketone and miscellaneous.....	\$97,351		
Other specified organic chemicals; amines, various coal-tar products, alcohols, refined camphor, oleo resin, ossein, thymol, and sulphonal.....	\$1,409,158		
Other unclassified organic chemicals.....	\$4,138,359		
Inorganic.....	\$84,530,613	\$36,520,217	\$34,811,522
Antimony:			
Chloride—			
Number of establishments.....	4		
Pounds.....	103,466		
Value.....	\$15,554		
Sulphide—			
Number of establishments.....	5		
Pounds.....	2,983,378		
Value.....	\$808,433	(1)	
Other—Oxide, oxychloride, potassium, antimonyl tartrate.....	\$366,040		
Arsenic:			
Arsenate of calcium—			
Number of establishments.....	5		
Pounds.....	1,191,808		
Value.....	\$248,459		
Arsenate of lead			
Number of establishments.....	12	11	
Total production, pounds.....	11,524,278	8,847,656	
For sale—			
Pounds.....	11,465,788	8,641,856	
Value.....	\$2,090,341	\$511,688	
Made and consumed, pounds.....	48,487	205,800	
Other—Arsenous and arsenic acid, arsenical salts of copper, magnesium, sodium, and zinc, etc., some metal, and sulphide.....	\$1,150,567	\$134,204	(1)
Barium:			
Carbonate—			
Number of establishments.....	4		
Pounds.....	12,906,705		
Value.....	\$350,465		
Chloride—			
Number of establishments.....	9		
Total production.....	8,743,093		
For sale—			
Pounds.....	5,811,579		
Value.....	\$229,544	(1)	
Made and consumed, pounds.....	2,931,519		
Nitrate—			
Number of establishments.....	4		
Total production.....	2,026,185		
For sale—			
Pounds.....	903,377		
Value.....	\$85,319		
Made and consumed, pounds.....	1,121,808		
Sulphate (blanc fixe)—			
Number of establishments.....	10	11	(2)
Pounds.....	13,635,789	18,278,000	8,152,000
Value.....	\$256,100	\$257,415	\$86,986

1 Figures not available; included with unclassified.

2 Figures not available.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP X.—CHEMICALS, NOT ELSEWHERE SPECIFIED—Con.			
Barium—Continued.			
Sulphide—			
Number of establishments.....	7		
Total production, pounds.....	21,908,754		
For sale—			
Pounds.....	5,084,931	(1)	
Value.....	\$106,317		
Made and consumed, pounds.....	16,823,823		
Other—Barium chlorate, dioxide, fluoride, phosphate, thiocyanate, etc.....	\$646,758	\$103,204	
Bismuth:			
Subnitrate—			
Number of establishments.....	7		
Total production, pounds.....	283,286		
For sale—			
Pounds.....	279,786		
Value.....	\$811,487		
Made and consumed, pounds.....	3,500		(1)
Other—nitrate, oxide, subgallate, etc., and metal.....	\$424,015		
Bromine:			
Liquid—			
Number of establishments.....	5		
Pounds.....	211,555		
Value.....	\$92,047		
Other—ammonium, calcium, potassium, and sodium bromides and bromates, organic bromides, etc. (see the respective groups).			
Other—Miscellaneous.....	\$1,425,684		
Calcium:			
Acetate—			
Number of establishments.....	86	78	
Total production, tons.....	84,478	83,542	
For sale—			
Tons.....	76,955	81,761	70,730
Value.....	\$2,682,232	\$2,138,009	\$2,118,443
Made and consumed, tons.....	7,523	1,781	
Chloride—			
Number of establishments.....	15	7	
Tons.....	74,699	44,753	
Value.....	\$1,043,301	\$342,271	
Phosphate—			
Number of establishments.....	7	3	
Pounds.....	44,270,166	24,192,974	
Value.....	\$4,727,364	\$1,298,566	
Other—Calcium bisulphite, bromide, carbonate, hypochlorite, sulphide and sulphate, etc., \$5,172,241, carbide, citrate, ferrocyanide, lactate, lacto-phosphate, sulphocarbonate, etc., \$10,436,916.	\$15,609,157		(1)
Cerium compounds—Carbonate, chloride, dioxide, fluoride, nitrate, oxalate, etc.....	\$132,283		
Chromium sulphate and chromium compounds, not elsewhere specified (see Group V).....	\$610,933		
Cobalt, salts and compounds.....	\$217,689	(1)	
Copper:			
Carbonate—			
Number of establishments.....	5		
Pounds.....	327,049		
Value.....	\$92,230		
Sulphate (blue vitriol)—			
Number of establishments.....	14	14	(2)
Pounds.....	35,287,881	37,152,851	36,546,553
Value.....	\$1,164,611	\$1,598,944	\$1,531,574
Other copper salts and compounds.....	\$675,637	\$14,383	(1)
Gold:			
Chloride—			
Number of establishments.....	4	(2)	(2)
Ounces.....	7,229		
Value.....	\$70,152	28,819	42,544
Other gold salts and compounds.....	\$90,917	\$291,658	\$430,944
Iodine, resublimed and minor iodides:			
Number of establishments.....	7		
Pounds.....	10,731	(1)	(1)
Value.....	\$438,002		

¹ Figures not available; included with unclassified.² Figures not available.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP X.—CHEMICALS, NOT ELSEWHERE SPECIFIED—Con.			
Iron:			
Chloride, crystals (ferrie)—			
Number of establishments.....	7		
Pounds.....	917,849		
Value.....	\$71,572		
Chloride, liquor (ferrie)—		(1)	
Number of establishments.....	9		
Pounds.....	977,133		
Value.....	\$61,859		(1)
Oxide—			
Number of establishments.....	6	6	
Tons.....	36,417	(2)	
Value.....	\$574,970	\$105,682	
Sulphate (copperas)—			
Number of establishments.....	32	29	
Tons.....	59,383	46,239	412,819
Value.....	\$963,939	\$352,772	\$78,497
Other iron compounds—			
Inorganic.—Ferroalloys, other than blast-furnace products, iron-by-hydrogen, chloride (ferrous) nitrate, sulphide, vanadate, etc.....	\$9,274,214		
Organic.—Acetate, iron ferrocyanide, oxalate, valerate.....	\$661,975	\$3,592,793	
Lead:			
Acetate—			
Number of establishments.....	9	(2)	
Total production, pounds.....	5,131,135	(2)	
For sale—			
Pounds.....	4,183,621	7,299,936	
Value.....	\$552,435	\$474,430	
Made and consumed, pounds.....	947,512		
Arsenate (see arsenic)—			
Other lead salts.....	\$335,906	(1)	
Lithium salts—Bromide, carbonate, chloride, etc.....	\$502,542		(1)
Magnesium:			
Carbonate (precipitated)—			
Number of establishments.....	4		
Pounds.....	544,022		
Value.....	\$70,512		
Chloride—			
Number of establishments.....	7		
Pounds.....	26,282,436	(1)	
Value.....	\$445,987		
Oxide—			
Number of establishments.....	6		
Pounds.....	9,031,650		
Value.....	\$1,176,858		
Sulphate (Epsom salts):			
Number of establishments.....	20	12	10
Total production, pounds.....	59,067,335	(2)	(2)
For sale—			
Pounds.....	58,606,632	29,265,115	21,621,207
Value.....	\$1,497,077	\$396,999	\$189,791
Made and consumed, pounds.....	370,703	(2)	(2)
Other magnesium salts, metal, and alloys.....	\$376,843	(1)	(1)
Manganese:			
Borate—			
Number.....	3		
Pounds.....	144,828	(1)	(1)
Value.....	\$27,996		
Other manganese salts and compounds ⁵	\$71,390		

¹ Figures not available; included with unclassified.² Figures not available.³ Iron sulphate produced by chemical plants 12,808 tons; by rolling mills, 9,738 tons; and by wire mills, 36,747 tons.⁴ Includes 5,845 tons made and consumed.⁵ Not including ferroalloys.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914,
AND 1909—Continued.
(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP X.—CHEMICALS, NOT ELSEWHERE SPECIFIED—CON.			
Mercury:			
Chloride, mercuric (corrosive sublimate)—			
Number of establishments.....	4	(1)	
Total production, pounds.....	447,080	(1)	
For sale—			
Pounds.....	437,015		
Value.....	\$648,774		
Made and consumed, pounds.....	10,065		
Chloride, mercurous (calomel)			
Number of establishments.....	3	605,701	
Pounds.....	256,388	\$518,023	
Value.....	\$414,388		
Other mercury compounds—Cyanide, oxide, and miscellaneous preparations.....	\$711,856		(2)
Nickel compounds—Carbonate, cyanide, formate, hydrate, nitrate, sulphate, black salts, and miscellaneous.....	\$641,645	\$157,149	
Phosphorus, metal, chloride, sesquisulphide, and miscellaneous.....	\$910,591		
Radium salts:			
Number of establishments.....	7		
Milligrams.....	27,627	(2)	
Value.....	\$2,985,777		
Silver:			
Nitrate—			
Number of establishments.....	7		
Total production, ounces.....	3,055,903		
For sale—			
Ounces.....	3,017,889	2,563,238	2,030,399
Value.....	\$2,184,051	\$846,059	\$727,428
Made and consumed, ounces.....	38,014		
Other silver salts and compounds—Chloride, collargol, cyanide, nucleinate, oxide, proteinate, and miscellaneous.....	\$257,722		
Strontium salts—Bromide, carbonate, chloride, iodide, lactate, nitrate, salicylate, sulphate, etc.....	\$319,373	(2)	(2)
Sulphur:			
Refined—			
Number of establishments.....	9	(1)	(1)
Tons.....	52,099	31,166	25,269
Value.....	\$2,712,944	\$1,141,100	\$891,501
Chloride (red and yellow)—			
Number of establishments.....	8		
Total production, pounds.....	4,648,066		
For sale—			
Pounds.....	2,353,807		
Value.....	\$124,088		
Made and consumed, pounds.....	2,294,259		
Other sulphur compounds.....	\$15,926	(2)	(2)
Thorium compounds—nitrate, oxide.....	\$664,843		
Tin:			
Chloride, stannous (crystals)—			
Number of establishments.....	4		
Pounds.....	587,963		
Value.....	\$251,843		
Chloride, stannic (tetra and bi)—			
Number of establishments.....	4		
Pounds.....	8,411,483		
Value.....	\$2,735,392	8,291,239	10,293,377
Oxide—		\$2,028,511	\$1,535,350
Number of establishments.....	4		
Pounds.....	1,352,345		
Value.....	\$899,525		
Titanium compounds—sodium sulphate, potassium oxalate, etc. ³	\$98,188		
Uranium compounds—acetate, sodium acetate, chloride, nitrate, nitrite, sodium, uranate, etc.....	\$6,233	(2)	(2)
Vanadium and compounds ³	\$698,678		

¹ Figures not available.

² Figures not available; included with unclassified.

³ Not including ferroalloys.

TABLE 118.—CHEMICALS—DETAILED STATISTICS OF PRODUCTS, BY GROUPS: 1919, 1914,
AND 1909—Continued.
(Ton, 2,000 pounds.)

	1919	1914	1909
GROUP X.—CHEMICALS, NOT ELSEWHERE SPECIFIED—CON.			
Zinc:			
Carbonate—			
Number of establishments.....	4		
Pounds.....	91,683		
Value.....	\$16,645		
Chloride—			
Number of establishments.....	19		
Pounds.....	74,089,063		
Value.....	\$4,349,086		
Oxide—			
Number of establishments.....	5		
Total production, pounds.....	6,185,602		
For sale—			
Pounds.....	4,299,602	40,786,886	25,054,213
Value.....	\$374,188	\$1,130,959	\$472,302
Made and consumed, pounds.....	1,886,000		
Sulphate—			
Number of establishments.....	12		
Total production, pounds.....	12,941,730		
For sale—			
Pounds.....	7,325,544		
Value.....	\$267,001		
Made and consumed, pounds.....	5,616,186		
Other zinc compounds—Arsenite, borate, cyanide, nitrate, resinate, stearate, sulphocarbolate, valerate, etc.....	\$442,780		
Other rare earth compounds, not elsewhere specified— Beryllium nitrate, neodymium chloride, zirconium oxide, etc.....	\$12,171	(²)	(²)
Other rare metals, not elsewhere specified—Molybdenum, silicon, tungsten.....	\$1,806,978	(²)	(²)
Unclassified.			
Crude, commercial, and fine chemicals not separately re- ported.....	\$4,600,105	\$10,181,408	\$26,748,736

¹ Not including zinc oxide reported in the paint industry, 139,661 tons, value \$21,082,239. Total production from all sources, 142,753 net tons.

² Figures not available; included with unclassified.

CHEMICALS PRODUCED BY THE AID OF ELECTRICITY.

Table 119 presents the statistics for chemicals produced by electrothermic or electrolytic processes so far as detail information can be given without disclosing the operation of individual establishments. With respect to some of the important commodities, the production is largely that of establishments under a common ownership or closely affiliated. These products are included in the statistics for the respective commodities as given in the preceding table.

TABLE 119.—CHEMICALS PRODUCED BY THE AID OF ELECTRICITY: 1919.

	Number of establishments.	Quantity.	Value.
Total:			
1919.....	112		\$82,590,005
1914.....	36		29,661,949
1909.....	19		18,451,461
1904.....	21		7,068,246
1899.....	14		2,045,535
Chlorine bleaches (Group VI):			
Chlorine.....pounds.....	14	91,141,000	
For sale.....pounds.....		34,392,000	1,425,917
Made and consumed.....pounds.....		56,749,000	
Hypochlorites (calcium and sodium, chiefly calcium).pounds.....	16	252,850,000	4,781,348
Hydrogen (Group IX).....cubic feet.....	40	137,082,000	851,397
Oxygen (Group IX).....cubic feet.....	39	131,477,000	1,855,911
Potassium hydroxide (caustic, ¹ Group IV).....pounds.....	3	7,404,000	1,892,438
Sodium hydroxide (caustic, ¹ Group III).....pounds.....	15	189,680,000	
For sale.....pounds.....		173,021,000	6,228,682
Made and consumed.....pounds.....		10,665,000	
Other commodities in order of value, with number of establishments: Aluminum, 4; abrasives (silicon and aluminous carbides, including forms), 4; calcium carbide, 5; ferro-alloys, 7; sodium and sodium cyanide, 4; chlorates, 5; phosphorus, 2; carbon bisulphate, 8; vanadium, 1; tungsten and molybdenum, 3; hydrochloric acid, 3; magnesium metal, 4; bromine, 5; other metals and alloys, 4; and miscellaneous, 10.....			65,554,312

	Sodium hydroxide.		Potassium hydroxide.	
	Tons.	Per cent.	Tons.	Per cent.
¹ Total production.....	333,361	100.0	4,179	100.0
Electrolytic.....	94,843	28.5	3,702	88.6
Other processes.....	238,518	71.5	477	11.4

CLEANSING AND POLISHING PREPARATIONS.

The products of the establishments in this industry include washing, ironing, sweeping, and scouring compounds; laundry and floor wax; pumice stone and tripoli; and especially preparations for cleansing and polishing furniture, floors, wall paper, gloves, metal ware, and cars, automobile body polish, paint and varnish removers, rust and stain removers, etc. In Table 115 separate statistics are given for three subgroups, "cleansing preparations," "metal polish," and "all other polishing preparations."

In addition to the products covered by the table, cleansing preparations to the value of \$437,255 and polishing preparations to the value of \$1,143,013 were reported in 1919 by establishments assigned to other classifications. General statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225.

Some cleansing and polishing preparations may have been reported under "all other products" by the soap manufacturers. Washing soda (sal soda) is included under "chemicals."

COKE, NOT INCLUDING GAS-HOUSE COKE.

The general statistics for the coke industry are given in Table 225 for the census years 1849 to 1919 inclusive and in Table 115 separate statistics are given for 1919 for the two divisions designated as "Beehive ovens" and "By-product ovens." From the by-product ovens valuable subsidiary 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. Statistics of the materials and products for this industry are collected annually by the United States Geological Survey. Table 120 gives the product statistics for 1919, 1914, and 1909.

The total production of coke, including gas-house coke sold and that made and consumed in gas manufacture, was 48,459,000 tons in 1919 as compared with 38,138,000 in 1914 and 41,947,000 in 1909.

TABLE 120.—COKE: 1919, 1914, AND 1909.

(Ton, 2,000 pounds.)

	1919	1914	1909
Coal used for coking, all establishments, tons.....	65,587,918	51,623,750	59,354,937
PRODUCTS.			
The classified industry (establishments primarily engaged in the manufacture of coke)—all products.....	\$316,515,838	\$90,275,020	\$95,690,622
Coke and coking by-products, all establishments, including subsidiary coke products of establishments in other industries.....	\$322,056,708	\$105,863,305	\$98,078,383
Coke:			
Tons.....	44,180,557	34,555,914	39,315,065
Value.....	\$258,339,740	\$88,334,217	\$89,066,483
Made in—			
Beehive ovens—			
Tons.....	19,042,036	23,335,071	33,080,421
Value.....	\$98,094,972	\$50,254,050	\$69,530,794
Retort or by-product ovens—			
Tons.....	25,137,621	11,219,943	6,254,644
Value.....	\$160,244,768	\$38,080,167	\$20,434,689
By-products from retort or by-product ovens—			
Gas—			
Production, M cubic feet.....	415,642,265	(1)	(1)
Sales, M cubic feet.....	193,079,979	61,304,375	15,791,220
Illumination and household purposes.....	5,238,486		
Industrial purposes.....	138,170,761	(1)	(1)
To public service corporations.....	49,653,732		
Value.....	\$16,685,007	\$0,000,583	\$2,609,211
Tar—			
Production, gallons.....	288,898,764	(1)	(1)
Sales—			
Gallons.....	217,780,143	109,001,315	60,126,006
Value.....	\$6,910,265	\$2,807,274	\$1,408,611
Ammonia (sales)—			
Sulphate—			
Pounds.....	557,619,631	170,763,006	123,111,197
Value.....	\$21,075,718	\$4,696,590	\$3,227,316
Anhydrous or free ammonia—			
Pounds.....	51,646,744	(1)	(1)
Value.....	\$5,692,050	\$2,958,631	\$3,675,771
Benzol products (sales).....	\$12,078,886	(1)	(1)
Other coking products.....	\$605,142	\$997,007	\$419,307

¹ Figures not available.² Includes liquor and sulphate sold on pound basis N11P.

DRUG GRINDING.

Powdered or pulverized drugs are the principal products reported by establishments under this classification, and include the grinding of drugs, charcoal, roots, herbs, gums, licorice root, etc. Statistics for the industry are presented in Table 225 for the census years 1889 to 1919, inclusive. The industry is confined to establishments whose chief business is drug grinding and the establishments did not report materials or products in detail.

DRUGGISTS' PREPARATIONS, PATENT AND PROPRIETARY MEDICINES AND COMPOUNDS, AND PERFUMERY AND COSMETICS.

Druggists' preparations.—This industry includes materials for use by druggists in compounding medicines to be dispensed upon physicians' prescriptions or orders. These comprise tinctures, fluid extracts, medicinal sirups, and other liquid preparations; pills, tablets, powders, etc.; alkaloids and derivatives, synthetic medicinal preparations, such as acetanilid, acetphenetidin, phenolphthalein, saccharin, methyl-salicylate, etc.; medicinal metals and their salts (bromides, acetates, citrates, bismuth, etc.); and biological products, such as serums, vaccines, toxins, etc. Concerns engaged in drug grinding as their principal business are not included in this industry.

Patent medicines and compounds.—This industry consists of "patent and proprietary medicines" which are those sold under the protection of a patent, copyright, or trade-mark, or prepared according to a secret formula; and "patent and proprietary compounds" which include all such compounds not intended for medical use, such as fire-extinguisher compounds, household ammonia, insecticides, etc.

Perfumery and cosmetics.—This industry comprises cologne, toilet waters, face powders, cold cream, etc., and perfumes.

The general statistics for the respective industries are separately presented in Table 225, "druggists' preparations" for the census years 1889 to 1919, inclusive, and "patent medicines and compounds" and "perfumery and cosmetics" for the years 1849 to 1919. Each establishment is classed, according to its principal products, in one of the three branches of the group of industries, but in many cases one establishment manufactures products pertaining to more than one branch, and there is a considerable production of these commodities by establishments classified in other industries.

Table 121 gives the statistics of products for 1919 and 1914.

TABLE 121.—DRUGGISTS' PREPARATIONS, PATENT AND PROPRIETARY MEDICINES AND COMPOUNDS, AND PERFUMERY AND COSMETICS: 1919 AND 1914.

	1919	1914
Number of establishments, total.....	3,839	4,092
The classified industries, establishments engaged primarily in the manufacture of—		
Druggists' preparations.....	524	416
Patent medicines and compounds.....	2,467	2,903
Perfumery and cosmetics.....	569	496
Other industries, establishments reporting as subsidiary products—		
Druggists' preparations.....	67	277
Patent medicines and compounds.....	151	
Perfumery and cosmetics.....	61	
PRODUCTS.		
Total value.....	\$418,221,150	\$176,747,080
The classified industries:		
Druggists' preparations.....	\$114,503,486	\$48,000,654
Patent medicines and compounds.....	\$212,162,265	\$102,463,374
Perfumery and cosmetics.....	\$90,613,391	\$16,899,101
Subsidiary products of other industries:		
Druggists' preparations.....	\$21,830,202	\$5,353,646
Patent medicines and compounds.....	\$6,878,102	\$3,202,057
Perfumery and cosmetics.....	\$3,134,714	\$819,248
Alkaloids and derivatives.....	\$15,416,028	\$16,231,503
Quinine—		
Pounds.....	237,944	
Value.....	\$3,929,006	
Morphine, pounds.....	38,122	
For sale—		
Pounds.....	37,047	(2)
Value.....	\$5,906,201	
Made and consumed, pounds.....	1,075	
Heroin—		
Pounds.....	6,833	
Value.....	\$1,310,883	
Codeine—		
Pounds.....	3,295	
Value.....	\$473,322	
Cocaine—		
Pounds.....	6,781	
Value.....	\$1,021,423	

¹ Not including perfumery and cosmetics manufactured by the soap industry to the value of \$12,635,-200 in 1919 and \$6,804,508 in 1914.

² Figures not available.

TABLE 121.—DRUGGISTS' PREPARATIONS, PATENT AND PROPRIETARY MEDICINES AND COMPOUNDS, AND PERFUMERY AND COSMETICS: 1919 AND 1914—Continued.

	1919	1914
PRODUCTS—continued.		
Alkaloids and derivatives—Continued.		
Caffeine, pounds.....	40,537	
For sale—		
Pounds.....	18,742	
Value.....	\$379,528	
Made and consumed, pounds.....	21,795	
Strychnine—		(1)
Pounds.....	26,029	
Value.....	\$986,702	
Other alkaloids and alkaloids not itemized—		
Pounds.....	121,127	
Value.....	\$1,408,363	
Synthetic preparations, including coal-tar medicinals.....	\$8,899,533	\$1,384,906
Biological products (serums, vaccines, toxins, etc.).....	\$15,876,358	\$6,223,475
Other druggists' preparations (not patent or proprietary):		
Tinctures, fluid extracts, medicinal syrups, and other liquid preparations, not otherwise accounted for.....	\$38,679,454	\$13,900,402
Pills, tablets, powders, etc., not otherwise accounted for.....	\$37,803,903	\$10,903,056
Pharmaceutical metals and their salts.....	\$420,932	\$732,307
Patent and proprietary medicines:		
For sale in unbroken unit packages to the general public.....	\$132,978,871	\$83,455,264
Ethical pharmaceutical specialties.....	\$29,494,936	
Patent and proprietary compounds.....	\$16,351,234	\$16,514,352
Perfumery, cosmetics, and toilet preparations ²	\$69,449,056	\$19,160,407
Flavoring essences and extracts.....	\$5,222,192	
All other products.....	\$17,628,633	\$8,241,318

¹ Figures not available.² Not including perfumery and cosmetics manufactured by the soap industry to the value of \$12,635,206 in 1919 and \$6,504,508 in 1914.

The schedule used at the census of 1919 asked for the consumption of certain alkaloid materials, alkaloids and alcohol. These statistics are given in the following table:

TABLE 122.—DRUGGISTS' PREPARATIONS, AND PATENT MEDICINES AND COMPOUNDS; MATERIALS CONSUMED—ALKALOIDS AND ALCOHOL: 1919.

	Number of establishments.	Quantity.	Cost.
Alkaloids and alkaloid materials.....			
Cinchona bark.....	100	<i>Pounds.</i> 2,363,000	\$9,759,061
Coca leaves.....	16	735,000	1,502,926
Opium.....	282	328,900	368,561
Alkaloids and salts thereof—			3,697,886
Arecoline.....	6	7	6,764
Atropine.....	22	21	8,357
Berberine.....	8	15	591
Caffeine.....	253	39,414	312,285
Cinchonine.....	20	2,472	22,046
Cinchonidine.....	20	819	11,426
Cocaine.....	112	516	90,451
Codeine.....	181	2,313	296,302
Colchicine.....	9	5	5,087
Emetine.....	6	30	10,283
Heroin.....	178	702	178,545
Hydrastine.....	11	8	2,785
Morphine.....	217	3,984	635,912
Nicotine.....	8	4,327	6,717
Pilocarpine.....	7	12	2,260
Quinine.....	439	183,517	2,718,238
Sparteine.....	6	11	1,786
Strychnine.....	282	16,419	372,304
Miscellaneous and unclassified.....		125	17,556
Alcohol:			
Grain (ethyl).....	1,434	<i>Gallons.</i> 2,962,842	14,379,871
Denatured.....	277	796,871	524,049
Wood (methyl).....	105	73,208	106,147

¹ Includes cinchona bark, coca leaves, and opium to the amount of \$3,359,990 consumed by establishments manufacturing alkaloids as subsidiary products.

NATURAL DYESTUFFS AND EXTRACTS.

The products of establishments in this industry include natural dyestuffs made from wood, bark, or berries, and dyeing extracts, as distinguished from the artificial or synthetic dyes, and also tanning extracts and liquors, including chrome tanning solutions; and mordants, assistants, and sizes. At prior censuses the industry included the artificial dyestuffs and mineral colors and dyes. General statistics for the industry for the census years from 1849 to 1919, inclusive, are given in Table 225.

The statistics do not include dyestuffs and extracts made by dye and print works or tanneries and consumed by the same in further processes of manufacture. 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."

TABLE 123.—NATURAL DYESTUFFS AND EXTRACTS: 1919, 1914, AND 1909.

[Not including tanning extracts made and consumed in establishment producing.]

	1919	1914	1909
Number of establishments.....	176	133	124
The classified industry—Dyestuffs and extracts—natural.....	144	112	107
Other industries.....	32	21	17
PRODUCTS.			
Total value.....	\$56,905,553	\$21,382,689	\$16,788,676
The classified industry—Dyestuffs and extracts—natural.....	\$53,744,283	\$20,620,336	\$15,954,574
Subsidiary products from other industries.....	\$3,161,270	\$762,353	\$334,102
Dyestuffs:			
Natural dyestuffs.....	\$4,699,111	\$1,862,162	\$1,135,694
Dyewood extracts—			
Logwood—			
Number of establishments.....	10	9	6
Pounds.....	32,751,757	28,989,962	22,317,248
Value.....	\$3,292,512	\$1,311,966	\$991,974
Fustic—			
Number of establishments.....	5	5	(²)
Pounds.....	3,844,390	4,509,948	(²)
Value.....	\$355,029	\$222,804	(²)
Quercitron—			
Number of establishments.....	6	4	(²)
Pounds.....	6,745,979	3,444,882	(²)
Value.....	\$308,472	\$112,945	(²)
Other dyewood extracts—Brazilwood, cutch, etc.—			
Pounds.....	2,078,287	3,434,150	(²)
Value.....	\$312,924	\$90,934	(²)
All other, dyewoods ground or chipped, and dyestuffs not dyewoods.....	\$435,174	\$123,513	\$143,720
Tanning materials.....	\$32,616,231	\$7,898,672	\$7,322,971
Extracts:			
Oak and chestnut—			
Number of establishments.....	34	24	(²)
Pounds.....	507,905,777	328,197,524	266,529,514
Value.....	\$18,663,125	\$4,130,042	\$4,321,637
Hemlock—			
Number of establishments.....	11	7	(²)
Pounds.....	19,703,590	18,978,013	12,588,078
Value.....	\$879,366	\$340,402	\$280,487
Sumac—			
Number of establishments.....	5	(²)	(²)
Pounds.....	4,507,433	4,512,361	3,148,790
Value.....	\$253,088	\$129,631	\$107,456
Other tanning extracts—Quebracho, spruce, gambier, chrome tanning, myrobalans, divi-divi, and gallnuts, in order as to value—			
Pounds.....	170,846,336	109,597,041	\$2,614,391
Value.....	\$8,059,912	\$2,944,906	
Other tanning materials.....	\$4,760,740	\$353,691	
Mordants:			
Tannic acid—			
Pounds.....	665,772	760,100	\$598,516
Value.....	\$528,463	\$234,630	
Other mordants.....	\$690,178	\$157,791	
Assistants:			
Turkey red oil—			
Pounds.....	2,477,874	11,681,884	1,814,506
Value.....	\$319,050	\$820,491	\$108,292
Other assistants.....	\$2,526,246	\$716,510	(²)

¹ Includes artificial dyestuffs, and mineral colors or dyes to the value of \$5,252,693 in 1914 and \$3,683,553 in 1909.

² Figures not available.

TABLE 123.—NATURAL DYESTUFFS AND EXTRACTS; 1919, 1914, AND 1909—Continued.

[Not including tanning extracts made and consumed in establishment producing.]

	1919	1914	1909
PRODUCTS—continued.			
Sizes:			
Dextrins—			
Pounds.....	49,328,560	18,913,641	10,148,431
Value.....	\$3,791,872	\$705,584	
Gums, other than resin—			
Pounds.....	8,680,048	3,832,182	\$10,999
Value.....	\$634,595	\$205,282	
Rosin—			
Pounds.....	57,055,943	20,717,148	\$1,835,046
Value.....	\$2,883,600	\$373,218	
Other sizes.....	\$4,264,074	\$1,768,777	
All other products.....	\$3,947,033	\$6,030,572	\$5,176,158

EXPLOSIVES.

This classification includes the manufacture of all kinds of explosives, blasting powder, black gunpowder, nitroglycerin, dynamite, permissible explosives, guncotton, and all other cellulose nitrates; smokeless powder, and all other high-powered powders used as propellants.

Table 225 presents general statistics for the industry for the censuses from 1849 to 1919, inclusive, and the following table gives detailed statistics for materials and products, for the census of 1919, in comparison with 1914 and 1909.

TABLE 124.—EXPLOSIVES: 1919, 1914, AND 1909.

(Ton, 2,000 pounds.)

	1919	1914	1909
Number of establishments.....	118	111	86
Number of plants represented.....	122	116	124
MATERIALS.			
Total cost.....	\$45,911,049	\$25,626,539	\$22,811,548
Sulphur or brimstone:			
Tons.....	25,797	15,832	17,389
Cost.....	\$659,219	\$372,703	\$307,806
Pyrites:			
Tons.....	6,812	25,885	36,544
Cost.....	\$46,147	\$139,496	\$183,500
Nitrate of soda:			
Tons.....	174,742	190,960	188,889
Cost.....	\$13,154,333	\$8,979,877	\$7,892,336
Glycerin:			
Tons.....	11,535	14,501	(¹)
Cost.....	\$5,755,319	\$5,439,405	(¹)
Sulphuric acid:			
Consumption, tons.....	² 105,256	83,605	65,050
Purchased—			
Tons.....	62,069	52,398	22,501
Cost.....	\$976,295	\$723,795	\$406,204
Produced in works where consumed, tons.....	43,187	31,207	42,555
Recovered and used, tons.....	41,583		
Nitric acid:			
Consumption, tons.....	47,112	51,460	35,280
Purchased—			
Tons.....	1,537	4,347	3,796
Cost.....	\$200,267	\$476,404	\$541,314
Produced in works where consumed, tons.....	45,575	47,113	31,484
Mixed acid:			
Consumption, tons.....	77,982	88,653	
Purchased—			
Tons.....	16,637	19,255	25,882
Cost.....	\$1,567,691	\$1,047,377	\$1,512,626
Produced in works where consumed, tons.....	61,345	69,398	
All other materials, cost.....	\$23,551,778	\$8,447,422	\$11,907,098
Nitrate of ammonia produced in works where consumed, pounds.....	43,254,887	29,891,837	10,904,319

¹ Figures not available.² Strength 66°; varying strength in prior years.

TABLE 124.—EXPLOSIVES: 1919, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1919	1914	1909
PRODUCTS.			
Total value.....	\$32,474,613	\$41,432,870	\$40,139,661
Explosives, total:			
Pounds.....	554,163,405	481,752,040	487,481,152
Value.....	\$32,233,391	\$39,645,382	\$37,983,868
Dynamite—			
Number of establishments.....	27	26	26
Pounds.....	212,529,733	223,667,630	226,145,791
Value.....	\$37,230,704	\$20,653,653	\$20,998,820
Permissible explosives—			
Number of establishments.....	15	20	13
Pounds.....	30,622,923	18,113,601	9,607,448
Value.....	\$5,499,177	\$1,604,072	\$833,209
Nitroglycerin—			
Number of establishments.....	70	58	49
For sale as such.....	11	32	23
For consumption.....	67	27	26
Production, pounds.....	56,361,210	65,302,883	74,212,980
Sold as such—			
Pounds.....	714,634	3,785,474	3,923,313
Value.....	\$301,833	\$950,611	\$363,360
Consumed in shooting wells, pounds.....	7,621,915	(¹)	(²)
Consumed in works where produced, pounds.....	48,024,611	61,517,409	70,289,067
Blasting powder—			
Number of establishments.....	44	48	38
Kegs (25 pounds).....	7,406,991	8,296,947	9,839,087
Value.....	\$12,188,473	\$8,459,113	\$9,608,295
Gunpowder, black—			
Number of establishments.....	7	8	8
Pounds.....	11,730,094	7,685,036	12,862,700
Value.....	\$2,098,579	\$977,455	\$1,736,427
Other explosives, in order named, as to value, 1919:			
Smokeless powder, guncotton, nitrogelatin, nitro-			
starch, fuse powder, trinitrotoluol, ammonium ni-			
trate, and fulminating mercury—			
Pounds.....	57,744,670	21,070,624	7,464,725
Value.....	\$24,936,595	\$7,100,478	\$3,913,757
Amount received for contract work, shooting wells.....	\$3,434,835	(¹)	(²)
All other products, value.....	\$9,806,587	\$1,787,588	\$2,155,703

¹ In addition, explosives (guncotton and fulminating mercury) to the value of \$129,514 were produced by establishments not primarily engaged in the manufacture of explosives.

² Included above with "nitroglycerin—sold as such."

³ Figures not available.

FERTILIZERS.

Establishments included in this classification manufacture "complete fertilizers" by which is meant a mixture of superphosphates with both potash and ammoniates; ammoniated fertilizers; superphosphates from minerals, bones, etc.; concentrated phosphates, etc. The production, for sale, of sulphuric and other acids, fish scrap, oil, bone black, glue, grease, etc., is also reported. Large quantities of some of these products are made by fertilizer establishments for their own use. Statistics for fertilizers were first reported separately at the census of 1859, and statistics for that and for subsequent censuses are given in Table 225.

The quantity and value of the different classes of fertilizers manufactured in 1919 in comparison with those for the censuses of 1914 and 1909 are given in Table 125. The statistics include the fertilizer products of establishments engaged primarily in the manufacture of products other than fertilizers, chief of which are slaughtering and meat-packing establishments and cottonseed-oil mills.

The value of all products of the industry proper, which includes some that are not fertilizers, was \$281,143,587 in 1919, as compared with \$153,196,152 in 1914, and \$103,960,213 in 1909. Including the fertilizer by-products of other industries, the total production of fertilizers in 1919 was 8,237,011 net tons, valued at \$284,544,523. During the period 1914-1919 the tonnage of the fertilizer products decreased 2.3 per cent. Some of the purchased materials, such as sulphuric acid and superphosphates, are the products of establishments within the industry, and therefore are duplicated in the total value of products.

TABLE 125.—FERTILIZERS: 1919, 1914, AND 1909.

(Ton, 2,000 pounds.)

	1919	1914	1909
Number of establishments.....	80	1,238	843
Fertilizer industry.....	900	784	550
Manufacturing fertilizers as subsidiary products.....	1,200	454	293
MATERIALS.			
Total cost.....	\$193,034,389	\$110,222,003	\$73,185,514
The fertilizer industry.....	\$185,040,522	\$107,051,044	\$69,521,920
Other industries producing fertilizers as subsidiary products.....	\$7,993,867	\$11,267,350	\$3,663,594
Cottonseed meal:			
Tons.....	230,523	325,234	
Cost.....	\$12,530,636	\$8,419,383	\$42,537
Tankage and ammoniates, not elsewhere specified:			\$17,200,611
Tons.....	550,753	887,034	
Cost.....	\$29,949,569	\$20,131,141	
Fish:			
Tons.....	273,252	250,110	212,045
Cost.....	\$5,878,634	\$3,111,991	\$3,006,613
Ammonium sulphate:			
Tons.....	135,882	149,024	65,592
Cost.....	\$12,659,005	\$9,015,163	\$3,732,112
Cyanamid or lime nitrogen:			
Tons.....	19,928	25,911	(*)
Cost.....	\$1,320,140	\$1,176,110	(*)
Nitrate of soda:			
For acid manufacture—			
Tons.....	21,732	15,134	
Cost.....	\$1,692,614	\$704,581	\$0,846
For mixed fertilizers—			\$3,910,320
Tons.....	130,083	147,050	
Cost.....	\$10,091,790	\$6,807,228	
Phosphate rock:			
Tons.....	2,247,325	2,080,961	1,549,497
Cost.....	\$17,929,097	\$11,222,692	\$8,828,834
Bone discard:			
Tons.....	12,760	3,395	(*)
Cost.....	\$252,728	\$35,007	(*)
Raw bones:			
Tons.....	81,804	64,590	(*)
Cost.....	\$3,093,304	\$1,603,353	(*)
Steamboat bones:			
Tons.....	59,227	55,067	(*)
Cost.....	\$1,815,554	\$1,178,950	(*)
Ground bones, raw:			
Tons.....	16,471	25,139	(*)
Cost.....	\$707,034	\$593,223	(*)
Pyrites:			
Tons.....	398,692	613,842	499,574
Cost.....	\$3,919,050	\$3,590,235	\$2,831,004
Sulphur:			
Tons.....	221,558	2,041	4,236
Cost.....	\$5,669,831	\$42,716	\$58,024
Sulphuric acid:			
Purchased—			
Tons.....	639,032	728,880	620,708
Cost.....	\$6,683,061	\$4,887,817	\$3,400,132
Made and consumed, tons.....	1,893,377	1,276,715	841,935
Superphosphate:			
Purchased—			
Tons.....	1,200,182	1,096,178	532,886
Cost.....	\$18,489,969	\$9,301,601	\$5,175,957
Made and consumed (acid phosphate), tons.....	3,316,486	2,723,317	1,838,865
Basic slag or Thomas phosphate powder:			
Tons.....	11,394	16,190	(*)
Cost.....	\$118,768	\$144,213	(*)
Gum:			
Tons.....	33,053	120,128	(*)
Cost.....	\$893,833	\$446,416	(*)
Kainit:			
Tons.....	31,145	448,885	347,104
Cost.....	\$920,614	\$3,939,263	\$3,005,183
Potash salts:			
Tons.....	274,992	529,973	270,459
Cost.....	\$18,653,390	\$12,774,113	\$7,714,367

* Includes 94 cottonseed-oil mills, 32 grease and tallow rendering establishments, 51 slaughtering and meat-packing plants, and 32 establishments distributed among 13 other industries that produce wastes of fertilizer value.

† Figures not available.

TABLE 125.—FERTILIZERS: 1910, 1914, AND 1909—Continued.

(Ton, 2,000 pounds.)

	1910	1914	1909
MATERIALS—continued.			
Hardwood ashes:			
Tons.....	9,085	4,437	(1)
Cost.....	\$96,590	\$54,171	(1)
All other materials.....	\$39,667,532	\$20,543,915	\$14,161,407
PRODUCTS.			
Total value.....	\$396,523,899	\$189,017,550	\$111,371,281
Fertilizer industry.....	\$281,143,587	\$153,196,152	\$102,960,213
Fertilizers, subsidiary products of other industries.....	\$25,380,312	\$15,821,398	\$7,911,258
Fertilizers:			
Tons.....	8,237,011	5,432,236	5,618,231
Value.....	\$284,544,523	\$153,260,212	\$100,030,971
Complete and ammoniated fertilizers—			
Tons.....	4,756,443	5,612,421	3,523,769
Value.....	\$200,106,419	\$121,076,856	\$74,109,307
Superphosphates ¹ —			
Production, tons.....	5,712,158	4,416,022	3,062,854
For sale—			
Tons.....	2,395,672	1,602,705	1,223,909
Value.....	\$46,221,930	\$14,778,051	\$13,744,851
Made and consumed, tons.....	3,316,486	2,723,317	1,838,945
Concentrated phosphates—			
Tons.....	119,603	37,555	270,128
Value.....	\$3,328,417	\$1,367,005	\$2,713,513
Other fertilizers—			
Tons.....	965,293	1,059,495	600,378
Value.....	\$34,387,767	\$15,438,167	\$9,522,320
Sulphuric acid (basis of 50° Baumé)—			
Production, tons.....	1,877,391	1,405,768	995,881
For sale—			
Tons.....	303,817	129,053	153,449
Value.....	\$3,339,010	\$768,873	\$928,582
Made and consumed, tons.....	1,568,577	1,276,715	841,935
Fish scrap:			
Tons.....	47,542	62,950	78,484
Value.....	\$3,179,091	\$1,916,680	\$2,006,724
Pyrite cinder: ²			
Tons.....	116,444	245,082	261,053
Value.....	\$169,420	\$231,869	\$143,907
Oil:			
Gallons.....	2,118,092	2,445,023	3,213,393
Value.....	\$1,831,194	\$773,337	\$810,638
Bone black:			
Pounds.....	44,597,838	41,054,769	(1)
Value.....	\$2,227,113	\$1,413,163	(1)
Glass.....	\$2,171,055	\$1,131,243	(1)
Grease.....	\$2,015,033	\$1,209,334	(1)
All other products.....	\$5,755,880	\$8,303,983	\$7,891,359

¹ Figures not available.² Includes fertilizers reported as ammoniated fertilizers, but containing both superphosphates and potash viz. in 1910, 1,271,215 tons; 1914, 1,519,56 tons; and 1909, 522,389 tons.³ Not including 116,937 tons in 1910, 155,634 tons in 1914, and 72,402 tons in 1909, of no value.⁴ Includes fish oil, 1,730,171 gallons, valued at \$1,441,089; neat's-foot oil, 165,495 gallons, valued at \$131,745; and cottonseed oil, 193,723 gallons, valued at \$257,430.⁵ Includes chemicals (soda products, acids, etc.) to the value of \$1,039,068 in 1910 and \$400,597 in 1914.**GAS, ILLUMINATING AND HEATING.**

Establishments under this classification manufacture illuminating and fuel gas, for distribution through mains. The production of natural gas is not included. Many manufacturing concerns convert coal, through imperfect combustion, into "producer" gas for use as fuel or in gas engines. This product, 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, likewise Blau gas and acetylene, when distributed through mains, 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 Table 225. The statistics for the industry do not include those for establishments operating retort coke ovens, for which see Table 120, though much of the gas purchased by the gas companies is by-product coke gas.

The total production of gas made for sale by all establishments, inclusive of retort coke-ovens and the by-products of establishments outside of the gas and the coke industries in 1919, was 501,578,651 thousand cubic feet, valued at \$299,086,265; in 1914, 265,060,574 thousand cubic feet, valued at \$181,207,482; and in 1909, 166,667,641 thousand cubic feet, valued at \$141,478,557.

The statistics for materials and products for 1919 in comparison with those for 1914 and 1909 are given in the following table:

TABLE 126.—GAS, ILLUMINATING AND HEATING: 1919, 1914, AND 1909.

	1919	1914	1909
MATERIALS.			
Total cost.....	\$157,550,882	\$76,779,288	\$52,427,844
Coal used for gas making:			
Anthracite—			
Gross tons.....	1,307,383		
Cost.....	\$11,326,268		
Bituminous—		6,116,672	4,940,598
Net tons.....	16,193,527	\$20,872,517	\$16,304,832
Cost.....	\$32,412,349		
Coke (purchased) used for gas making:			
Net tons.....	1,335,322	964,851	591,919
Cost.....	\$11,781,932	\$4,500,289	\$2,607,706
Oil used for gas making:			
Gallons.....	163,652,910		
Cost.....	\$6,183,438		
Oil used for enriching gas:		715,418,623	578,302,411
Gallons.....	718,020,458	\$24,720,998	\$17,105,981
Cost.....	\$44,546,711		
Benzene or benzol:			
Gallons.....	14,155	358,149	253,837
Cost.....	\$3,107	\$54,053	\$27,543
Benzine, gasoline, and naphtha:			
Gallons.....	111,923	998,353	1,003,874
Cost.....	\$35,504	\$169,020	\$212,226
Calcium carbide:			
Pounds.....	1,049,222	31,749,491	8,080,465
Cost.....	\$45,977	\$887,937	\$105,836
Lime, cost.....	\$20,281	(2)	(2)
Oxide or purifying material, cost.....	\$1,075,748	(2)	(2)
Gas purchased (43 establishments):			
M cubic feet.....	87,105,518		
Cost.....	\$22,612,816		
Coke oven (16 establishments)—			
M cubic feet.....	23,095,064		
Cost.....	\$3,784,539		
Coal (5 establishments)—			
M cubic feet.....	15,041,080		
Cost.....	\$9,343,107		
Mixed coal and water (6 establishments)—		28,251,074	16,769,705
M cubic feet.....	31,748	\$8,883,016	\$5,416,601
Cost.....	\$31,524		
Carbureted water (10 establishments)—			
M cubic feet.....	14,932,670		
Cost.....	\$7,473,804		
Natural (8 establishments)—			
M cubic feet.....	13,104,056		
Cost.....	\$1,976,752		
Boiler fuel, cost.....	\$7,722,000		
Retort and bench fuel, cost.....	\$354,754	\$3,784,911	\$2,309,131
Water, cost.....	\$570,599	(1)	(3)
All other materials, cost.....	\$7,800,498	\$5,512,723	\$2,590,052
Amount paid for lamps and appliances purchased for sale.....	\$10,546,900	\$7,303,224	\$5,537,936
PRODUCTS.			
Total value.....	\$329,278,008	\$220,237,790	\$166,614,371
Gas:			
For sale—			
M cubic feet.....	308,440,473	203,639,260	150,835,793
Value.....	\$282,288,778	\$175,065,920	\$138,615,309
Plant consumption and loss, M cubic feet.....	35,679,338	1,121,108	1,730,593
Coal gas—			
M cubic feet.....	8,029,749	10,509,946	19,985,253
Value.....	\$10,499,613	\$10,726,514	\$18,035,841
Carbureted water-gas—			
M cubic feet.....	90,706,209	90,017,726	481,144,568
Value.....	\$33,963,451	\$74,516,534	\$70,802,780
Mixed coal and water-gas—			
M cubic feet.....	179,871,832	86,281,339	40,775,283
Value.....	\$161,199,670	\$72,012,021	\$36,953,543

¹ Includes 966 tons of canal coal, valued at \$8,818.

² Figures not available.

³ See tabular note at end of table, p. 190.

⁴ Includes 1,726,082 M cu. ft. of straight water-gas, valued at \$1,289,031.

TABLE 120.—GAS, ILLUMINATING AND HEATING: 1910, 1914, AND 1909—Continued.

	1910	1914	1909
PRODUCTS—continued.			
Gas—Continued.			
Oil-gas—			
M cubic feet.....	18,421,830	10,512,274	8,688,660
Value.....	\$18,747,490	\$13,044,509	\$12,111,458
Acetylene-gas—			
Distributed through mains—			
M cubic feet.....	5,077	14,868	
Value.....	\$69,047	\$194,010	
Delivered in containers (compressed) 1—			25,186
M cubic feet.....		121,090	\$361,848
Value.....		\$2,317,005	
Gasoline (cold process) gas—			
M cubic feet.....	20,428	181,412	210,048
Value.....	\$41,160	\$254,718	\$320,330
Other (enriched natural) 2—			
M cubic feet.....	14,205,252		
Value.....	\$8,070,732		
Coke:			
Production, net tons.....	4,278,533	3,582,065	2,031,097
For sale—			
Net tons.....	2,458,100	2,281,835	1,040,094
Value.....	\$17,822,894	\$8,710,620	\$5,723,215
Made and consumed, net tons.....	1,820,307	1,300,730	991,003
Tar:			
Used in gas generators.....	868,265		
For retort or bench fuel.....	780,515	(A)	(C)
Used otherwise.....	420,787		
Coal-gas tar—			
Production, gallons.....	65,824,282		
For sale—			
Gallons.....	61,060,577		
Value.....	\$2,047,813		
Made and consumed, gallons.....	3,854,705	153,311,196	100,630,058
Water-gas and oil-gas tar—			
Production, gallons.....	105,318,330	125,638,607	78,339,880
For sale—			
Gallons.....	58,587,047	\$3,282,765	\$1,875,649
Value.....	\$2,012,723	27,872,589	31,690,178
Made and consumed, gallons.....	46,730,392		
Ammonia:			
Ammonia liquors—			
Gallons.....	23,393,320		
Value.....	\$1,074,449	\$50,737,762	\$37,277,864
Anhydrous ammonia—			
Pounds.....	1,840,024	\$1,235,442	\$725,702
Value.....	\$150,590		
Ammonium sulphate—			
Pounds.....	3,073,945	0,210,018	(3)
Value.....	\$205,101	\$134,196	(3)
Hydrocarbons:			
Gallons.....	491,559	(A)	(B)
Value.....	\$40,010	\$35,002	\$44,509
Light oil and derivatives:			
Crude light oil—			
Production, gallons.....	6,401,113		
For sale—			
Gallons.....	285,071		
Value.....	\$34,369		
Made and consumed, gallons.....	6,200,042		
Secondary light oil—			
Gallons.....	602,897		
Value.....	\$45,841		
Benzol—			
Crude, gallons.....	3,738,844		
For sale—			
Gallons.....	76,810	(A)	(A)
Value.....	\$14,074		
Made and consumed, gallons.....	3,662,038		
Refined (pure)—			
Gallons.....	3,147,761		
Value.....	\$661,782		
Toluol—			
Crude, gallons.....	214,270		
For sale—			
Gallons.....	4,146		
Value.....	\$1,623		
Made and consumed, gallons.....	210,124		

1 Included in chemicals in 1910: 811,890 M. cu. ft., valued at \$7,140,757.

2 Enriched natural gas not reported prior to 1910.

3 Figures not available.

4 In addition, 13,813,058 gallons were produced for which no value was reported.

5 Gallons.

6 Included in "all other products."

TABLE 126.—GAS, ILLUMINATING AND HEATING: 1919, 1914, and 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
Light oil and derivatives—Continued.			
Toluol—Continued.			
Refined (pure)—			
Gallons.....	165,612		
Value.....	\$94,247		
Solvent naphtha—			
Gallons.....	187,034		
Value.....	\$49,689		
Other refined oils—			
Gallons.....	567,252		
Value.....	\$88,069		
Drip and holder oil—			
Gallons.....	2,050,080		
Value.....	\$137,957		
Naphthalene:			
Crude—			
Production, pounds.....	1,757,317		
For sale—			
Pounds.....	521,459		
Value.....	\$0,841		
Made and consumed, pounds.....	1,235,858		
Refined—			
Pounds.....	911,710		
Value.....	\$45,685	(1)	(1)
Pitch:			
Production, pounds.....	13,966,731		
For sale—			
Pounds.....	13,834,651		
Value.....	\$92,688		
Made and consumed, pounds.....	132,180		
Rotort carbon:			
Production, pounds.....	12,145,336		
For sale—			
Pounds.....	1,130,676		
Value.....	\$9,370		
Made and consumed, pounds.....	11,005,761		
Lampblack (gas-house):			
Production, pounds.....	207,944,060		
For sale—			
Pounds.....	34,239,800		
Value.....	\$107,201		
Made and consumed, pounds.....	173,704,260		
Other by-products.....	\$697,494		
Gasoline.....	\$206		
Spent oxide.....	\$32,358		
All other products.....	\$3,055,869	\$20,815,871	\$12,786,697
Receipts from rents and sales of lamps and appliances:			
Rents.....	\$1,763,187		
Sales.....	\$15,695,155	\$10,977,774	\$7,043,390

Note.—Commercial production by 5 establishments in 1919 and 6 in 1914, engaged primarily in other lines of manufacture; not included above:—

	1919		1914	
	Quantity.	Value.	Quantity.	Value.
Total value.....		\$121,761		\$158,743
Gas, M. Cubic ft.....	84,199	112,480	56,939	131,970
Coal.....	17,576	29,158	41,744	45,394
Carbureted water.....	36,325	66,717	10,154	16,011
Oil.....	10,298	16,695		
Acetylene (compressed).....	(2)	(2)	5,041	70,574
Coke, net tons.....	913	6,017	2,287	9,356
Tar, gallons.....	23,209	1,635	35,106	2,076
Receipts from lamps and appliances.....		1,026		15,332

¹ Included in all other products.

² Included in chemicals in 1919.

GLUE, NOT ELSEWHERE SPECIFIED.

The principal products of establishments included in this classification are glue, flexible and liquid; gelatin; and glue jelly or paste, derived from hides, bones, fleshings, and fish. Statistics for the industry for the censuses from 1849 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, glue and gelatin to the value of \$4,489,774 were made in slaughtering and meat-packing establishments in 1919, while fertilizer factories reported glue to the value of \$2,171,055. Other establishments principally those making tallow, soap stock, and food preparations, reported glue and gelatin to the value of \$1,039,794, making the total value of glue manufactured, \$39,834,690 in 1919 as compared with \$19,725,703 in 1914 and \$16,328,579 in 1909.

GREASE AND TALLOW, NOT INCLUDING LUBRICATING GREASES.

Establishments in this classification render soap grease from fat, bones, meat, scraps, garbage, etc., and render tallow from the solid fat of cattle, sheep, and other animals. Establishments making grease and tallow reported hides, skins, bones, tankage, fertilizers, poultry feed, dried blood, oils, stearine, cracklings, hoofs, horns, glue stock, ground bones, etc. General statistics for the industry for the censuses from 1859 to 1919, inclusive, are presented in Table 225.

Table 115 gives separate statistics for those establishments making soap stock, for those rendering tallow, and for those reporting other products, respectively, classified according to the product of chief value.

There is considerable overlapping between the three sub-classifications, as soap stock is reported by establishments primarily engaged in rendering tallow and other products, and tallow is reported by some establishments whose chief product is soap stock, and the same applies to the subclassification "other products" whose chief products are greases other than soap stock.

In addition in 1919, soap stock to the value of \$2,015,033 was reported by the fertilizer industry, and to the value of \$2,989,878 by slaughtering and meat-packing establishments, while establishments assigned to other classifications reported soap stock to the value of \$1,065,410.

Tallow to the value of \$28,591,346 was reported by slaughtering and meat-packing establishments, and to the value of \$1,211,381 by establishments assigned to other classifications. In like manner, the "all other" subclassification is to be credited with products aggregating \$2,221,518 reported by establishments assigned to other classifications. 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.

LUBRICATING GREASES.

This classification includes establishments engaged primarily in the manufacture of grease lubricating compounds and axle grease for automobiles, carriages, wagons, and railway cars. The industry was known as "axle grease" prior to 1914, and was first reported separately at the census of 1879. (See Table 225 for comparative statistics.) 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.

In addition to the products covered by the table, petroleum refineries reported the production of lubricating and axle greases to the value of \$8,146,627 in 1919, and establishments assigned to other classifications, principally those making fish and miscellaneous oils, reported lubricating grease to the value of \$1,196,265.

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, which includes printing, lithographing, and embossing inks, colored inks, and gold and bronze ink. At the censuses of 1849 and 1879 there was no separate presentation of the statistics, the classification "ink" including both printing and writing ink. (See Table 225.)

In addition to the products covered by the table, printing inks to the value of \$407,644 in 1919, \$177,672 in 1914, and \$89,839 in 1909 were reported by establishments assigned to other industries.

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 censuses of 1849 and 1879 only the totals for "ink" of all kinds were given. Comparable figures, as far as available, are presented in Table 225.

In addition to the value given in the table, writing ink to the value of \$1,037,676 in 1919, \$67,508 in 1914, and \$59,965 in 1909, was reported by establishments assigned to other classifications.

OIL AND CAKE, COTTONSEED.

The establishments under this classification are engaged primarily in the manufacture of oil, cake and meal, and linters from cotton seed, and in some cases in the refining of the oil. General statistics for the industry for the census years from 1859 to 1919, inclusive, are given in Table 225.

The following table presents the statistics for cottonseed products for the censuses of 1919, 1914, and 1909.

TABLE 127.—COTTONSEED PRODUCTS: 1919, 1914, AND 1909.

(Ton, 2,000 pounds.)

	1919	1914	1909
Cottonseed, crushed, tons.....	4,012,701	5,770,065	3,260,000
PRODUCTS.			
Products, total value ¹	\$581,244,798	\$312,127,024	\$147,867,894
Crude cottonseed products.....	\$352,138,000	\$152,880,000	\$105,720,000
Oil—			
Gallons.....	161,520,000	220,200,000	131,000,000
Value.....	\$200,608,000	\$80,540,000	\$35,230,000
Cake and meal—			
Tons.....	1,817,000	2,048,000	1,326,000
Value.....	\$110,039,000	\$57,740,000	\$35,910,000
Hulls—			
Tons.....	1,143,000	1,677,000	1,188,000
Value.....	\$11,065,000	\$8,150,000	\$6,810,000
Linters—			
Bales of 500 pounds net.....	584,140	820,271	300,640
Value.....	\$12,336,000	\$4,160,000	\$4,770,000

¹ From Census Bulletin, Cotton Production and Distribution, season of 1920-21, page 102.

² Census of manufactures.

OIL, ESSENTIAL.

Establishments under this classification extract or distill the oils of various plants, such as peppermint, spearmint, wormwood, pennyroyal, wintergreen, fleabane, tansy, and fireweed. Black birch, spruce, cedar, juniper and sassafras oils, peppermint-camphor (menthol) and witch-hazel extract are among the products. General statistics for the industry for the censuses from 1859 to 1919 are given in Table 225.

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 1919, 1914, and 1909 are shown in the following table:

TABLE 128.—ESSENTIAL OILS: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	87	107	74
The classified industry.....	78	105	68
Establishments reporting subsidiary products (other in- dustries).....	9	2	6
PRODUCTS.			
Total value.....	\$5,897,469	\$2,565,361	\$1,773,304
The classified industry, all products.....	\$5,698,403	\$2,313,606	\$1,773,304
Subsidiary products of other industries.....	\$199,066	\$251,755	
Oil of peppermint:			
Crude (for sale as such):			
Number of establishments.....	11	(1)	(1)
Pounds.....	138,042	254,793	259,081
Value.....	\$493,157	\$353,076	\$450,981
Refined:			
Number of establishments.....	3	(1)	(1)
Pounds.....	98,181	109,198	36,700
Value.....	\$782,979	\$248,541	\$68,098
Oil of spearmint (crude):			
Number of establishments.....	8	(1)	(1)
Pounds.....	29,990	94,209	33,400
Value.....	\$145,749	\$238,074	\$83,283
Oil of black birch:			
Number of establishments.....	9	(1)	(1)
Pounds.....	21,568	41,178	67,053
Value.....	\$74,290	\$67,691	\$102,045
Oil of sassafras:			
Number of establishments.....	6		
Pounds.....	194,317		
Value.....	\$168,414		
Oil of cedar:			
Pounds.....	9,629		
Value.....	\$29,148		
Oil of cloves:			
Pounds.....	220,977		
Value.....	\$680,218		
Oil of lemon:		(2)	(2)
Pounds.....	33,608		
Value.....	\$61,687		
Oil of nutmeg:			
Pounds.....	48,114		
Value.....	\$68,472		
Oil of sandalwood:			
Pounds.....	21,826		
Value.....	\$207,759		
Other essential oils, value ^a	\$1,698,861	\$382,100	\$407,398
Witch-hazel extract:			
Gallons.....	\$675,345	917,690	691,823
Value.....	\$620,075	\$675,938	\$419,793
All other products, value.....	\$876,660	\$699,941	\$241,706

^a Figures not available.^b Included with "other essential oils."^c Includes in 1919, oil of apricot, bay, belladonna, bitter almond, camphor, copaiba, celery, coriander, cubeb, erigeron, henbane, mare's tail, mustard, orange, orris root, parsley, patchouly, peach, pimento, tansy, vetiver, wintergreen, wormwood, etc.**OIL, LINSEED.**

The expressing of oil from flaxseed is the chief business of the establishments in this classification, but oil cake and meal and ground flaxseed were also among the products. Linseed oil is used principally in mixing paints. Statistics for the industry for the census years from 1849 to 1919 are given in Table 225.

In addition to the products covered by the table, raw linseed oil to the value of \$2,888,623 in 1919, \$1,201,839 in 1914, and \$1,106,181 in 1909 was made for sale in paint and varnish factories, and to the value of \$967,780 in 1919, \$84,408 in 1914, and \$63,100 in 1909, by establishments assigned to other industries.

Table 129 presents the statistics of production for 1919. Detail figures for prior censuses are not available.

TABLE 129.—LINSEED OIL: 1919.

	1919		1919
MATERIALS.		PRODUCTS—continued.	
Total cost.....	\$100,577,538	Linseed oil:	
Flaxseed:		Raw oil—	
Consumption, tons.....	631,458	Total production, gallons..	55,121,284
Linseed oil mills—		For sale—	
Tons.....	604,258	Gallons.....	32,243,931
Cost.....	\$89,584,459	Value.....	\$50,847,950
Estimated consumption by establishments in other industries, manufacturing linseed oil, tons.....	27,200	Produced for consumption (including boiling) in same establishment, gallons.....	22,877,303
Other oil materials (not flaxseed), copra, castor beans, etc.....	\$6,143,670	Boiled oil—	
Fuel and rent of power.....	\$668,479	Gallons.....	22,150,328
All other materials.....	\$4,170,930	Value.....	\$30,702,221
PRODUCTS.		Linseed cake:	
Total value.....	\$124,494,503	Tons.....	244,803
Linseed oil industry, all products..	\$120,638,100	Value.....	\$15,819,433
Subsidiary linseed oil products of other industries.....	\$3,856,403	Linseed meal:	
		Tons.....	104,335
		Value.....	\$10,015,777
		Vegetable oils other than linseed (products of linseed oil mills): ¹	
		Gallons.....	6,997,972
		Value.....	\$9,388,802
		All other products, value.....	\$1,060,314

¹ Includes the following vegetable oils, products of linseed oil mills (not total production of same): Coconut or copra, 4,383,953 gallons, valued at \$6,176,845; castor, 540,927 gallons, valued at \$951,157; soyabean, 212,102 gallons, valued at \$304,526; peanut, 138,270 gallons, valued at \$313,419; other and unclassified vegetable oils, 1,092,720 gallons, valued at \$1,547,855; total 6,997,972 gallons, valued at \$9,388,802.

OIL, NOT ELSEWHERE SPECIFIED.

The compounding and blending of mineral, animal, and vegetable oils for lubricating purposes and the manufacture of castor oil, oleo oil, fish or whale oil, resinol and neat's-foot oil, floor oil, signal oil, coconut oil, wool oil, palm oil, and lard oil, etc., constitute the operations carried on by the establishments in this classification.

Statistics for the industry for the census years from 1849 to 1919, inclusive, are given in Table 225.

Table 115 gives separate figures for the establishments whose products of chief value were "vegetable oil," "animal oil," "mineral oil," and "composite oil". In addition to the products covered by the table, vegetable oils to the value of \$51,583,827, animal oils to the value of \$45,855,359, mineral oils to the value of \$131,059, and composite oils to the value of \$6,829,526, were reported by establishments assigned to other classifications in 1919.

Differences in the classifications 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 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.

The general statistics for establishments engaged primarily in the manufacture of paint are given in Table 225 for the censuses from 1849 to 1919, inclusive, and for varnish for the censuses from 1859 to 1919, inclusive. The detail statistics of materials and products are considered for the combined industries.

Paints.—The principal products of establishments in this industry are colors or pigments, and paints whether in paste or ready for use. Water paints and kalsomine, stains, and putty are among the products. The manufacture of white lead

or of zinc white is the sole or principal business of some concerns, while some are engaged solely in paint mixing. There is thus considerable duplication in the value of products for the industry as a whole. 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.

Varnishes.—The establishments in the varnish industry manufacture principally varnishes consisting of solutions of gum, or resins, in solvents such as alcohol, linseed oil, turpentine, naphtha, and benzine. Among the products are the black varnishes called japans, enamels, and fillers made of linseed oil with powdered glass, ground slate, or silica; also linseed oil, raw and boiled, and bleached shellac.

The statistics for materials and products are given in the following table, for 1919, 1914, and 1909:

TABLE 130. PAINT AND VARNISH: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	886	857	863
Paint industry.....	801	585	588
Varnish industry.....	229	215	203
Subsidiary paint and varnish products, other industries.....	56	57	72
MATERIALS.			
Total cost.....	\$223,091,743	\$88,980,635	\$79,136,194
Paint industry.....	\$165,604,116	\$71,588,364	\$62,458,250
Varnish industry.....	\$31,508,256	\$16,877,393	\$16,557,305
Other industries, producing paint and varnish as subsidiary products.....	\$5,979,370	\$514,878	\$120,639
Pig lead:			
Tons (2,000 pounds).....	192,558	150,762	150,163
Cost.....	\$22,159,573	\$11,488,113	\$12,380,524
Grain alcohol:			
Gallons.....	2,985,735	1,061,324	356,225
Cost.....	\$1,724,112	\$436,509	\$226,724
Wood alcohol:			
Gallons.....	244,561	987,451	1,325,807
Cost.....	\$303,908	\$422,122	\$663,382
Linseed oil:			
Gallons.....	27,037,192	24,481,623	(1)
Cost.....	\$43,721,595	\$12,049,218	(1)
China wood oil:			
Gallons.....	6,196,134	(1)	(1)
Cost.....	\$10,264,039	(1)	(1)
Cottonseed oil:			
Gallons.....	16,506	(1)	(1)
Cost.....	\$24,028	(1)	(1)
Corn oil:			
Gallons.....	55,674	(1)	(1)
Cost.....	\$76,739	(1)	(1)
Soya-bean oil:			
Gallons.....	2,753,173	(1)	(1)
Cost.....	\$3,630,634	(1)	(1)
Other oils (fish oil, tar oil, kerosene, creosote, perilla, hempseed oil, etc.):			
Gallons.....	8,746,494	(1)	(1)
Cost.....	\$3,373,988	(1)	(1)
Benzol:			
Gallons.....	1,665,605	(1)	(1)
Cost.....	\$400,162	(1)	(1)
Turpentine:			
Gallons.....	6,081,902	(1)	(1)
Cost.....	\$6,961,982	(1)	(1)
Rosin:			
Pounds.....	85,917,127		
Cost.....	\$5,411,192		
Copal, damar, or kauri:			
Pounds.....	18,235,774		
Cost.....	\$3,250,165	48,902,000	(1)
Shellac:			
Pounds.....	7,785,319	\$4,797,944	(1)
Cost.....	\$4,683,619		
Other gums:			
Pounds.....	17,116,381		
Cost.....	\$1,873,210		
Fuel and rant of power.....	\$4,122,181	\$1,692,230	\$1,306,297
All other materials, cost.....	\$111,180,555	\$58,194,499	\$64,629,237

1 Figures not available.

TABLE 130.—PAINT AND VARNISH: 1919, 1914, AND 1909. Continued.

	1919	1914	1909
PRODUCTS.			
Total value.....	\$381,916,186	\$149,173,400	\$127,472,819
Paint industry.....	\$256,711,379	\$112,408,712	\$91,572,065
Varnish industry.....	\$81,632,424	\$31,214,949	\$30,317,417
Paint and varnish subsidiary products of other industries..	\$41,569,383	\$5,549,739	\$5,583,397
Colors (pigments).....	\$72,457,266	\$17,450,182	\$18,131,809
Paints in oil.....	\$168,525,418	\$70,582,461	\$57,380,539
Water paints and kalsomine.....	\$5,351,918	\$2,202,284	\$1,981,161
Varnishes and japans.....	\$86,814,800	\$36,142,236	\$31,758,735
Fillers:			
Liquid—			
Gallons.....	2,605,283	965,636	1,166,533
Value.....	\$1,839,573	\$670,033	\$828,393
Paste—			
Pounds.....	15,508,341		
Value.....	\$1,480,529		
Dry—			
Pounds.....	1,473,161	91,587,548	63,418,305
Value.....	\$71,283	\$1,318,720	\$1,199,505
Putty:			
Pounds.....	66,681,511	69,828,017	67,767,318
Value.....	\$3,164,251	\$1,250,421	\$1,169,083
Linseed oil, raw:			
Gallons.....	1,093,414	2,230,988	2,098,006
Value.....	\$2,888,623	\$1,201,839	\$1,106,181
Linseed oil, boiled:			
Gallons.....	611,426	572,561	1,379,025
Value.....	\$1,044,814	\$306,569	\$806,846
Other oils:			
Gallons.....	3,504,333	(1)	(1)
Value.....	\$3,115,989	\$999,392	(1)
Bleached shellac:			
Pounds.....	8,799,191	8,651,511	3,905,503
Value.....	\$5,955,732	\$1,806,802	\$772,210
Dryers:			
Gallons.....	408,572	1,047,110	(1)
Value.....	\$311,485	\$357,725	(1)
All other products.....	\$28,698,460	\$14,981,419	\$12,331,577

¹ Figures not available.

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, oil asphaltum, coke, black naphtha, tar, and sludge acid and residuums. The statistics for each census from 1859 to 1919, inclusive, are given in Table 225.

The products of the petroleum-refining industry, statistics for which are presented in the following table, aggregated \$1,632,532,766 in value in 1919, as compared with \$396,361,406 in 1914, and \$236,997,659 in 1909. The crude petroleum used increased in quantity from 191,262,724 barrels of 42 gallons in 1914 to 365,271,803 barrels in 1919, or 91 per cent.

TABLE 131.—PETROLEUM REFINING: 1919, 1914, AND 1909.

(Ton, 2,000 pounds.)

	1919	1914	1909
Number of establishments.....	320	176	147
MATERIALS.			
Total cost.....	\$1,247,908,355	\$325,264,509	\$199,273,403
Crude petroleum used:			
Barrels (42 gallons).....	365,271,803	191,262,724	120,775,439
Cost.....	\$867,646,475	\$240,727,856	\$152,307,040
Average unit cost, barrel.....	\$2.38	\$1.31	\$1.26
Distillates purchased and refined:			
Barrels.....	43,074,082	9,455,300	(1)
Cost.....	\$151,824,508	\$24,395,541	(1)
Casinghead gasoline, purchased:			
Barrels.....	6,952,215	(1)	(1)
Cost.....	\$30,857,628		

¹ Figures not available.

TABLE 131. PETROLEUM REFINING: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
MATERIALS—continued.			
Casinghead gas (wet natural gas):			
Thousand cubic feet.....	16,671,322	(1)	(1)
Cost.....	\$1,256,834		
Sulphur:			
Tons.....	5,241		
Cost.....	\$136,828		
Pyrites:			
Tons.....	26,275	\$206,053	
Cost.....	\$224,700		
Sulphuric acid (purchased):			\$4,003,198
Tons.....	503,920	200,455	
Cost.....	\$10,327,000	\$3,519,552	
Caustic soda:			
Pounds.....	45,270,806	22,216,000	
Cost.....	\$1,736,670	\$361,421	
Other chemicals.....	\$663,660	(1)	(1)
Fuller's earth.....	\$2,375,729	(1)	(1)
Containers, and materials therefor:			
Wooden.....	\$34,801,732	\$12,944,471	\$8,037,421
Metal.....	\$26,193,075	\$7,202,207	\$8,037,467
Fuel and rent of power.....	\$53,505,109	\$13,567,284	\$8,376,383
All other materials.....	\$37,358,257	\$13,250,124	\$17,611,803
PRODUCTS.			
Total value.....	\$1,632,532,766	\$396,361,406	\$236,997,653
Naphthas and lighter products:			
Gasoline:			
Gallons.....	3,648,590,635	1,195,422,100	
Value.....	\$679,867,064	\$106,140,170	
Naphtha:			
Gallons.....	392,282,320		
Value.....	\$65,077,854		540,327,500
Benzine:			\$39,771,959
Gallons.....	67,491,006	264,626,106	
Value.....	\$10,015,853	\$15,779,137	
Other:			
Gallons.....	97,262,837		
Value.....	\$11,045,284		
Illuminating oils:			
Gallons.....	2,305,489,735	1,935,274,800	1,674,789,000
Value.....	\$235,663,055	\$90,806,452	\$94,547,010
Fuel oils:			
Gallons.....	7,767,000,556	3,734,082,050	1,701,728,850
Value.....	\$318,124,339	\$84,017,916	\$36,402,883
Distillates—			
Gallons.....	646,652,618	457,491,650	
Value.....	\$36,548,107	\$15,999,342	
Gas oils—			
Gallons.....	4,393,623,480	755,558,400	(1)
Value.....	\$76,383,453	\$22,805,340	
Residual fuel oil—			
Gallons.....	5,727,624,452	2,521,042,000	
Value.....	\$265,192,779	\$45,213,234	
Partly refined oils, sold for re-refining:			
Gallons.....	428,346,637		
Above fuel oil.....	79,895,749		
Fuel oil.....	109,503,858	(1)	(1)
Below fuel oil.....	238,747,030		
Value.....	\$29,298,849		
Lubricating oils:			
Gallons.....	821,580,400	517,898,800	537,294,250
Value.....	\$190,242,439	\$55,812,120	\$38,884,236
Pale or paraffin; viscosity less than 100° Universal; or			
flash under 400° F.; closed cup—			
Gallons.....	124,372,754	93,422,100	101,061,500
Value.....	\$28,238,302	\$8,084,650	\$9,473,075
Red or neutral; viscosity 100° Universal or higher; or			
flash 400° F. or over; closed cup (not including cylinder oils)—			
Gallons.....	212,357,564	116,352,500	30,744,200
Value.....	\$44,583,065	\$12,426,023	\$2,255,924
Cylinder oils—			
Gallons.....	235,345,952	102,949,100	79,378,950
Value.....	\$59,030,506	\$13,703,772	\$9,482,568
All other lubricating oils, including compounded (except cylinder) oils—			
Gallons.....	249,504,130	205,115,100	265,209,600
Value.....	\$64,384,636	\$21,507,675	\$17,071,709

(1) Figures not available.

TABLE 131.—PETROLEUM REFINING: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS—continued.			
Liquid asphaltic road oils:			
Gallons.....	98,036,511		
Value.....	\$1,491,388	131,814,350	89,350,400
Residuum or tar:			
Gallons.....	29,163,394	\$1,017,858	\$2,215,623
Value.....	\$1,522,797		
Greases:			
Gallons.....	28,147,534	14,006,400	6,915,100
Value.....	\$11,806,655	\$4,536,491	\$1,567,647
Petrolatum—			
Gallons.....	10,230,287	6,078,050	
Value.....	\$3,750,028	\$1,243,388	(1)
Lubricating greases—			
Gallons.....	12,599,628	4,980,140	
Value.....	\$6,063,741	\$1,621,949	(1)
Axle grease—			
Gallons.....	5,317,619	2,948,200	(1)
Value.....	\$2,102,886	\$698,154	
Paraffin wax:			
Gallons.....	67,976,676	57,538,800	47,341,500
Value.....	\$28,348,437	\$8,897,106	\$9,388,812
Acid oil:			
Gallons.....	45,600,039	(1)	(1)
Value.....	\$932,907	(1)	(1)
Asphalt, other than liquid asphalt:			
Tons.....	927,151	465,157	233,328
Value.....	\$12,500,157	\$4,867,213	\$4,724,752
Coke:			
Tons.....	798,180	213,777	(1)
Value.....	\$3,928,345	\$818,889	\$307,005
Reclaimed or separated acid sold:			
Tons.....	136,320	89,702	133,215
Value.....	\$687,302	\$494,380	\$402,205
Candles, value.....	\$2,839,519	\$1,402,945	
Other special products, value.....	\$6,813,647	\$8,507,933	\$10,524,747
All other products, value.....	\$13,106,875	\$3,265,736	
EQUIPMENT.			
Stills:			
Number.....	6,365	3,639	2,395
Capacity (gallons).....	174,205,000	(1)	(1)
Steam—			
Number.....	1,061	612	467
Capacity (gallons).....	27,550,000	17,892,000	18,102,000
Fire—			
Number.....	4,394	3,027	1,928
Capacity (gallons).....	130,115,000	81,882,000	69,394,000
Pressure—			
Number.....	1,480	(1)	(1)
Capacity (gallons).....	16,630,000	(1)	(1)
Agitators:			
Number.....	1,083	770	529
Capacity (gallons).....	52,427,181	(1)	(1)
Chilling houses for paraffin:			
Number.....	105	76	79
Capacity (gallons).....	4,712,000	(1)	(1)
Filter houses:			
Number.....	357	(1)	(1)
Capacity (gallons).....	11,381,452	(1)	(1)
Hydraulic or other presses:			
Number.....	645	459	357
Capacity (gallons).....	6,258,924	(1)	(1)
Storage tanks for:			
Crude petroleum—			
Number.....	2,183	1,014	678
Capacity (gallons).....	1,511,889,000	889,202,000	242,501,000
Refined petroleum products—			
Number.....	11,380	6,967	6,476
Capacity (gallons).....	2,152,820,000	1,042,836,000	1,041,627,000
Fuel oil—			
Number.....	1,822	807	
Capacity (gallons).....	1,009,863,000	563,152,000	
Other—			
Number.....	5,546	4,111	(1)
Capacity (gallons).....	655,346,000	646,608,000	(1)

1 Figures not available.

CRUDE PETROLEUM—PRODUCTION AND REFINERY CONSUMPTION, BY FIELDS.

FIELD.	1919		1914	
	U. S. produc- tion.	Refinery consump- tion.	U. S. produc- tion.	Refinery consump- tion.
Total barrels (42 gallons)	377,719,000	326,928,292	265,762,535	185,027,479
California.....	101,564,000	74,200,751	99,775,327	41,901,651
Mid-Continent.....	196,891,000	181,039,564	97,995,400	92,462,687
Pennsylvania grade (Appalachian).....	29,232,000	29,828,701	21,101,048	21,196,064
Illinois.....	12,436,000	10,888,115	21,919,749	17,672,279
Gulf.....	20,568,000	16,396,712	13,117,528	5,787,313
Louisiana.....	3,444,000	1,737,865	5,062,543	2,564,742
Other fields—Colorado, Wyoming, etc.....	13,584,000	12,836,584	3,790,940	3,441,893

SALT.

All establishments producing salt are included in this classification. The products include rock and evaporated salt, brine sold as such, bromine, and calcium chloride. The major part of the business is of the nature of manufacturing rather than of mining or extracting material from the earth. General statistics for the industry are presented in Table 225 for the censuses from 1849 to 1919, inclusive.

Statistics of the products for this industry are collected annually by the United States Geological Survey. The following table gives the product statistics for 1919, 1914, and 1909.

TABLE 132.—SALT: 1919, 1914, AND 1909.

PRODUCT.	1919	1914	1909
Total value	\$37,513,821	\$14,070,333	\$11,327,834
Salt:			
Tons (2,000 pounds).....	6,882,902	14,872,656	4,195,028
Value.....	\$27,074,604	\$10,271,358	\$8,311,720
Bromine:			
Pounds.....	1,854,971	576,991	569,725
Value.....	\$1,234,969	\$203,004	\$57,600
Calcium chloride:¹			
Tons (2,000 pounds).....	26,123	19,403	12,853
Value.....	\$321,596	\$121,766	\$63,198
All other products	\$8,882,562	\$3,474,115	\$2,805,307

¹ Includes solar salt, Porto Rico.

² Calcium-magnesium chloride marketed in the United States, production from natural brine; not including that obtained in the manufacture of soda.

SOAP.

Establishments under this classification manufacture hard soaps, powdered soaps, toilet, shaving, and special soaps; soft soaps, and glycerin. General statistics for the industry for the census years from 1904 to 1919, inclusive, are presented in Table 225.

The statistics for the soap industry, given in the following table for 1919, 1914, and 1909, include those for the soap factories operated by the owners of slaughtering and meat-packing establishments, as well as for establishments engaged primarily in the manufacture of soap. In 1899 the manufacture of soap and of candles was reported as one industry, the value of products being \$53,231,017. In 1904 the value of the combined products of these industries was \$72,164,062, in 1909, \$114,488,298, in 1914, \$129,673,164, and in 1919, \$120,090,921.

The cost of the materials used in the soap industry was \$238,518,818 in 1919, \$88,866,786 in 1914, and \$72,179,418 in 1909. The value of all products was \$316,740,115 in 1919, \$127,942,441 in 1914, and \$111,357,777 in 1909. With the addition of the by-products from establishments in other industries, the total value of soap products was \$337,879,913 in 1919, and \$135,304,499 in 1914. The chief product, hard soap, including that made in establishments engaged primarily in the manufacture of products other than soap, aggregated 1,151,269 net tons in 1919 and 1,032,114 net tons in 1914. Glycerin is an important product of the soap industry. Reference, however, should be made to Table 118 for the total glycerin product, including that of chemical establishments.

TABLE 133.—SOAP: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	439	513	526
The soap industry.....	318	371	420
Establishments manufacturing subsidiary soap products.....	91	142	106
MATERIALS.¹			
Total cost.....	\$238,518,858	\$88,866,786	\$72,179,413
Animal fats, tallow, grease, etc.:			
Pounds.....	406,411,643		
Cost.....	\$51,986,798		
Red oil (commercial oleic acid):			
Gallons.....	3,227,386	2,516,289,571	2,413,969,787
Cost.....	\$2,598,366	\$22,566,899	\$23,341,905
Other, including fish oil, fatty acids, etc.:			
Gallons.....	4,087,087		
Cost.....	\$3,059,407		
Vegetable oils:			
Cocoanut oil—			
Gallons.....	24,349,831		
Cost.....	\$28,217,738		
Palm-kernel oil—			
Gallons.....	606,807	13,225,330	11,856,337
Cost.....	\$691,902	\$9,406,583	\$8,875,294
Cottonseed oil—			
Gallons.....	7,483,977	15,903,691	24,221,712
Cost.....	\$8,274,153	\$6,700,458	\$9,718,988
Other vegetable oils:			
Gallons.....	11,320,861		
Cost.....	\$13,263,976		
Soap stock:			
Pounds.....	112,353,679	123,032,886	114,050,892
Cost.....	\$5,773,182	\$6,456,784	\$2,433,609
Rosin:			
Pounds.....	119,529,661	183,310,786	207,296,447
Cost.....	\$7,836,738	\$1,067,992	\$1,363,412
Caustic soda:			
Tons (2,000 pounds).....	80,279	53,320	52,172
Cost.....	\$5,700,421	\$1,936,575	\$2,212,232
Soda ash:			
Tons.....	92,219	146,983	121,016
Cost.....	\$3,300,806	\$1,997,573	\$3,281,787
All other materials, cost.....	\$104,686,750	\$25,731,600	\$21,933,191
Produced in works where consumed.²			
Red oil, gallons.....	1,552,179	3,653,557	3,128,736
Tallow, pounds.....	67,113,763	5,311,000	16,664,000
Cottonseed oil, gallons.....	23,800	241,005	2,300,008
Caustic lye, gallons.....	28,552,080	22,777,000	15,804,000
Sodium silicate, pounds.....	98,603,158	43,197,253	37,466,246
Glycerine, pounds.....	40,472,470	2,156,591	5,879,279
Framed soap, pounds.....	834,198,448	618,066,000	524,775,000

¹ Not including those consumed in soap manufacture in establishments making subsidiary soap products.² Reported in pounds as "tallow, grease, and other fats."³ Includes other vegetable oils as follows:

KIND.	Gallons.	Cost.	KIND.	Gallons.	Cost.
Castor.....	362,746	\$463,745	Palm.....	2,362,463	\$2,415,798
Corn.....	298,118	341,087	Peanut.....	407,359	806,490
Linseed.....	38,785	55,962	Soybean.....	7,786,746	8,082,380
Olive.....	124,644	204,896	Other vegetable oils.....		1,163,617

⁴ Reported in pounds as "foots."⁵ Includes other materials as follows:

KIND.	Quantity.	Cost.	KIND.	Quantity.	Cost.
Hydrogenated oils, pounds.....	17,316,625	\$1,765,895	Borax, tons.....	930	\$129,470
Sodium silicate (ton, 2,000 lbs.).....	106,087	2,041,784	Talc, etc, tons.....	42,708	677,215
Caustic potash, tons.....	1,543	605,605	Other constituent materials.....		564,903

TABLE 133.—SOAP: 1919, 1914, AND 1909—Continued.

PRODUCTS.	1919	1914	1909
Total value.....	\$337,879,913	\$135,304,499	\$115,455,190
Soap industry (all products).....	\$316,740,115	\$127,942,441	\$111,357,777
Subsidiary soap products from other industries.....	\$21,139,798	\$7,362,058	\$4,097,413
Hard soaps:			
Quantity, pounds.....	2,308,612,000	2,064,228,000	1,794,240,000
Tallow, lard, and oleo soaps.....	1,072,390,000	1,002,034,000	1,051,549,000
Toilet soap.....	179,350,000	169,926,000	111,571,000
Dye soap.....	2,455,000	(1)	(1)
Powdered soap, sold in bulk.....	472,610,000	367,744,000	301,176,000
Soap chips.....	181,817,000	97,746,000	329,953,000
All other hard soaps.....	389,970,000	339,778,000	
Value.....	\$227,415,154	\$104,464,542	\$91,064,466
Soft soap:			
Pounds.....	64,463,000	57,002,000	60,037,000
Value.....	\$3,925,060	\$1,697,424	\$1,269,187
Liquid soap:			
Pounds.....	10,033,000	(1)	(1)
Value.....	\$1,255,213	(1)	(1)
Special soap articles:			
Pounds.....	30,227,719	(1)	(1)
Value.....	\$3,204,249	\$832,654	\$706,177
Lye:			
Pounds.....	16,301,000	23,346,000	.....
Value.....	\$1,789,201	\$891,265	.....
Glycerine: ¹			
Crude, for sale—			
Pounds.....	18,228,447	12,745,336	.....
Value.....	\$2,482,779	\$1,817,536	.....
Refined, pounds.....	49,498,027	34,831,082	.....
For sale—			
Pounds.....	47,377,151	32,674,491	\$6,790,282
Value.....	\$11,461,213	\$5,775,887	
Produced and consumed, pounds.....	2,121,476	2,156,591	5,879,279
Stearin:			
Pounds.....	3,139,683		
Value.....	\$829,402		
Candle pitch, tar or stearin pitch:			
Pounds.....	5,211,877		
Value.....	\$91,336		
Red oil (commercial oleic acid):		(1)	
Produced.....	1,985,380		
For sale—			
Gallons.....	433,207		
Value.....	\$476,146		
Made and consumed, gallons.....	1,552,179		
Candles:			
Pounds.....	5,483,173	(1)	\$15,025,078
Value.....	\$818,070	\$150,492	
Glues:			
Pounds.....	35,448		
Value.....	\$2,920		
Tankage:		(1)	
Tons.....	14,356		
Value.....	\$492,083		
Perfumes and toilet preparations.....	\$12,035,206	\$0,804,508	
All other products.....	\$71,005,170	\$12,870,191	

¹ Figures not available.² Total production of refined glycerine, all industries, in 1910—60,464,208 pounds (includes 2,121,476 pounds made and consumed): Crude glycerine made for sale, 21,402,735 pounds. See report on "Chemicals."³ Includes food products—lard substitutes, edible oils, etc., cottonseed products, and hardened oil—to the value of \$55,705,711; patent medicines and compounds, \$2,014,378; cleansing and polishing preparations, \$354,321, and other miscellaneous products, \$12,630,566.

TURPENTINE AND ROSIN.

The establishments included in this classification distil the gum exuded from the southern pine, the distillate being turpentine and residuum rosin. Establishments engaged in the destructive distillation of pine wood are included under "wood distillation." The industry includes the extraction of the raw material from the trees as well as its distillation. General statistics for these industries for the censuses from 1849 to 1919, inclusive, are given in Table 225.

The following table gives the quantity and value of the turpentine and rosin produced in 1919, 1914, and 1909:

TABLE 134.—TURPENTINE AND ROSIN: 1919, 1914, AND 1909.

PRODUCT.	1919	1914	1909
Total value.....	\$53,051,294	\$20,890,191	\$25,295,017
Turpentine:			
Gallons.....	17,893,841	26,980,981	28,988,954
Value.....	\$20,667,328	\$10,591,527	\$12,654,228
Rosin:			
Barrels (280 pounds).....	2,033,322	2,885,077	3,263,857
Value.....	\$31,881,000	\$10,329,110	\$12,576,721
Dross and other products, value.....	\$503,066	\$151,554	\$64,068

¹ In addition, in 1919, 1,534,333 gallons of turpentine, valued at \$1,267,739, and 234,030 barrels of rosin, valued at \$2,742,552, were reported by establishments engaged in the distillation of wood.

² In addition, in 1914, 667,958 gallons of turpentine, valued at \$230,500, were reported by establishments assigned to other industries.

³ In addition, in 1909, 725,178 gallons of turpentine, valued at \$257,008, were reported by establishments assigned to other industries.

WOOD DISTILLATION.

This classification includes establishments engaged in the manufacture of wood alcohol (methyl alcohol), pyroligneous acid, acetates, tar, turpentine, and charcoal by the destructive distillation of wood in retorts, ovens, or kilns, but does not include establishments making spirits of turpentine from the crude turpentine or gum. The statistics for the industry for 1899, 1904, 1909, 1914, and 1919 are shown in Table 225. The statistics include establishments engaged in the refining of crude wood alcohol.

The statistics for materials and products for 1919, in comparison with those for the censuses of 1914 and 1909, are given in the following table:

TABLE 135.—WOOD DISTILLATION: 1919, 1914, AND 1909.

	1919	1914	1909
Number of establishments.....	115	95	120
MATERIALS.			
Total cost.....	\$20,066,544	\$6,495,570	\$5,875,851
Wood-distillation industry.....	\$20,059,651	\$6,495,570	\$5,875,851
Other industries producing wood-distillation subsidiary products.....	\$6,893	(1)	(1)
Wood, cords.....	1,442,675	1,042,517	1,265,157
Hardwoods—			
Cords.....	1,180,477	970,308	1,149,847
Cost.....	\$7,965,069	(1)	(1)
Softwood (pine)—			
Cords.....	256,198	72,209	115,310
Cost.....	\$1,593,977	(1)	(1)
Crude wood alcohol:			
Purchased—			
Gallons.....	7,360,390	5,665,446	7,135,614
Cost.....	\$5,593,509	\$1,408,124	\$1,784,029
Made and consumed, gallons.....	2,123,303	2,409,450	2,534,882

¹ Figures not available.

TABLE 135. WOOD DISTILLATION: 1919, 1914, AND 1909—Continued.

	1919	1914	1909
PRODUCTS.			
Total value.....	\$32,625,305	\$10,529,829	\$10,312,057
The wood-distillation industry.....	\$32,545,314	\$9,882,537	\$9,730,998
Subsidiary wood-distillation products of other industries.....	\$79,991	\$647,292	\$875,059
Wood alcohol:			
Crude, gallons.....	9,103,996	9,602,431	9,307,583
For sale.....			
Gallons.....	6,980,663	7,196,975	6,772,700
Value.....	\$5,593,509	\$1,005,880	\$1,774,459
Made and consumed, gallons.....	2,123,303	2,405,456	2,534,883
Refined, gallons.....	7,391,010	6,464,955	
For sale.....			
Gallons.....	6,984,608	6,235,113	6,732,877
Value.....	\$5,381,863	\$2,709,369	\$3,096,808
Made and consumed, gallons.....	406,342	229,842	(1)
Acetate of lime, pounds.....	108,956,432	166,081,523	
For sale.....			
Pounds.....	153,910,349	163,521,577	141,478,296
Value.....	\$2,682,232	\$2,138,909	\$2,118,443
Made and consumed, pounds.....	15,040,083	2,562,946	(1)
Formaldehyde, acetic acid, acetone, methyl acetone, acetone oil, ketone, and acetate of soda, in order named, value.....	\$2,076,322	(1)	(1)
Tar, gallons.....	2,677,881	2,965,354	
For sale.....			
Gallons.....	2,143,157	1,476,797	1,570,257
Value.....	\$481,820	\$145,984	\$113,225
Made and consumed, gallons.....	534,724	1,488,557	(1)
Tar oils:			
Gallons.....	803,440	(1)	(1)
Value.....	\$240,805	(1)	(1)
Wood creosote:			
Pounds.....	1,152,055	2,073,057	2,549,190
Value.....	\$31,957	\$38,872	\$34,645
Turpentine:			
Gallons.....	1,534,333	575,557	706,868
Value.....	\$1,207,739	\$104,183	\$249,526
Rosin:			
Barrels (280 pounds).....	234,030	51,825	(1)
Value.....	\$2,742,652	\$198,165	(1)
Charcoal:			
Total production, bushels.....	48,210,497		
For sale.....			
Bushels.....	35,594,160		
Value.....	\$5,304,638	44,827,836	39,952,235
Blast furnace consumption—			
Bushels.....	12,455,052	\$2,829,571	\$2,426,048
Value.....	\$2,910,737		
Made and consumed, bushels.....	161,285		
Other wood-distillation products, value.....	\$112,541	\$441,399	\$231,192
All other products, value.....	\$552,590	\$227,497	\$267,711

1 Figures not available.

Group 9.—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.

TABLE 136.—STONE, CLAY, AND GLASS PRODUCTS: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
Total.....	12,529	298,659	\$1,262,212	\$328,559	\$406,571	\$1,085,529	\$876,958
Industries using stone as a material.....	7,501	89,723	522,391	104,287	181,884	432,119	250,235
Artificial stone products.....	2,765	8,378	20,647	9,311	13,913	33,004	10,751
Marble and stone work.....	4,240	32,768	112,509	38,365	49,524	129,165	79,641
Monuments and tombstones.....	3,266	13,307	64,950	17,313	31,275	73,301	42,086
Other marble and stone work, except slate.....	861	15,855	50,463	17,957	16,244	49,200	33,013
Roofing slate.....	71	2,558	5,022	2,145	1,302	4,421	3,119
Other slate products.....	52	1,048	2,134	940	703	2,123	1,420
Lime.....	476	11,405	45,845	10,869	14,297	35,971	19,674
Cement.....	123	25,524	271,269	33,195	79,510	175,265	95,755
Wall plaster and composition flooring.....	161	5,123	25,307	5,833	11,822	26,875	15,053
Emery and other abrasive whocia.....	60	5,601	34,803	5,679	12,228	30,949	18,721
Grindstones.....	23	674	2,045	598	244	1,300	1,125
Millstones.....	12	38	59	44	20	67	41
Hones and whetstones.....	11	212	847	203	320	794	474
Industries using clay as a material.....	3,465	122,337	496,730	127,771	109,050	312,252	233,202
Brick and tile, terra-cotta, and fire-clay products.....	2,414	76,915	355,848	78,250	67,488	205,423	140,935
Building brick.....	1,454	35,984	150,403	30,728	27,832	95,161	67,329
Fire brick.....	194	13,673	60,014	13,222	13,361	30,185	22,823
Stove lining.....	19	861	955	354	360	1,095	720
Sewer pipe and drain tile.....	478	10,263	44,904	10,500	9,608	27,732	18,124
Terra-cotta products.....	214	11,073	56,430	11,049	8,239	29,381	20,872
Silica, magnesite, and kauxite bricks and shapes.....	39	4,523	28,898	4,562	7,298	15,853	8,645
All other.....	10	1,033	8,060	1,255	924	3,317	2,413
Sand-lime brick.....	32	2,534	2,230	502	575	1,663	1,988
Pottery.....	340	27,934	66,753	20,820	20,794	74,919	54,125
China ware.....	161	23,733	53,849	25,073	17,550	63,037	45,478
Earthen and stone ware.....	147	2,803	8,827	2,787	2,041	7,994	5,053
All other.....	32	1,338	4,052	1,360	1,194	3,888	2,694
China decorating, not including that done in potteries.....	43	244	470	244	311	867	556
Decalcomania work on china.....	9	39	111	32	63	150	87
All other.....	34	205	359	212	248	717	469
Crucibles.....	22	848	8,009	923	2,233	5,294	3,001
Graphite crucibles.....	6	239	2,997	257	1,046	2,140	1,100
Clay crucibles.....	10	237	4,031	265	888	2,125	1,240
Glass-house pots.....	6	372	991	401	299	1,020	721
Minerals and earths, ground or otherwise treated.....	419	14,426	60,209	16,310	16,270	46,067	20,797
Statuary and art goods.....	195	1,466	3,146	1,716	1,379	5,019	3,040
Glass and manufactures of glass.....	1,173	86,599	243,091	96,501	117,537	311,158	193,521
Glass.....	371	77,520	215,680	87,527	90,789	261,884	171,104
Glass, cutting, staining, and ornamenting.....	618	6,489	18,089	6,155	14,358	28,443	14,085
Decalcomania work on glass.....	22	469	673	235	383	908	525
All other.....	594	6,071	17,416	5,920	13,975	27,535	13,590
Mirrors, framed and unframed.....	186	2,599	9,322	2,819	12,499	20,831	8,332

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.

Table 136 (p. 204) shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, 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 1919. 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, while plaster and stone, as well as clay, are used in the manufacture of statuary and art goods.

The statistics for the quantity and value of the different products for cement, lime, wall plaster, brick and tile, terra-cotta and fire-clay products, pottery and sand-lime brick, grindstones and hones and whetstones are collected annually by the United States Geological Survey, and such tables as give such figures for the different products for 1919 are taken from the reports of that office.

ARTIFICIAL STONE PRODUCTS.

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. Concerns engaged chiefly in constructing concrete buildings, bridges, etc., were not canvassed by the census, which does not cover the building industries generally. Some establishments, however, engaged in building work and largely also in making portable articles were included. Where the building operations could not be segregated, the statistics 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.

Table 225 presents the more important data for this industry for 1919, 1914, 1909, and 1904. Prior to 1904 the statistics for "artificial stone" were included in 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 recent development.

In addition to the products covered by the table, artificial stone products to the value of \$245,018 in 1919, \$199,789 in 1914, and \$279,023 in 1909 were reported by establishments assigned to other classifications.

MARBLE AND STONE WORK.

Separate statistics have been compiled for establishments making chiefly monuments and tombstones and for those reporting other products, but there is so much overlapping of products that only combined totals are shown in Table 225, which gives the statistics for the censuses from 1859 to 1919. Although data for the two branches of the industry can not be compiled with that degree of accuracy attending the figures for other industries, separate totals are significant and therefore are given in Tables 137 and 138.

This industry covers, broadly speaking, (1) monuments and tombstones; (2) the sawing, cutting, dressing, and polishing of marble, granite, limestone, bluestone, soapstone, freestone, brownstone, 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, stepstones, posts, headstones, copings, columns, sidewalk stones, paving blocks and curbing, floor tiles, steps, flagging, panels, tables, tubs, sinks, altars, marble counters, slabs, basins, soda-water fountains, fireplace work, shelves, stairs, mantels, standards, mosaic and terrazzo work, and store and office fixtures; (3) roofing slate, and (4) a great variety of articles made from slate, such as electrical switchboards, panels, and fixtures, wainscoting, counter tops, billiard and pool table beds, sinks and sink tops, mantels, school slates, slate black-

boards, laundry tubs, washboards, screens, bulletin boards, flagging, curbing, structural slate, interior finish, mill stock, and inlaid and enameled slate. Table 136 gives separate figures for the three divisions of the industry. In many cases stone-cutting is done in connection with building construction, but the construction work is not covered by the census of manufactures.

Table 137 presents the statistics for this industry for each census year from 1850 to 1919. Prior to 1904 the statistics included the production of artificial stone.

TABLE 137.—MARBLE AND STONE WORK: 1850 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	984	19,461	118,804	\$57,619	\$21,042	\$18,249	\$55,801	\$37,555
1914.....	1,536	49,505	168,630	87,703	27,102	21,469	66,078	41,600
1909.....	1,086	51,292	158,924	87,335	32,306	22,248	71,688	52,440
1904.....	1,169	38,486	86,176	63,353	23,686	17,843	59,155	41,342
1899 ¹	1,687	31,072	71,570	40,339	16,607	13,656	43,314	29,688
1889.....	1,411	21,470	18,175	25,897	16,268	17,487	43,052	27,565
1879 ²	2,892	22,196	(³)	17,249	10,552	13,220	32,446	19,226
1869.....	923	13,190	5,637	11,288	7,601	8,035	21,317	13,282
1859.....	1,806	15,379	(³)	8,865	5,672	5,346	16,244	10,898

¹ Includes "artificial stone."² Includes "monuments and tombstones."³ Figures not available.

Monuments and tombstones.—This branch of the industry includes establishments engaged primarily in the cutting, polishing, and finishing, for the trade, of all kinds of stone, but chiefly of slate, marble, and granite for cemetery purposes. The principal products are monuments, tombstones, tablets, headstones, footstones, coping, crosses, cornerstones, posts, markers, vaults, bases, mausoleums, sarcophagi, shafts, and inclosures for cemetery lots. The census does not now cover the numerous small yards where finished or partly finished monuments and tombstones are purchased and where the only work is lettering or finishing, 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.

Table 138 gives the statistics for this branch of the industry, beginning with 1869, when the figures were first shown separately. In 1879 the industry was included in "marble and stone work," and the statistics for that year are included in those given in Table 137.

TABLE 138.—MONUMENTS AND TOMBSTONES: 1869 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	3,256	13,307	51,328	\$54,980	\$17,313	\$31,275	\$73,361	\$42,086
1914.....	3,365	14,385	38,831	30,720	10,858	16,333	40,977	24,644
1909.....	2,978	14,311	27,507	28,762	10,241	15,149	38,405	23,256
1904.....	1,439	12,624	16,711	15,817	8,213	8,756	25,689	16,333
1899.....	1,205	10,614	11,549	12,643	6,236	7,890	20,323	12,433
1889.....	2,052	9,778	3,589	13,073	6,028	7,636	20,671	13,035
1869.....	1,049	5,719	988	4,042	2,490	3,710	8,917	5,207

LIME.

From 1879 to 1899, inclusive, the data for the manufacture of lime included cement and wall plaster under the designation "lime and cement." For purposes of comparison, Table 139 combines statistics for lime, cement, and wall plaster for the censuses from 1849 to 1919, inclusive. Table 225 shows statistics for each of these three industries separately.

TABLE 139.—LIME, CEMENT, AND WALL PLASTER: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	760	42,652	572,899	\$342,421	\$49,807	\$105,629	\$236,111	\$130,482
1911.....	925	45,734	566,162	307,120	27,685	67,538	136,691	69,153
1909.....	1,186	45,463	425,362	236,803	23,691	42,082	93,961	51,879
1901.....	874	32,388	187,856	121,559	15,302	22,378	54,788	32,410
1899.....	904	19,085	93,540	48,787	7,741	11,040	28,674	17,634
1889.....	873	13,043	18,610	18,752	4,944	5,668	15,742	10,074
1879.....	615	5,669	(1)	6,332	1,579	2,619	5,772	3,123
1869.....	1,367	9,395	8,876	9,207	3,102	6,662	13,643	6,981
1859.....	1,635	4,659	(1)	3,798	1,316	2,546	5,676	3,130
1849.....	936	3,626	(1)	1,926	954	1,584	3,224	1,640

1 Figures not available.

The quarrying of limestone and the burning of the stone into lime are usually done by the same establishments, and the data cover both branches of the industry.

In addition to the products covered by Table 225, lime to the value of \$574,688 in 1919, \$778,316 in 1914, and \$180,206 in 1909, was reported by establishments assigned to other classifications. The value of products reported by the census probably includes some products other than lime. The reports of the Geological Survey show that the production of lime in 1919 was 3,330,347 tons (2,000 pounds), valued at \$29,448,553, and in 1914, 3,380,928 tons valued at \$13,247,676.

CEMENT.

This industry consists in the manufacture of hydraulic cement, chiefly Portland cement, from rock usually quarried by the same establishments. It also includes the manufacture of natural and puzzolan cements.

In comparative Table 225 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.

The quantity and value of products for the cement industry for 1919, 1914, 1909, and 1904, are given in Table 140.

TABLE 140.—CEMENT PRODUCTS: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Total value of products.....	\$175,264,910	\$101,850,480	\$63,274,715	\$29,873,122
The cement industry.....	\$175,264,910	\$101,756,444	\$63,205,455	\$29,873,122
Subsidiary cement products from other industries.....		\$94,036	\$69,260	(2)
Cement:				
Barrels.....	81,306,524	80,049,766	66,689,715	31,675,257
Value.....	\$138,713,823	\$82,204,096	\$53,610,568	\$26,031,920
Portland cement—				
Barrels.....	80,777,935	88,230,170	64,991,431	26,505,881
Value.....	\$138,130,260	\$81,789,368	\$52,858,354	\$26,355,119
Natural and puzzolan cement—				
Barrels.....	528,589	* 810,596	* 1,698,284	* 5,169,376
Value.....	\$583,554	\$414,728	\$752,209	\$2,676,801
All other products, value.....	\$36,551,087	\$19,646,384	\$0,064,152	\$3,841,202

1 Figures for subsidiary cement products from other industries not included.

2 Figures not available.

* Includes for 1914, 751,285 barrels of natural and 68,311 barrels of puzzolan; for 1909, 1,537,638 barrels of natural and 160,646 of puzzolan; and for 1904, 4,869,331 barrels of natural and 303,046 barrels of puzzolan.

Comparatively little natural cement was made in 1919 and 1914 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 hydrau-

lic cement called Portland cement is a calcined and ground mixture of limestone, chalk or marle, and clay or shale.

At the censuses of 1909 and 1904 the statistics of the production of cement were collected in cooperation with the United States Geological Survey, which compiles annual statistics for the industry. The figures for the quantities and values of the different kinds of cements for 1919 and 1914 were taken from the reports of the Survey. The value of the cement is the value in bulk, exclusive of the value of the barrels and bags used as containers. The value of the containers used and the subsidiary or by-products, such as crushed rock, marble dust, and mixed ashes and cement, not reported by the Survey, are included in the total for "all other products."

WALL PLASTER AND COMPOSITION FLOORING.

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 in "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 1919 were sand, lime, cement, plaster of Paris, wood fiber, stucco, hair, felt paper retarder, asbestos, cinders, coal ashes, asphalt, clay, and slag.

Table 225 summarizes the statistics for the industry as reported for the censuses from 1849 to 1919, inclusive, except those of 1899, 1889, and 1879, when they were included in "lime and cement." The figures cover the entire quarrying and manufacturing operations of certain establishments which quarried the gypsum from which the wall plaster was made.

Wall plaster and composition flooring to the value of \$675,564 in 1919, \$59,556 in 1914, and \$175,094 in 1909 were also made by establishments engaged primarily in the manufacture of cement. The annual report of the United States Geological Survey shows that the production for 1919 of calcined gypsum sold as plaster of Paris, wall plaster, Keene's cement, etc., amounted to 1,393,141 tons of 2,000 pounds, valued at \$16,809,624 as compared with 1,565,937 tons, valued at \$6,938,777 in 1914.

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. General statistics for the industry for the census years from 1869 to 1919, inclusive, are presented in Table 225.

Emery and other abrasive wheels to the value of \$641,576 in 1919, \$121,172 in 1914, and \$6,003 in 1909 were reported by establishments assigned to other industries.

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 167.)

GRINDSTONES.

Table 225 presents the statistics for this industry as shown in the reports of the censuses of manufactures from 1849 to 1919. The statistics for the different censuses are by no means closely comparable, as there is no sharp line of demarcation between the manufacturing and quarrying business.

MILLSTONES.

Only two establishments appeared under this classification in 1914, but this statement furnishes no accurate measure of the extent of the industry, which is conducted largely at the places where the material is quarried. In 1919, there were 12 establishments, with products valued at \$66,896. Millstones are used for grinding cement, talc, quartz, and mineral paints, as well as for grinding grain. (See Table 225.)

HONES AND WHETSTONES.

This industry includes the manufacture of razor hones, whetstones, oilstones, scythestones, lawn-mower sharpeners, rubbing stones for hardware finish, rubbing brick, and shoemakers' sandstones. General statistics for the industry are given in Table 225 for the censuses from 1859 to 1919, inclusive.

There were several classifications in 1859 which are combined in Table 225 for comparison. Those classifications were "oilstones," "scythe rifles," "scythestones," and "whetstones." Hones and whetstones are also made by certain quarries, no part of whose business is covered by the table.

BRICK, TILE, POTTERY, AND OTHER CLAY PRODUCTS.

The general statistics for establishments engaged primarily in the manufacture of "brick and tile, terra-cotta, and fire-clay products," of "pottery," and of "sand-lime brick" are shown separately in Table 225 for 1919 and 1914, and by states for 1919. In order to obtain figures comparable with those of the Geological Survey the classification was changed from that used in 1909 and prior censuses.

Table 141 shows the totals for the manufacture of brick, tile, pottery, and other clay products for each census from 1849 to 1919, inclusive.

TABLE 141.—BRICK, TILE, POTTERY, AND OTHER CLAY PRODUCTS: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1910.....	2,786	105,353	439,194	\$424,836	\$108,578	\$88,857	\$285,005	\$106,148
1914.....	3,634	127,444	470,758	326,749	71,895	55,105	173,858	118,753
1909.....	5,037	132,696	451,186	316,023	66,892	45,647	168,895	123,248
1904.....	5,507	118,449	360,280	230,883	53,824	32,908	135,353	102,445
1890.....	6,423	105,693	252,502	148,038	39,575	22,921	95,354	72,613
1880.....	6,535	123,156	131,821	108,706	38,578	18,258	89,828	71,570
1879.....	6,383	76,576	(¹)	85,040	17,044	12,684	41,811	20,127
1869.....	3,950	50,167	12,708	26,776	13,333	9,531	36,368	20,837
1859.....	2,240	24,569	(¹)	9,708	5,225	2,931	13,988	11,057
1849.....	2,121	10,801	(¹)	5,217	4,890	1,768	8,189	6,421

¹ Figures not available.

Table 142 shows the quantity and value of the different products reported for the entire industry at each census from 1904 to 1919, inclusive. The census reports for the same establishments that furnished statistics to the Geological Survey contain the value of subsidiary products and the cost of containers that are not included in the reports to the Survey. Therefore, the total value of products does not agree with the total published by the Survey. Further, the Survey reports the products sold during the year, while the census covers the production, some of which may not have been sold.

TABLE 142.—BRICK, TILE, POTTERY, AND OTHER CLAY PRODUCTS: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Total value.....	\$285,005,158	\$179,964,016	\$169,532,756	\$135,652,306
Brick and tile, terra-cotta, and fire-clay products industry.....	208,422,020	135,921,415	168,895,365	135,352,854
Pottery industry.....	74,919,186	36,942,606		
Sand-lime brick industry.....	1,663,052	904,199		
Subsidiary products from other industries.....	(1)	6,105,706	637,391	299,452
Brick and tile, terra-cotta, and fire-clay products, value ²	\$210,108,677	\$130,641,360	\$136,387,846	\$109,003,306
Brick, value.....	\$142,793,359	\$84,239,587	\$97,137,841	\$78,728,083
Common—				
Thousands.....	4,751,881	7,145,809	9,787,671	8,683,897
Value.....	\$63,584,748	\$43,763,554	\$57,216,789	\$31,239,871
Fire—				
Thousands.....	963,439	816,784	838,167	678,302
Value.....	\$38,015,792	\$16,427,547	\$16,620,695	\$11,752,625
Vitrified—				
Thousands.....	489,242	931,324	1,023,654	715,559
Value.....	\$11,615,141	\$12,500,866	\$11,269,586	\$7,256,088
For paving—				
Thousands.....	392,526			
Value.....	\$9,371,763			
Other purposes.....		(1)	(1)	(1)
Thousands.....	96,716			
Value.....	\$2,243,381			
Silica brick—				
Thousands.....	211,420	(1)	(1)	(1)
Value.....	\$10,914,898			
Face—				
Thousands.....	791,068	810,395	816,164	626,142
Value.....	\$10,033,059	\$9,289,623	\$9,712,219	
Fancy or ornamental.....	\$77,879	\$124,450	\$174,073	\$7,335,511
Sand lime—				
Thousands.....	146,947	172,629	(1)	(1)
Value.....	\$1,705,163	\$1,688,512	\$1,130,580	\$698,093
Enameled.....	\$840,676	\$1,075,926	\$983,992	\$445,083
Drain tile—				
Tons.....	1,241,168	(1)	(1)	(1)
Value.....	\$10,965,943	\$8,522,639	\$9,798,978	\$5,522,198
Sewer pipe—				
Tons.....	1,155,131	(1)	(1)	(1)
Value.....	\$10,754,832	\$14,014,767	\$10,322,324	\$8,416,069
Architectural terra-cotta.....	\$9,988,182	\$6,087,652	\$6,251,625	\$3,792,703
Fireproofing, terra-cotta lumber, and hollow building tile or blocks.....	\$17,964,573	\$8,385,337	\$4,466,708	\$4,317,312
Tile (not drain)—				
Value.....	\$8,137,452	\$5,705,583	\$5,291,963	\$2,725,717
Roofing—				
Square feet.....	9,414,800			
Value.....	\$1,283,901			
Floor—				
Square feet.....	7,790,967			
Value.....	\$1,535,287			
Ceramic—				
Square feet.....	7,471,767	(1)	(1)	(1)
Value.....	\$1,824,372			
Patience—				
Square feet.....	1,550,121			
Value.....	\$881,241			
Wall—				
Square feet.....	7,495,618			
Value.....	\$2,612,651			
Stove lining.....	\$683,814	\$520,586	\$423,583	(1)
Other brick and tile products.....	\$8,840,492	\$3,165,810	\$2,694,821	\$3,501,224

¹ Figures not available.² The total value of products as reported by the Geological Survey for brick and tile, terra-cotta and fire-clay products, and for pottery are not comparable with the value of products for the industry as reported by the census, for the latter includes all products of the establishments, irrespective of their character, and the former includes production by establishments primarily engaged in other lines of manufacture.

TABLE 142.—BRICK, TILE, POTTERY, AND OTHER CLAY PRODUCTS: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
Pottery, value ¹	\$75,742,125	\$35,398,161	\$31,048,341	\$25,834,513
White ware, including C. C. ware, white granite, semiporcelain ware, and semi-vitreous porcelain ware.....	29,847,261	14,968,079	13,728,316	9,195,703
Sanitary ware.....	14,872,364	7,874,269	5,989,295	3,932,506
Stoneware and yellow and Rockingham ware.....	4,603,018	3,349,301	3,993,859	3,481,521
Porcelain electrical supplies.....	12,614,794	4,130,270	3,047,499	1,500,283
China, bone china, delft, and belleek ware.....	7,708,832	2,384,686	1,766,766	3,478,627
Red earthenware.....	1,298,311	1,059,904	804,806	821,695
Chemical stoneware.....	805,321	(2)	(2)	(2)
Red and brown white-lined cooking ware.....	723,981	(2)	(2)	(2)
Other pottery products.....	\$3,268,243	1,631,652	1,717,800	3,421,178

¹ The total value of products as reported by the Geological Survey for brick and tile, terra-cotta and fire-clay products and for pottery are not comparable with the value of products for the industry as reported by the census, for the latter includes all products of the establishments, irrespective of their character, and the former includes production by establishments primarily engaged in other lines of manufacture.

² Figures not available.

³ Not including saggars, made and used, to the amount of \$2,115,637.

Brick and tile, terra-cotta, and fire-clay products.—This classification includes establishments manufacturing (1) brick of various kinds, common, glazed, enameled, vitrified, paving, fancy, ornamental, etc., except sand-lime brick; (2) fire brick; (3) stove linings, flue linings, furnace blocks, fire-clay retorts, locomotive arch blocks, and similar products; (4) sewer pipe, draintile, silo blocks, sewer blocks, encaustic tile, conduits; (5) terra-cotta, architectural and fireproofing, hollow building tile or block; (6) silica, magnesite, and bauxite bricks and shapes; and (7) all other terra-cotta or fire-clay products. This grouping was adopted for 1914 and 1919 in order to obtain figures comparable with those compiled by the Geological Survey. Separate totals for each of the seven groups are given in Table 136. As no such segregation was made prior to 1914, comparative figures can be given for 1919 and 1914 only. Table 225 gives general statistics for the industry for 1919 by states.

Sand-lime brick.—This classification covers those establishments that manufacture brick from a combination of sand and lime. It was first shown as a separate industry in 1914, having been included with brick and tile prior to this census. Table 225 gives general statistics for the industry for 1919 and 1914, and by states for 1919.

Of the 146,947 thousand brick made in 1919, 145,277 thousand were common brick valued at \$1,682,966, and 1,670 thousand were face brick valued at \$22,197.

Pottery.—This classification covers establishments which manufacture stoneware, earthenware, white and cream-colored ware, chinaware, delft and belleek ware, porcelain electrical supplies, insulators and potters' supplies, dinner ware, crockery, flowerpots, jardinières, cooking ware, jars, jugs, pots, bowls, baking dishes, art ware, vases, yellow ware, door knobs, etc.

Separate totals are given in Table 136 for establishments engaged primarily in the manufacture of (1) chinaware, (2) earthen and stone ware, and (3) all other pottery. The general statistics for the industry for 1919 are given in Table 225.

Table 142 enumerates the different kinds of pottery produced and gives the value of each from 1904 to 1919, inclusive.

CHINA DECORATING, NOT INCLUDING THAT DONE IN POTTERIES.

This classification includes establishments engaged in firing or decorating china and earthen ware. 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 225, giving comparative figures, except for the census of 1889. Many establishments in the pottery industry decorate the china they produce, so that the statistics given in the tables 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.

In addition to the products covered by Table 225, china decorating to the value of \$58,398 in 1919 and \$16,400 in 1914 was reported by establishments assigned to other classifications.

CRUCIBLES.

In the manufacture of crucibles, most of which are made to withstand a very high temperature, fire clay, German clay, fire sand, kaolin, and plumbago are the principal materials. Comparative statistics for the censuses from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, crucibles to the value of \$1,570,579 in 1919, \$684,285 in 1914, and \$751,007 in 1909, were reported by establishments assigned to other industries.

MINERALS AND EARTHS, GROUND OR OTHERWISE TREATED.

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, ocher, clay, mica, pumice, feldspar, rottenstone, ferromanganese, slate, slag, needle antimony, manganese, barytes, borax, fuller's earth, Paris white and whiting, kaolin, soapstone, limestone, sandstone, keystone, cornwall stone, silica, flux, shale, schist, marble, and alundum. Where the material is prepared for the market at the quarry the operations of quarries are included. The industry was first reported at the census of 1869, and statistics from 1869 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, minerals and earths, ground to the value of \$321,960 in 1919, \$378,704 in 1914, and \$49,654 in 1909 were reported by establishments assigned to other classifications.

STATUARY AND ART GOODS.

This classification covers the manufacture of a variety of products, such as statues, vases, urns, brackets, garden and lawn furniture, flower boxes, fountains, plaques, mantels, columns, panels, moldings, pedestals, ornamental plaster work, architectural sculpture, small images, scagliola, church statuary, bronze statuary, and papier-mâché articles. The value of bronze statues cast in bronze foundries as a subordinate part of the business is included in the value of products for the brass, bronze, and copper 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 "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 225 gives comparative figures for the four years, 1904, 1909, 1914, and 1919.

In addition to the products covered by the table, statuary and art goods to the value of \$226,471 in 1919, \$108,515 in 1914, and \$89,137 in 1909 were reported by establishments assigned to other classifications.

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, glass bars and canes, marbles, nest eggs, and blanks for cutting. General statistics for the industry for the census years from 1849 to 1919, inclusive, are presented in Table 225.

Table 143 gives comparative statistics for the glass industry in the United States for 1919, 1914, 1909, and 1904. The quantity of pressed and blown glass shown in the table for 1919 and 1914 does not include a number of specialties, such as stoppers, reflectors, marbles, thermos bottles, vases, etc., some of which were reported in pounds and some in number of pieces. There was also a large quantity of bottles and jars that could not be assigned by quantity to any specific class, but the values are included in their proper class.

TABLE 143.—GLASS PRODUCTS: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Products, total value ¹	\$261,884,080	\$123,085,019	\$92,095,203	\$79,607,998
Building glass, value.....	\$83,713,115	\$36,824,069	\$26,308,438	\$21,697,861
Window glass—				
Square feet.....	368,912,209	400,998,893	346,080,550	242,615,750
Value.....	\$41,100,724	\$17,495,956	\$11,742,959	\$11,610,851
Obscured glass, including cathedral and skylight—				
Square feet.....	33,822,302	43,040,079	22,815,946	21,870,634
Value.....	\$4,300,308	\$2,417,253	\$1,358,574	\$972,014
Plate glass, total cast, square feet.....	72,849,340	75,770,261	60,105,694	34,804,986
Polished—				
Square feet.....	50,823,749	60,383,516	47,370,254	27,293,138
Value.....	\$33,348,279	\$14,773,787	\$12,204,875	\$7,978,253
Rough, made for sale as such—				
Square feet.....	788,742	131,492	205,690	17,784
Value.....	\$171,118	\$25,859	\$37,431	\$3,529
Wire glass—				
Polished—				
Square feet.....	1,229,077	1,707,848	(²)	(²)
Value.....	\$635,543	\$534,322	(²)	(²)
Rough, made for sale as such—				
Square feet.....	14,462,409	13,980,996	(²)	(²)
Value.....	\$2,271,099	\$1,056,612	(²)	(²)
All other building glass, value.....	\$1,886,044	\$520,280	\$964,590	\$1,133,214
Pressed and blown glass, value.....	\$70,748,861	\$30,279,290	\$27,398,445	\$21,956,158
Tableware, 100 pieces.....	2,457,938	1,554,056	1,280,050	1,283,974
Jellies, tumblers, and goblets, dozens.....	25,182,133	18,030,243	11,687,036	7,346,214
Lamps, dozens.....	917,250	580,196	322,482	487,017
Chimneys, dozens.....	6,615,109	6,989,624	6,632,967	7,039,756
Lantern globes, dozens.....	1,985,741	1,363,562	952,620	1,765,247
Shades, globes, and other gas goods, dozens.....	12,313,307	2,016,800	1,541,449	878,244
Blown tumblers, stem ware, and bar goods, dozens.....	9,668,638	11,377,310	9,182,060	6,282,606
Opal ware, dozens.....	2,155,972	4,636,051	3,095,666	1,091,208
Cut ware, dozens.....	549,170	297,957	206,336	83,736
Decorated glassware, dozens.....	1,052,851	1,158,077	(²)	(²)
Lenses, dozens.....	725,675	(²)	(²)	(²)
Electric bulbs, dozens.....	18,363,603	(²)	(²)	(²)
Tubing, pounds.....	18,147,470	(²)	(²)	(²)
Bottles and jars, value.....	\$94,670,389	\$51,958,728	\$36,018,333	\$33,631,063
Prescriptions, vials, and druggists' wares, gross.....	6,684,548	4,893,416	3,624,022	3,202,586
Beer, soda, and mineral, gross.....	4,178,368	4,573,610	2,345,204	2,351,852
Liquors and flasks, gross.....	993,030	2,689,022	1,887,344	2,157,801
Milk jars, gross.....	877,268	1,188,891	440,302	253,651
Fruit jars, gross.....	1,860,262	1,198,952	1,124,485	1,061,829
Battery jars and other electrical goods, gross.....	13,805	79,211	9,481	19,974
Patent and proprietary, gross.....	3,364,679	1,384,089	1,637,708	1,657,372
Packers and preservers, gross.....	4,297,076	3,271,174	1,237,175	1,237,065
Demijohns and carboys, dozens.....	271,119	160,796	122,670	64,450
All other products, value.....	\$12,751,715	\$4,022,932	\$2,369,087	\$2,322,916

¹ In addition, considerable quantities of electrical shades, globes, and bulbs, which can not be shown without disclosing the operations of individual establishments, were made in 1919 and 1914 by establishments engaged primarily in the manufacture of electrical goods. In 1909, 42,639 gross of bottles and jars, valued at \$90,490, and in 1904 glassware, valued at \$9,663, were made as subsidiary products by establishments engaged primarily in other lines of manufacture.

² Not reported separately.

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 glass, stained and leaded art-glass windows, partitions, screens and panels, shades and domes, ceilings, vials, pictures, vases, memorial tablets, fringes, inhalers, labels, signs, vacuum jars, electrodes and X-ray tubes, 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," "photographic apparatus," and "photographic 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 1850. Statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, glass, cutting, staining, and ornamenting to the value of \$1,555,375 in 1919, \$810,042 in 1914, and \$618,437 in 1909 was reported by establishments assigned to other classifications.

MIRRORS, FRAMED AND UNFRAMED.

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. Statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, mirrors valued at \$1,217,022 in 1919, \$522,831 in 1914, and \$730,619 in 1909 were reported by establishments engaged primarily in other industries.

Group 10.—METALS AND METAL PRODUCTS OTHER THAN IRON AND STEEL.

THE GROUP AS A WHOLE.

This group covers industries of the same general type as those included in the group "iron and steel and their products," the difference being that the basic materials are other metals. As in the case of the iron and steel group, there is no sharp line of distinction between certain industries assigned to this group and those 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 the 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.

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 elaborated character and add very considerably to their value.

Table 144 shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture for each of the industries included in the general group, as reported for the census of 1919. 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.

TABLE 144.—METALS AND METAL PRODUCTS OTHER THAN IRON AND STEEL: 1919.

INDUSTRY.	Number of establishments.	Wage-earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Total.....	10,667	339,469	\$1,796,069	\$394,628	\$1,910,035	\$2,780,294	\$850,259
Metals.....	1,521	120,706	934,359	157,667	1,300,471	1,636,327	329,856
Babbitt metal and solder.....	118	2,372	24,383	2,882	48,844	59,017	10,173
Babbitt metal.....	54	1,308	15,498	1,703	27,337	33,383	6,046
White metal.....	21	317	3,978	395	10,907	12,841	1,934
Type metal.....	7	27	218	26	445	625	180
Solder.....	36	720	4,689	758	10,155	12,168	2,013
Brass, bronze, and copper products.....	1,092	75,051	325,800	94,132	304,824	482,313	177,489
Brass and bronze.....	1,007	63,795	270,638	79,568	234,945	389,550	154,005
Copper.....	47	9,224	43,660	12,085	60,193	78,339	18,146
All other.....	38	2,032	11,002	2,479	9,680	14,424	4,738
Gold and silver, reducing and refining, not from the ore.....	87	644	9,757	844	49,737	55,483	5,746
Lead, bar, pipe, and sheet.....	32	852	9,420	1,067	13,634	17,174	3,540
Smelting and refining.....	192	41,787	565,499	58,742	889,432	1,022,340	132,908
Copper.....	34	17,345	308,680	25,723	584,410	651,102	66,692
Smelting only.....	21	7,919	171,825	12,259	156,055	186,671	30,616
Smelting and refining ¹	13	9,426	136,855	13,464	428,355	464,431	36,076
Lead.....	25	6,438	115,677	9,180	179,374	196,705	17,421
Smelting only.....	18	4,839	57,993	6,647	62,917	74,953	12,036
Smelting and refining ²	7	1,599	57,684	2,533	116,457	121,842	5,385
Zinc.....	39	13,796	98,757	17,783	70,015	104,123	34,108
Pigs, bars, plates, and sheets.....	38	12,928	87,770	16,135	63,605	95,663	32,058
All other.....	6	868	10,987	1,648	6,410	8,490	2,050
Metals, not elsewhere specified ³	13	2,041	20,228	2,993	14,957	20,074	5,117
Not from the ore.....	81	2,167	22,157	3,093	40,676	50,246	9,570

¹ Includes 4 establishments engaged exclusively in refining.

² Includes 2 establishments engaged exclusively in refining.

³ Includes "smelting and refining, antimony" and "smelting and refining, tin" to avoid disclosing individual operations.

TABLE 144.—METALS AND METAL PRODUCTS OTHER THAN IRON AND STEEL: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage-earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Metal products.....	8,579	214,074	\$853,801	\$230,919	\$700,392	\$1,009,101	\$508,709
Aluminum manufactures.....	83	11,402	48,490	13,327	49,272	75,278	26,036
Ingots, plates, and sheets.....	7	684	2,073	822	4,938	6,562	1,624
Ware.....	39	7,821	29,052	8,554	33,174	50,478	17,304
All other.....	37	2,897	17,365	3,951	11,160	18,238	7,078
Bells.....	10	237	1,005	205	450	651	601
Clocks.....	46	8,252	18,350	7,802	7,178	23,380	16,202
Watches.....	18	15,888	49,001	10,599	6,393	32,041	25,051
Watches.....	7	8,809	25,904	9,708	4,316	20,088	15,772
Watch movements.....	11	7,079	23,097	6,801	2,077	11,956	9,579
Watch and clock materials, except watchcases.....	27	582	1,021	413	549	1,342	793
Watch materials.....	21	485	805	335	471	1,120	649
Clock materials.....	6	97	216	78	78	222	144
Watchcases.....	33	3,000	21,790	4,001	8,206	19,619	11,413
Copper, tin, and sheet-iron work.....	4,796	27,640	89,945	33,807	80,808	160,314	79,410
Tinware, not elsewhere specified.....	301	34,386	198,387	34,493	165,171	233,964	68,703
Stamped and enameled ware, not elsewhere specified.....	323	34,248	132,222	34,851	65,457	143,651	78,197
Stamped ware.....	279	23,895	90,098	23,675	46,104	101,094	54,990
Enameled ware.....	35	9,196	38,365	9,070	17,196	37,637	20,441
Bathtubs.....	5	664	2,209	904	1,317	2,956	1,639
Lavatories and sinks.....	4	493	1,550	602	840	1,907	1,127
Gas and electric fixtures.....	341	9,795	36,873	9,802	20,250	42,268	22,009
Gas fixtures.....	57	2,609	9,784	1,906	5,717	9,496	3,779
Electric fixtures.....	187	4,326	13,544	4,711	8,709	20,338	11,629
Combination gas and electric fixtures.....	71	2,351	11,512	2,590	4,788	10,197	5,499
All other.....	26	599	2,633	625	1,045	2,237	1,192
Lamps and reflectors.....	171	8,360	26,100	9,233	18,429	38,099	19,670
Automobile lamps.....	35	3,194	10,321	4,062	8,227	16,062	8,435
All other lamps.....	122	4,851	14,704	4,903	9,098	20,278	10,580
Reflectors.....	14	315	1,075	328	504	1,159	655
Needles, pins, and hooks and eyes.....	92	9,294	26,325	8,810	10,227	29,305	19,078
Gold and silver, leaf and foil.....	87	950	1,571	984	2,655	4,461	1,806
Jewelry.....	2,054	30,871	121,070	35,864	110,451	203,939	93,488
Pens, gold.....	15	416	398	517	962	1,801	839
Silversmithing and silverware.....	99	6,453	34,465	7,359	13,061	29,126	16,065
Plated ware.....	68	9,492	31,790	10,913	17,766	41,635	23,809
Knives, forks, spoons, and other flat ware.....	18	6,866	23,806	7,508	13,704	30,963	17,199
Hollow ware.....	30	2,207	6,113	2,511	2,803	7,714	4,901
All other.....	20	829	4,871	894	1,189	2,958	1,769
Tin and other foils, not elsewhere specified.....	15	1,908	11,998	1,759	13,008	17,921	4,913
Tin foil.....	12	1,903	11,993	1,756	13,007	17,913	4,906
Aluminum and other.....	3	5	5	3	1	8	7
Related industries.....	567	4,689	8,509	6,042	13,172	24,866	11,664
Electroplating.....	515	3,024	4,193	3,794	2,639	10,390	7,751
Galvanizing.....	52	1,665	4,316	2,248	10,533	14,476	8,943

BABBITT METAL AND SOLDER.

The establishments included under this classification manufacture nonferrous metals and alloys, principally from pig lead, antimony, copper, zinc, and tin, used for antifriction bearings and for joining metals.

Table 144 shows separate statistics for establishments whose product of chief value is (1) babbitt metal, (2) white metal, (3) type metal, and (4) solder, including hard, soft, white, spelter, gold, silver, plumbers', pewterers', and button solder.

There is considerable overlapping between these subdivisions of the industry. Babbitt metal to the value of \$2,236,906 in 1919 and \$1,592,128 in 1914 was reported by establishments assigned to other industries.

White metal to the value of \$3,772,324 in 1919 and \$77,574 in 1914 was reported by establishments assigned to other industries.

Type metal to the value of \$124,090 in 1919 and \$383,889 in 1914 was reported by establishments assigned to other classifications.

Solder to the value of \$2,349,286 in 1919 and \$1,484,798 in 1914 was reported by establishments assigned to other industries.

Statistics for the industry for the censuses from 1869 to 1919, inclusive, are given in Table 225.

BRASS, BRONZE, AND COPPER PRODUCTS.

This classification includes the manufacture of brass and bronze (alloys consisting chiefly or solely of copper and zinc and of copper and tin), and of copper ingots, bars, plates, sheets, rods, and tubing, and the foundry work and finishing of such metals; car and engine brasses; refinishing brass work; oiling devices; safety steam appliances; brass spigots; hose couplings, etc.; stair plates; stair rods; fenders; screen plates; signs; letters; novelties; metal spinning, etc. The classification does not include the manufacture of brass and copper wire by establishments chiefly engaged in drawing such wire from purchased rods, or by the wire departments of rolling mills.

Separate statistics are given in Table 144 for "brass and bronze," "copper," and "all other." The totals in this table represent the establishments classified according to product of chief value. The group "all other" includes establishments that manufacture German silver, gun metal, etc., as principal products.

TABLE 145.—BRASS, BRONZE, AND COPPER PRODUCTS: 1919 AND 1914.

PRODUCT.	Total.	ESTABLISHMENTS ASSIGNED TO THIS INDUSTRY.				Establishments engaged primarily in other industries—value.
		Value.	Weight in pounds.			
			Brass and bronze.	Copper.	Other metals or alloys.	
Total value:						
1919.....	\$565,457,186	\$482,312,790				\$83,144,396
1914.....	206,101,244	162,199,019				43,902,225
Ingots and bars:						
1919.....	44,250,065	30,490,628	121,790,427	17,605,166	20,629,787	¹ 13,750,437
1914.....	8,819,571	4,791,708	20,703,249	2,326,292	3,823	4,027,863
Plates and sheets:						
1919.....	103,409,463	102,898,118	283,109,614	85,319,088	45,336,816	² 511,345
1914.....	43,019,997	41,655,037	157,332,392	50,982,631	14,408,852	1,364,900
Rods:						
1919.....	43,597,588	40,703,984	118,412,135	58,687,553	207,189	³ 2,803,604
1914.....	14,569,759	12,189,421	51,029,242	20,658,551	238,224	2,380,338
Tubing:						
Seamless—						
1919.....	38,770,023	37,530,485	66,076,897	39,820,839	467,672	⁴ 1,239,538
1914.....	10,273,755	10,268,980	15,123,534	12,234,161	689,069	4,775
Brazed—						
1919.....	4,596,422	4,596,422	11,859,631	269,202		
1914.....	3,660,886	3,645,810	13,155,701	690,500	5,206	15,076
Wire:						
Plain—						
1919.....	⁵ 74,147,695	33,932,222	43,607,653	98,718,301	2,429,350	40,215,473
1914.....	⁶ 34,061,789	13,486,703	31,813,856	51,965,246	749,021	20,575,086
Insulated—						
1919.....	⁷ 3,694,152	3,694,152	41,340	14,509,737		
1914.....	⁸ 846,439	846,439		5,384,175		
Other manufactured products:						
1919.....	225,870,490	201,511,211				24,359,279
1914.....	85,206,435	69,819,397				15,387,038
All other products:						
1919.....	⁹ 27,121,288	26,955,568				165,720
1914.....	5,642,613	5,495,624				147,089

¹ Quantity represented, pounds, brass and bronze, 58,748,830; copper, 15,849,090; other metal, 1,987,746.

² Quantity represented, pounds, brass and bronze, 2,049,360.

³ Quantity represented, pounds, brass and bronze, 2,430,395; copper, 9,796,739.

⁴ Quantity represented, pounds, brass and bronze, 515,835; copper, 3,613,064; other metal, 24,818.

⁵ Includes 146,991 net tons copper wire (production for sale) value, \$56,647,507; 23,025 tons brass wire, value, \$11,542,020; 671 tons bronze wire, value, \$624,320; 876 tons nickel, nickel-silver, etc., wire, value, \$1,457,588; and 5,336 tons of wire of other metals and alloys, including copper-clad steel, value, \$3,876,060.

⁶ Not including the value of 23,458 net tons (value estimated at \$13,066,315) made and consumed in establishments engaged in the manufacture of electrical machinery and apparatus.

⁷ Total production of insulated wire and cable by all establishments, including manufacturers of "electrical machinery, apparatus, and supplies," was in 1919, 224,000 net tons, value, \$128,682,339; and in 1914, value, \$69,605,513.

⁸ Includes amounts received for contract or custom work and value of some products made from metals other than those specified.

Table 225 presents general statistics for the industry for the censuses from 1869 to 1919, inclusive. For 1909 these statistics were shown as one industry with five sub-classifications. For 1904, 1899, and 1889 five separate industries were presented "brass and copper, rolled," "brass casting and finishing," "brass ware," "bronze castings," and "brass" which consists of brass from scrap metal. For 1879 the same industries were shown with the exception of brass from scrap metal, which was not reported separately. For 1869 "brass and copper, rolled" was divided into three industries—"brass and copper tubing," "brass rolled," and "copper rolled." 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 145 (p. 217) presents statistics for the different brass, bronze, and copper products as reported for 1919 and 1914. Similar statistics were not compiled for prior censuses. This table includes the statistics for brass and copper wire made in departments of steel works and rolling mills and by establishments engaged in drawing wire from purchased rods. Under "Other manufactured products" are included chiefly brass castings.

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. 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 other establishments has included only the amount received for the work done. Thus an abnormal increase or decrease may be shown from one census to another. (See Table 225.)

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 bonds 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 225. 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. Statistics for the industry for the censuses from 1869 to 1919, inclusive, are given in Table 225. 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.

In addition to the products covered by Table 225 "lead, bar, pipe, and sheet," to the value of \$2,399,028 in 1919, \$3,375,025 in 1914, and \$917,499 in 1909 was reported by establishments assigned to other industries.

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 copper and lead a large part of the value of products consists of the value of gold and silver extracted.

Table 146 presents, for 1919, 1914, and 1909, separate statistics for the establishments engaged in copper smelting exclusively and for those reporting both smelting and refining.

TABLE 146.—SMELTING AND REFINING, COPPER: 1919, 1914, AND 1909.

ESTABLISHMENTS ENGAGED IN---	Number of establishments.	Wage-earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total:							
1919.....	34	17,345	\$308,680	\$25,723	\$584,410	\$651,102	\$69,692
1914.....	37	17,731	171,420	16,149	379,157	444,022	64,865
1909.....	38	15,628	111,443	13,396	333,532	378,806	45,274
Smelting and refining: ¹							
1919.....	13	9,426	136,855	13,404	428,355	464,431	30,076
1914.....	11	7,161	78,687	5,134	266,688	282,985	16,297
1909.....	18	7,642	64,435	5,843	231,518	251,106	19,588
Smelting only:.....							
1919.....	21	7,919	171,825	12,259	156,055	186,671	30,616
1914.....	26	10,570	92,733	11,015	112,469	161,037	48,568
1909.....	20	7,980	47,008	7,553	102,014	127,700	25,686

¹ Includes 4 establishments in 1919 and 1 in 1914 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. Statistics for the censuses from 1899 to 1919, inclusive, are given in Table 225.

The smelter production of copper by all classes of smelters was 1,286,419,329 pounds valued at \$239,274,000 in 1919; 1,150,137,192 pounds valued at \$152,968,000 in 1914; and 1,092,951,624 pounds valued at \$142,084,000 in 1909.

SMELTING AND REFINING, LEAD.

Separate statistics for 1919, 1914, and 1909 are given in Table 147 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 produced as subsidiary products chemicals, gold, silver, and copper.

TABLE 147.—SMELTING AND REFINING, LEAD: 1919, 1914, AND 1909.

ESTABLISHMENTS ENGAGED IN—	Number of estab- lish- ments.	Wage earners (aver- age num- ber).	Capital.	Wages.	Cost of mate- rials.	Value of pro- ducts.	Value added by manu- facture.
			Expressed in thousands.				
Total—							
1919.....	25	6,438	\$115,677	\$9,180	\$179,374	\$196,795	\$17,421
1914.....	22	7,385	143,249	6,134	154,015	171,579	17,564
1909.....	28	7,424	132,310	5,431	151,963	167,406	15,443
Smelting and refining: ¹							
1919.....	7	1,599	57,684	2,533	116,457	121,842	5,385
1914.....	10	2,144	90,502	1,546	102,880	107,884	5,004
1909.....	12	2,758	90,976	1,893	111,309	119,880	8,571
Smelting only:							
1919.....	18	4,839	57,993	6,647	62,917	74,953	12,036
1914.....	12	5,241	52,747	4,588	51,135	63,695	12,560
1909.....	16	4,666	41,334	3,538	40,654	47,526	6,872

¹ Includes 2 establishments in 1919, 2 in 1914, and 1 in 1909 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 225 gives the statistics for 1919, 1911, 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 in 1909.

The production of lead (refined) by all smelters and refineries was 482,220 short tons, value \$51,115,000 in 1919; 542,122 short tons, value \$12,286,000 in 1911; and 416,909 short tons, value \$38,434,000 in 1909.

SMELTING AND REFINING, ZINC.

Spelter and sheet zinc are the principal products included under this classification. Table 225 presents statistics for 1919, 1911, 1909, 1904, and 1899. Separate statistics are presented in Table 144 for establishments whose product of chief value was pigs, bars, plates, and sheets of zinc, and for those reporting other zinc products.

The production of zinc by all smelters and refineries was 465,743 short tons, value \$67,998,000 in 1919; and 353,049 short tons, value \$36,011,000 in 1911.

SMELTING AND REFINING, METALS, NOT ELSEWHERE SPECIFIED.

This classification includes the smelting and refining of antimony, tin, and metals, not elsewhere specified, statistics for the three industries combined being given for 1919 in Table 225.

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; spelter; refined white metal; linotype, monotype, electrotypes, and stereotype metal; lead; brass, bronze, and copper ingots; antimony; nickel; aluminum; zinc; tin; and similar products. General statistics for the industry for the censuses from 1899 to 1919, inclusive, are given in Table 225. 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 \$8,111,100 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.

ALUMINUM MANUFACTURES.

Establishments under this classification manufacture, in addition to ingots, plates, and sheets, ware such as kettles—candy, varnish, and steam jacketed; coffee percolators; salt and pepper shakers; drinking cups; scoops; biscuit cutters; frames; stamps; pads; rules; screen caps; indexes; and other fabricated articles of pig aluminum. This industry was not shown separately prior to 1911, but was included with fancy articles, house-furnishing goods, and stamped and enameled ware in 1909. Table 225 gives statistics for 1919 and 1914.

In addition to the products covered by the table, aluminum products to the value of \$4,317,163 in 1919 and \$461,132 in 1914 were reported by establishments engaged primarily in the manufacture of other products.

BELLS.

The establishments included in this classification manufacture principally bronze bells and gongs and their fixtures, including church, 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 1889, and comparable figures are given in Table 225.

In addition to the products covered by the table, bells to the value of \$153,634 in 1919 and \$309,708 in 1914 were reported by establishments in other industries.

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 of greater value than bells. Differences in classification also account in part for the decrease from 1879 to 1889.

CLOCKS AND WATCHES, INCLUDING CASES AND MATERIALS.

This heading embraces four separate classifications, "clocks," "watches," "watch-cases," and "watch and clock materials." Clocks and watches are in a number of instances made in the same factory, and all four industries are so closely related that the combined totals are given in Table 148. Separate statistics for the four industries are given in Table 225, each establishment being assigned according to its product of chief value.

TABLE 148.—CLOCKS AND WATCHES, INCLUDING CASES AND MATERIALS: 1869 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	124	28,622	18,681	\$90,162	\$28,874	\$22,326	\$76,385	\$54,059
1914.....	119	23,328	15,647	62,409	13,495	11,021	34,153	23,132
1909.....	120	23,857	14,957	57,500	12,944	11,131	35,197	24,066
1904.....	97	22,579	10,731	42,189	11,802	9,872	29,790	19,018
1899.....	109	17,155	7,251	31,514	8,315	8,819	22,110	13,291
1890.....	127	14,312	4,346	21,266	7,551	7,802	19,730	11,928
1879.....	82	9,868	(1)	8,328	4,412	5,853	12,322	6,460
1869.....	142	4,171	1,168	4,552	2,817	2,629	8,236	5,607

¹ Figures not available.

Clocks.—Complete clocks of all descriptions, with wooden or metal cases, and clock movements are the principal products of establishments under this heading. Tower clocks, self-winding, program, automobile, hall, electric, calendar, master and secondary clocks, timing apparatus, etc., were among the products reported. Statistics for the industry for the censuses from 1849 to 1919, inclusive, are given in Table 225. In addition to the products covered by the table, clocks to the value of \$3,579,527 in 1919 and \$938,091 in 1914 were reported by establishments assigned to other industries, principally by manufacturers of watches.

Watches.—Establishments manufacturing complete watches, watch parts, and watch movements are included in this industry. Table 144 shows separate data for those establishments whose product of chief value is watches and for those whose product of chief value is watch movements. 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, and are, therefore, omitted from Table 225, which gives comparable figures for the censuses from 1869 to 1919, inclusive. In addition to the products covered by the table, watches to the value of \$4,301,471 in 1919 and \$1,161,354 in 1914 were reported by establishments assigned to other classifications.

Watch and clock materials.—This industry includes establishments manufacturing balance wheels, hairsprings, jewels, and other watch materials, clock springs, chimes, dials, cases, etc. Table 144 gives separate statistics for "watch materials" and for "clock materials," each establishment being assigned according to the product of chief value. 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 Table 225, which presents comparable data for the censuses from 1869 to 1919, inclusive. In addition to the products covered by the table, watch and clock materials were reported in 1919 by establishments assigned to other industries to the value of \$1,816,621.

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 for the censuses from 1869 to 1919, inclusive, in Table 225.

COPPER, TIN, AND SHEET-IRON PRODUCTS.

Table 225 shows separate figures for the three industries included in this group: Copper, tin, and sheet-iron work; tinware; and stamped and enameled ware. Some establishments in each branch manufacture products similar to those of the other branches, and therefore in the following table the statistics are combined.

TABLE 149.—COPPER, TIN, AND SHEET-IRON PRODUCTS: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	5,420	96,274	106,084	\$420,554	\$103,212	\$311,526	\$537,932	\$225,406
1914.....	5,091	80,029	75,203	244,593	47,978	136,487	241,943	105,456
1909.....	4,228	73,615	62,366	217,532	39,501	112,582	199,824	87,242
1904.....	2,540	53,035	30,220	147,608	26,269	63,921	119,933	55,012
1899.....	1,985	38,317	28,829	49,679	16,924	42,602	78,359	35,737
1889.....	7,125	39,395	11,054	48,504	19,062	36,842	78,376	41,534
1879.....	7,723	30,057	(1)	25,643	12,258	29,120	51,503	25,383
1869.....	6,710	26,461	1,685	21,756	9,878	19,865	42,357	22,492
1859.....	3,558	11,818	(1)	9,667	4,316	8,362	18,000	9,638
1849.....	2,280	7,393	(1)	4,130	2,363	4,305	8,933	4,628

1 Figures not available.

Copper, tin, and sheet-iron work.—This classification includes establishments engaged primarily in the manufacture of cornices; gutters; spouts; smokestacks; stove and furnace pipes, elbows, and casings; ventilators; skylights; tanks; bins; corrugated-iron culverts; and coppersmithing and sheet-iron work. Table 225 gives general statistics for the industry for the censuses from 1904 to 1919, inclusive. In addition to the products covered by the table, copper, tin, and sheet-iron work to the value of \$1,907,785 in 1919 and \$2,481,467 in 1914 was reported by establishments engaged primarily in the manufacture of other products.

Tinware, not elsewhere specified.—This classification includes establishments making tin pails; buckets; cans; boxes; household and cooking utensils; and cabinet and other tinware. Table 225 gives statistics for the industry for the censuses from 1904 to 1919, inclusive. This table does not cover tin cans and other containers manufactured and used by establishments engaged in canning and preserving. In addition to the products covered by the table, tinware to the value of \$6,443,151 in 1919 and \$3,174,674 in 1914, was reported by establishments assigned to other classifications. The manufacture of tinware, except at the censuses of 1919, 1914, 1909, and 1904, was included under "tinsmithing, coppersmithing, and sheet-iron working," or under "tinware, copperware, and sheet-iron ware."

Stamped and enameled ware, not elsewhere specified.—The establishments included in this classification manufacture primarily articles stamped out of sheet tin, copper, and zinc, including kitchen utensils, the most important class; combs, buckles, pins, initials, monograms, millinery ornaments, etc.; perforated screens 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."

Table 144 gives separate statistics for "stamped ware," "enameled ware," "bath-tubs," and "lavatories and sinks," each establishment being classified according to the product of chief value. (In addition, stamped and enameled ware to the value of \$6,416,745 in 1919 and \$600,437 in 1914 was made by establishments assigned to other classifications.) Table 225 gives statistics for the industry for the censuses from 1879 to 1919, inclusive.

GAS AND ELECTRIC FIXTURES AND LAMPS AND REFLECTORS.

Separate figures for the two industries included under this classification are given in Table 225, 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, the combined totals are given in Table 150.

TABLE 150.—GAS AND ELECTRIC FIXTURES AND LAMPS AND REFLECTORS: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
				Expressed in thousands.				
1919.....	512	18,155	22,618	\$62,973	\$19,095	\$38,688	\$80,367	\$41,679
1914.....	611	18,047	18,668	43,300	10,677	22,102	45,378	23,276
1909.....	619	18,861	15,862	36,835	10,393	20,467	45,057	24,590
1904.....	405	12,570	8,444	28,002	6,408	11,078	26,560	15,482
1899.....	377	11,238	6,991	15,855	5,188	7,962	19,821	11,859
1889.....	201	7,080	5,335	9,769	3,916	3,750	11,865	8,115
1879.....	109	4,799	(1)	5,122	2,212	3,529	7,687	4,158
1869.....	79	3,027	875	3,413	1,519	2,030	5,057	3,027
1859.....	64	2,007	(1)	1,554	707	938	2,836	1,898
1849.....	46	1,179	(1)	591	366	622	1,354	732

1 Figures not available.

Gas and electric fixtures.—The establishments under this classification include (1) those making as their product of chief value gas fixtures, chandeliers, domes, burners, mantels, etc., (2) those making electric fixtures, holders, electroliers, brackets, portables, etc., (3) those making combination gas and electric fixtures, and (4) those making both gas and electric fixtures and parts. Separate statistics are given in Table 144 for these four groups. There is considerable overlapping between the groups. Gas fixtures were reported to the value of \$293,057 in 1919 and \$130,898 in 1914 by establishments assigned to other classifications. Electric fixtures to the value of \$689,688 in 1919 and \$320,253 in 1914 were reported by other manufacturers. Combination fixtures to the value of \$742,879 in 1919 and \$107,912 in 1914 were reported by other manufacturers. Comparable statistics for the industry for the censuses from 1849 to 1919, inclusive, are given in Table 225. 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 225. "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.

Lamps and reflectors.—The manufacture of lamps, lanterns, headlights, reflectors, and supplies of various kinds and for many purposes is covered by this classification. Among the specific products reported are (1) automobile lamps, (2) carriage, wagon, and coach lamps, and other lamps, such as desk, table, and night lamps, cabin lamps, portable lamps, street lamps and lanterns, anchor or riding lamps for barges, mine and safety lamps, acetylene lamps and lanterns, gasoline and kerosene lamps, signal lamps, and marine lamps and fixtures, and (3) reflectors, headlights, footlights, and railroad-track lights. Separate statistics for these three groups are given in Table 144. These products do not include the arc, incandescent, and other electric lamps when they are the primary products, since these statistics are included with those for electrical machinery, apparatus, and supplies. Similar products to the value of \$3,545,408 in 1919 and \$735,252 in 1914 were reported by establishments assigned to other classifications. General statistics for the censuses from 1849 to 1919 are given in Table 225. In 1849 and 1859 the classification was "lamps," and in 1869, "lamps, lanterns, and locomotive headlights."

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, ordinary pins, metal 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 four classifications, "needles," "sewing-machine 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 Table 225 for each census from 1859 to 1919, inclusive.

The following table gives the quantities and values of the different products of the industry for 1919, 1914, 1904, and 1899. Detail statistics were not collected in 1909, but the total value of products was \$6,694,095.

TABLE 151.—NEEDLES, PINS, AND HOOKS AND EYES: 1919, 1914, 1904, AND 1899.

	1919	1914	1904	1899
Products, total value ¹	\$29,304,995	\$7,890,879	\$4,750,589	\$3,237,982
Needles:				
Total thousands.....	264,060	168,734	204,505	161,356
Total value.....	\$6,015,830	\$1,278,444	\$1,110,924	\$1,027,949
Knitting-machine--				
Latch--				
Thousands.....	121,184	46,165	44,762	39,764
Value.....	\$3,845,431	\$492,387	\$422,655	\$114,504
Spring--				
Thousands.....	42,722	47,934	47,921	44,246
Value.....	\$310,896	\$129,397	\$118,223	\$114,690
All other needles, including sewing-machine--				
Thousands.....	100,154	74,635	111,822	77,346
Value.....	\$1,829,512	\$656,660	\$600,046	\$498,785
Pins:				
Common or toilet--				
Total quantity.....	(²)	(²)	³ 132,632,232	³ 47,338,429
Total value.....	\$2,789,735	\$1,248,757		
Made of steel wire--				
Pounds.....	2,798,633	641,121		
Value.....	\$1,120,823	\$163,907		
Packs of 3,360.....	1,342,119	1,825,673		
Value.....	\$400,379	\$182,585	\$1,129,000	\$465,605
Made of brass wire--				
Pounds.....	740,707	1,186,397		
Value.....	\$617,017	\$375,780		
Packs of 3,600.....	1,089,307	1,638,035		
Value.....	\$651,516	\$526,485		
Hairpins, made of metal--				
Gross.....	24,310,433	9,242,012	1,704,900	1,189,104
Value.....	\$1,480,992	\$528,362	\$109,245	\$78,155
Safety pins--				
Gross.....	8,427,719	4,744,303	2,550,650	1,640,284
Value.....	\$2,977,498	\$936,063	\$829,386	\$354,294
Hooks and eyes:				
Great gross.....	745,819	1,076,177		
Value.....	\$833,321	\$1,304,745		
Made of steel wire--				
Great gross.....	582,647	654,714	(⁴)	(⁴)
Value.....	\$654,321	\$761,476		
Made of brass wire--				
Great gross.....	163,172	421,463		
Value.....	\$179,000	\$633,269		
Snap fasteners and clasps: ⁵				
Great gross.....	2,122,541			
Value.....	\$7,438,551			
Made of iron and steel--				
Great gross.....	1,080,276	(⁶)	(⁶)	(⁶)
Value.....	\$4,700,846			
Made of other metals--				
Great gross.....	1,042,265			
Value.....	\$2,737,705			
All other products, value.....	\$7,769,059	\$2,503,908	\$1,542,028	\$1,311,979

¹ In addition, needles, pins, and hooks and eyes, to the value of \$1,613,840 in 1919; \$1,155,144 in 1914; \$942,506 in 1904; and \$536,742 in 1899; were produced as subsidiary products by establishments engaged primarily in the manufacture of other products.

² Reported in gross in 1904 and 1899.

³ Reported in gross in 1904 and 1899.

⁴ Included in "all other products" in 1904 and 1899.

⁵ In addition, 428,775 great gross of snap fasteners and clasps, valued at \$556,654, were manufactured in the button and other industries in 1919.

⁶ Included in "all other products" in 1914, 1904, and 1899.

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. There were no establishments making silver leaf and foil as their product of chief value in 1919 or 1914.

The statistics for "gold and silver, leaf and foil," were first reported separately at the census of 1859. Comparable figures are given in Table 225 for the censuses from 1859 to 1919.

JEWELRY.

Jewelry, made of gold, silver, platinum, "gold-filled" metal, rolled gold plate, brass, bronze, copper, or other metal, with or without precious or semiprecious stones, constitutes the principal product reported for establishments included under this designation. Rings, pins—class, bar, veil, scarf, hat, stick, and sporting—medals, badges, emblems, loving cups, bracelets, chains—watch, belt, and guard—lockets, pendants, drops, lavallieres, brooches, slides, charms, fobs, earrings, buttons—cuff, link, and collar—bangles, necklaces, tie clasps and holders, eyeglass chains, cases, holders and mountings, bags, mesh bags, chatelaines, puff boxes, vanity cases, card and cigarette cases, cigar cutters, cigar and cigarette holders, card trays, thimbles, studs, lorgnettes, knives, bands, frames, swivels, crosses, rosaries, filigree, oriental, Chinese, and enameled jewelry, 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 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. Statistics for the industry for the censuses from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, jewelry to the value of \$1,821,552 in 1919, \$320,659 in 1914, and \$1,321,571 in 1909 was reported by establishments engaged primarily in other industries.

PENS, GOLD.

Gold pens are the principal products reported for establishments included under this industry. Statistics for the industry are given in Table 225 for the censuses from 1869 to 1919, inclusive. Changes in the classification of individual establishments doubtless account for the decrease shown in value of products for the five-year period 1899-1904.

SILVERWARE AND PLATED WARE.

Table 225 gives separate statistics for the two industries included under this classification. Establishments in each branch, however, manufacture some products covered by the other class, and therefore the combined totals are given in Table 152.

TABLE 152.—SILVERWARE AND PLATED WARE: 1859 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture.
				Expressed in thousands.				
1919.....	167	15,945	21,192	\$69,255	\$18,273	\$30,827	\$70,701	\$39,934
1914.....	180	15,787	18,738	50,157	9,796	16,580	38,271	21,091
1909.....	183	16,610	15,183	46,759	10,282	18,332	42,229	23,897
1904.....	158	14,861	12,873	37,732	8,625	14,459	32,840	18,381
1899.....	169	12,205	8,486	30,628	6,531	11,659	26,114	14,455
1890.....	122	9,036	5,343	18,879	4,944	6,981	17,938	10,967
1879.....	132	5,835	(1)	7,700	3,206	5,231	11,114	5,883
1869.....	258	5,050	2,250	5,809	2,892	4,994	10,487	5,493
1859.....	234	3,843	(1)	3,250	1,489	4,006	7,248	3,242

^a Figures not available.

Silversmithing and silverware.—The principal products reported for establishments included under this heading are hollow and flat tableware; ecclesiastical ware; candelabra; cups; ornaments; silver-deposited glassware and china; manicure and toilet articles; picture frames; boxes, cigar, cigarette, and match; coin holders; candlesticks; tea balls; salt and pepper shakers; vanity cases; and novelties. Table 225 gives the statistics for the industry for the census years from 1859 to 1919, inclusive. 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. In addition to the products covered by the table, silversmithing and silverware to the value of \$3,599,156 in 1919 and \$2,900,274 in 1914 was reported by establishments assigned to other classifications.

Plated ware.—Various kinds of ware plated with gold, silver, and other metals are represented in the products 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 classification was "britannia and plated ware"; in 1859, "silver plated and britannia ware;" in 1899 "plated and britannia ware." Table 225 gives comparative figures from 1849 to 1919, inclusive.

Separate statistics for those establishments making "knives, forks, and spoons, and other flat ware"; "hollow ware"; and "all other," which includes toilet sets, manicure sets, mesh bags, carving sets, jewel cases, desk sets, trays, shaving sets, military sets, ornaments, and novelties, etc., are given in Table 144, each establishment being assigned according to the product of chief value.

Knives, forks, and spoons to the value of \$1,072,221 were reported in 1919 and \$454,748 in 1914 by establishments assigned to other classifications. Hollow ware to the value of \$54,384 in 1919 and \$243,171 in 1914 was reported by establishments in other industries, while "all other" plated ware to the value of \$81,050 in 1919 and \$10,258 in 1914 was reported by establishments assigned to other classifications.

TIN AND OTHER FOILS, NOT ELSEWHERE SPECIFIED.

The establishments included in this classification manufacture (1) tin foil and (2) aluminum and other foils. Collapsible tubes, bottle caps, pill pipes, 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 225 gives statistics for the industry for the censuses from 1899 to 1919, inclusive. In addition to the products covered by the table, tin foil to the value of \$1,516,931 in 1919 and \$1,900 in 1914 was reported by other classes of manufacturers.

ELECTROPLATING.

The silver and gold plating of jewelry by means of electricity 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. Statistics for the industry are given in Table 225 for the censuses from 1879 to 1919, inclusive.

In addition to the products covered by the table, electroplating to the value of \$77,965 in 1919, \$100,219 in 1914, and \$202,725 in 1909 was reported by establishments engaged chiefly in the manufacture of other products.

GALVANIZING.

Galvanized sheets and roofing are the principal products included under this classification. Galvanizing is the process of coating iron with zinc. Aluminum coated steel sheets were reported as well as galvanized wire. Statistics for each census from 1869 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, galvanized sheets and plates to the value of \$66,793,334 in 1919, \$42,862,394 in 1914, and \$25,912,056 in 1909 were reported by steel works and rolling mills, and to the value of \$281,512 in 1919, \$381,236 in 1914, and \$109,432 in 1909 by establishments engaged in other industries. Also in 1919 there was reported by steel works and rolling mills, galvanized pipe to the value of \$23,175,064 and hoops and bands to the value of \$3,999,822.

Group 11.—TOBACCO MANUFACTURES.

The statistics for the manufacture of tobacco are shown separately for two groups of establishments, namely, those that reported chewing and smoking tobacco and snuff as the principal products, and those engaged primarily in the manufacture of cigars and cigarettes. The totals for these two groups and for certain subdivisions of each for 1919 are given in Table 153.

TABLE 153.— TOBACCO MANUFACTURES: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Expressed in thousands.				
Total.....	10,291	157,097	\$804,839	\$123,988	\$483,567	\$1,012,932	\$529,365
Tobacco, chewing and smoking, and snuff.....	365	18,324	188,444	12,675	130,270	239,270	109,000
Chewing.....	85	8,379	60,564	5,741	52,052	96,955	44,003
Smoking.....	199	8,520	98,539	5,765	66,648	119,282	52,634
Snuff.....	34	1,328	28,665	1,080	10,011	21,128	11,117
All other.....	47	97	676	89	1,559	1,905	346
Tobacco, cigars and cigarettes....	9,926	138,773	416,395	111,313	353,297	773,662	420,365
Cigars.....	9,778	114,299	220,709	90,418	158,815	360,396	201,581
Cigarettes.....	135	22,642	191,173	19,795	181,309	379,125	197,816
Cigars and cigarettes.....	13	1,832	4,513	1,100	13,173	34,141	20,968

All branches of tobacco manufacture are subject to internal-revenue taxes which are included in the value of the products reported to the census. The fact that the rates of taxation have been changed from time to time should be considered in accepting the figures reported for the various censuses.

According to the report of the Commissioner of Internal Revenue there were in operation at the close of the year 1919, 1,871 tobacco and snuff factories, 11,483 cigar factories, and 237 cigarette factories. These numbers are in excess of the number of establishments reported to the census, because (1) for internal-revenue purposes the same firm or establishment may be registered a number of times (i. e., as a manufacturer of cigars, as a manufacturer of tobacco, and as a manufacturer of cigarettes), while for census purposes such an establishment might make only one report and it would be classified according to its product of chief value; (2) a separate register is required by the Bureau of Internal Revenue for each plant or factory, though operated under the same ownership, while for census purposes one report may be made for several factories and they would be counted as a single establishment; (3) every dealer in scrap tobacco is required to register with the Internal Revenue Bureau, not as a dealer, but as a manufacturer of tobacco, and these are not considered manufacturers for census purposes; (4) all growers of Perique tobacco are required by the Internal Revenue Bureau to register as manufacturers of tobacco, but are not considered as manufacturers by the census; (5) a large number of manufacturers registered for taxation did not have a product valued at \$500 during 1919, and therefore did not report to the census.

Table 154 gives statistics for the two separate branches of tobacco manufactures for the censuses of 1919 and 1914.

TABLE 154.—TOBACCO MANUFACTURES: 1910 AND 1914.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Total, 1919.....	10,291	157,087	\$604,839	\$123,988	\$483,568	\$1,012,933	\$522,485
1914.....	13,951	178,872	303,840	77,856	307,134	490,165	283,031
Tobacco, chewing and smoking, and snuff:							
1919.....	305	18,324	188,444	12,675	130,271	239,271	100,000
1914.....	436	25,980	131,858	9,550	76,704	175,281	98,077
Chewing—							
1919.....	85	8,379	60,604	5,741	52,052	90,056	44,004
1914.....	110	8,445	29,430	3,274	25,793	58,670	32,677
Smoking—							
1919.....	190	8,520	98,530	5,765	64,048	119,262	52,034
1914.....	238	15,893	71,554	5,486	44,805	100,471	53,066
Snuff—							
1919.....	34	1,328	28,065	1,080	10,011	21,128	11,117
1914.....	35	1,473	30,467	711	5,896	15,490	9,894
All other—							
1919.....	47	97	676	80	1,500	1,905	345
1914.....	47	109	407	59	410	680	240
Tobacco, cigars and cigarettes:							
1919.....	9,020	138,773	416,395	111,313	353,297	773,602	420,365
1914.....	13,515	152,892	171,982	68,306	130,530	314,884	184,264
Cigars—							
1919.....	9,778	114,299	220,709	90,418	158,815	360,396	201,581
1914.....	13,298	140,955	122,603	63,032	97,915	233,423	135,608
Cigarettes—							
1919.....	135	22,642	191,173	19,795	181,300	379,125	197,810
1914.....	196	11,842	49,387	4,342	32,520	81,246	48,720
Cigars and cigarettes—							
1919.....	13	1,832	4,513	1,100	13,173	34,141	20,068
1914.....	21	95	92	32	80	216	126

TOBACCO, CHEWING AND SMOKING, AND SNUFF.

The products covered by this classification include (1) plug or chewing tobacco, (2) smoking tobacco, (3) snuff, and (4) all other, which includes scraps, cuttings, siftings, clippings, fillers, stems, powder, and dust. Statistics for the four groups are given in Table 153. There is considerable overlapping between the tobacco subclassifications, chewing tobacco to the value of \$32,309,140 being reported in 1919 by manufacturers of smoking tobacco, of snuff, and of cigars. Smoking tobacco to the value of \$44,054,782 was reported by manufacturers of chewing tobacco and of cigars and cigarettes. Snuff to the value of \$44,058 was reported by manufacturers of chewing and smoking tobacco and of cigars and cigarettes. "All other" tobacco to the value of \$1,032,398 was reported by manufacturers of cigars and of cigarettes. Comparative statistics for the manufacture of chewing and smoking tobacco and snuff for each census from 1859 to 1919 are given in Table 225.

At the census of 1849 the classification was "tobaccoists." 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.

TOBACCO, CIGARS AND CIGARETTES.

The products of this classification cover (1) establishments that made cigars only, (2) those that made cigarettes only, and (3) those that made both cigars and cigarettes. Table 154 gives statistics for these three groups for the censuses of 1914 and 1919. Cigars to the value of \$185,156 were reported in 1919 by manufacturers of smoking and chewing tobacco, and of snuff and of cigarettes. Cigarettes to the value of \$12,308,190 were reported by manufacturers of other tobaccos, principally those making smoking tobacco. Statistics for the industry for each census from 1859 to 1919 are given in Table 225.

Group 12.—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, motorcycles, bicycles, railway cars, sleighs, sleds, baby carriages, and wheelbarrows. Work done in small repair shops is not included and the work of railroad repair shops is presented as Group 13, of this report. The manufacture of locomotives is also omitted from this group.

Table 155 shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture for each of the industries included in the general group, as reported at the census of 1919.

TABLE 155.—VEHICLES FOR LAND TRANSPORTATION: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Total.....	21, 152	405, 939	\$2, 423, 239	\$689, 475	\$2, 498, 226	\$4, 058, 912	\$1,560,686
Automobiles.....	315	210, 559	1, 310, 451	312, 166	1, 578, 652	2, 387, 903	809, 251
Automobile bodies and parts.....	2, 515	132, 556	470, 498	178, 956	362, 027	692, 171	330, 144
Automobile repairing.....	15, 507	55, 061	141, 124	71, 613	87, 649	224, 652	137, 003
Carriages and wagons, including repairs.....	2, 286	18, 173	78, 953	19, 393	48, 362	91, 463	43, 101
Carriages and wagons.....	1, 130	15, 719	71, 701	16, 468	44, 912	82, 013	37, 101
Repair work only.....	1, 156	2, 454	7, 252	2, 925	3, 450	9, 450	6, 000
Carriage and wagon materials.....	258	6, 509	17, 971	5, 667	14, 735	26, 765	12, 030
Cars, steam-railroad, not including operations of railroad companies.....	99	52, 298	335, 207	78, 285	356, 085	538, 223	182, 138
Cars, electric-railroad, not including operations of railroad companies.....	7	2, 920	17, 307	4, 132	12, 059	18, 442	6, 383
Motorcycles, bicycles, and parts.....	51	10, 886	35, 362	12, 763	25, 986	53, 106	27, 120
Carriages and sleds, children's.....	103	6, 686	15, 215	6, 229	11, 700	24, 507	12, 807
Wheelbarrows.....	11	291	1, 151	271	971	1, 680	709

There is an intimate relation between the group of industries classed as "vehicles for land transportation," and the group of "railroad repair shops" (see Table 164). The repair shops of steam and electric railroads manufacture considerable numbers of complete cars, although the greater part of their expenditure is for repairs to cars and locomotives. However, inasmuch 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 was considered advisable to class steam and electric 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 the total value of products in 1919 of the industries classed in the group "vehicles for land transportation," \$4,058,911,515, be added to the value of products of railroad repair shops, \$1,354,446,094, and also the value of products of the locomotive industry, \$156,269,730, a grand total of \$5,569,627,339 is obtained, which represents approximately the value of the output of industries producing or repairing vehicles for land transportation in 1919, as compared with \$1,630,488,932 in 1914 and \$1,030,908,879 in 1909.

AUTOMOBILES, INCLUDING BODIES AND PARTS.

There are two classes of establishments engaged in the automobile industries: (1) Those which produce the complete machine, either from parts manufactured in the establishment or from parts purchased from others; and (2) those manufacturing parts chiefly, such as chassis, bodies, tops, mufflers, radiators, wind shields, fenders, steering wheels and gears, transmissions, differentials, carbureters, axles, bearings,

gaskets, crank shafts, gears, wheels, hoods, 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 "engines, steam, gas, and water;" the manufacture of rubber tires for automobiles under "rubber tires, tubes, and rubber goods, not elsewhere specified;" automobile springs under "springs, steel, car and carriage;" automobile starters under "electrical machinery, apparatus, and supplies;" and lamps for automobiles under "lamps and reflectors."

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 156 presents combined statistics for the two classes of establishments in the automobile industry for 1919, 1914, 1909, 1904, and 1899.

TABLE 156.—AUTOMOBILES, INCLUDING BODIES AND PARTS: 1899 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	2,830	343,115	544,242	\$1,780,949	\$491,122	\$1,940,679	\$3,080,074	\$1,139,395
1914.....	1,271	127,092	173,681	407,730	101,927	356,208	632,831	276,623
1909.....	743	75,721	75,550	173,837	48,694	131,616	249,202	117,556
1904.....	178	12,049	10,109	23,084	7,159	13,151	30,034	16,833
1899.....	57	2,211	3,164	5,760	1,321	1,804	4,748	2,944

Automobiles.—Statistics for the number and value of the different kinds of automobiles manufactured are given in Table 157 for 1919, 1914, and 1909.

TABLE 157.—AUTOMOBILES: 1919, 1914, AND 1909.

PRODUCT.	1919		1914		1909	
	Number.	Value.	Number.	Value.	Number.	Value.
Total value.....		\$2,387,903,287		\$503,230,137		\$193,823,108
Automobiles.....	1,678,926	1,546,061,696	568,781	458,760,916	126,563	164,269,324
Gasoline and steam.....	1,075,892	1,540,737,812	564,112	448,712,320	123,767	137,009,894
Electric.....	3,034	6,223,884	4,669	10,048,596	3,820	7,259,430
Passenger vehicles (pleasure, family, and public conveyances).....	1,555,226	1,321,137,868	543,881	414,541,820	123,296	158,935,641
Open—						
Roadsters.....	5,360	58,032,374				
Runabouts.....	120,098	80,523,340	81,597	45,800,476	40,786	30,421,726
Touring.....	1,224,347	977,410,908	451,032	345,972,679	76,114	113,403,188
Closed (limousines, cabs, etc.)..	156,328	200,015,254	11,008	22,340,767	5,265	12,720,304
All other (omnibuses, sight-seeing wagons, etc.).....	3,093	5,155,002	154	328,898	1,191	2,381,400
Government, municipal, etc. (ambulances, fire department vehicles, and patrol wagons).....	2,736	13,619,331	728	3,041,240	42	103,000
Business vehicles (merchandise).....	120,914	212,204,497	24,172	40,277,847	3,255	5,230,023
Delivery wagons.....	18,122	16,570,473	4,391	4,740,889	1,862	1,918,856
Trucks.....	101,837	193,359,933	19,519	34,741,097	1,366	3,165,512
All other.....	955	2,283,091	262	786,861	27	145,655
All other products.....		840,941,591		44,469,221		29,533,784

¹ In addition, 4,990 automobiles, valued at \$7,919,800 in 1919; 4,258 automobiles, valued at \$6,296,568 in 1914; and 694 automobiles, valued at \$330,080, in 1909; were reported by establishments engaged primarily in other industries.

Table 158 shows the number of the various kinds of automobiles manufactured in 1919, 1914, and 1909, classified according to the horsepower rating:

TABLE 158.—AUTOMOBILES, CLASSIFIED BY HORSEPOWER RATING: 1919, 1914, AND 1909.

CLASS.	Total.	Less than 10 h. p.	10 but less than 20 h. p.	20 but less than 30 h. p.	30 but less than 50 h. p.	50 but less than 90 h. p.	90 h. p. or more.
All classes: ¹							
1919.....	1,683,916	3,815	250,713	1,200,318	226,580	1,980	510
1914.....	569,054	4,952	45,022	344,536	161,722	12,843	179
1909.....	126,593	7,539	29,353	35,257	51,218	3,197	29
Touring cars:							
1919.....	1,226,127	-----	216,395	879,771	129,026	865	70
1914.....	451,267	3	29,584	276,565	133,323	11,661	131
1909.....	76,114	177	5,415	21,773	45,926	2,802	21
Closed cars:							
1919.....	156,504	2,073	12,325	119,559	22,332	215	-----
1914.....	10,809	3,102	781	2,406	4,128	389	3
1909.....	4,002	1,589	847	729	774	62	1
Runabouts:							
1919.....	120,098	-----	10	116,234	3,784	70	-----
1914.....	81,603	430	9,551	57,610	13,519	180	13
1909.....	36,204	4,532	17,548	10,931	3,029	157	7
Roadsters: ²							
1919.....	53,535	346	13,453	19,555	19,814	353	14
All other passenger vehicles: ³							
1919.....	1,216	-----	114	833	269	-----	-----
1914.....	5,548	907	3,712	365	550	14	-----
Delivery wagons:							
1919.....	18,122	850	2,384	4,102	10,736	-----	-----
1914.....	4,391	228	2,125	747	1,278	13	-----
1909.....	1,862	263	878	624	97	-----	-----
Trucks:							
1919.....	102,437	546	5,948	59,002	36,745	196	-----
1914.....	19,551	1,122	2,502	6,802	8,959	166	-----
1909.....	1,366	56	317	286	606	101	-----
All other business vehicles: ⁴							
1919.....	5,877	-----	84	1,262	3,824	281	426
1914.....	1,433	67	179	206	515	434	32
1909.....	1,497	15	636	549	236	61	-----

¹Includes, in all years, automobiles made by establishments engaged chiefly in the manufacture of automobile bodies and parts, but does not include 4,660 automobiles in 1919, 3,985 in 1914, and 694 in 1909, made by establishments engaged primarily in the manufacture of products other than automobiles, or automobile bodies and parts.

²Included with runabouts in 1914.

³Figures not available for 1914.

⁴Includes public conveyances, Government and municipal vehicles.

The numbers and values shown in these tables are as reported by the manufacturers and it is probable that some automobiles reported for a given class were converted to another class after being sold.

Automobile bodies and parts.—General statistics for the industry are presented in Table 225 for the census years from 1904 to 1919, inclusive. The figures by no means represent the full value of automobile parts and supplies, since products of this character were made by establishments in other industries, and were not always distinguished from the other products of such establishments. The value reported for automobile bodies and parts in 1919 was \$692,170,692, while the rubber goods industry shows rubber automobile tires were made in that year to the value of \$603,896,200. In addition many of the parts made by establishments in other industries are sold to dealers or direct to owners, and do not appear in the value of products of the automobile industry.

AUTOMOBILE REPAIRING.

The increase in the manufacture of automobiles has been accompanied by the establishment of garages or shops for the repair of the vehicles. In 1919 and 1914 this branch of the industry was included in the census of manufactures. Reports were secured only from establishments using power in which the repair work was similar to that done in machine shops. No special effort was made at the census of 1909 to collect statistics for this industry, but some reports were received and the data included with those for foundries and machine shops. The totals for 1919 and 1914 and general data by states for 1919 are given in Table 225.

In addition to the products shown in the tables, automobile repairing to the value of \$232,609 in 1919, and \$610,735 in 1914 was reported by establishments assigned to other classifications.

CARRIAGES AND WAGONS AND MATERIALS.

The manufacture of complete carriages and wagons and that of carriage and wagon materials are so closely connected that there is considerable overlapping in the statistics. For this reason, while separate data for the two industries are given in Table 225, combined statistics are presented in Table 159 under the classification "carriages and wagons and materials." The statistics for the combined industry necessarily include considerable duplication.

TABLE 159.—CARRIAGES AND WAGONS AND MATERIALS: 1859 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	2,544	24,682	64,666	\$96,924	\$25,000	\$63,097	\$118,228	\$55,131
1914.....	5,067	52,391	112,549	177,643	32,557	65,719	131,547	65,828
1909.....	5,492	69,928	126,032	175,474	37,595	81,951	159,893	77,942
1904.....	5,588	77,882	106,150	152,345	38,363	77,528	155,869	78,341
1899.....	6,792	73,812	83,771	128,062	33,565	66,772	138,262	71,490
1890.....	5,111	66,521	49,458	100,483	33,330	53,411	118,943	65,532
1879.....	4,253	52,896	1 10,813	45,008	21,722	35,378	75,066	39,688
1869.....	11,891	55,381	8,946	30,880	21,417	23,002	65,954	42,952
1859.....	7,230	37,127	(2)	18,733	13,426	11,011	33,583	23,672

¹ Carriages and wagons only.

² Figures not available.

Carriages and wagons, including repairs.—This classification covers 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 not included.

As a large amount of repair work is done by establishments included in this classification, Table 155 is compiled to show separate statistics for those making carriages and wagons, and for those doing repair work only. Concerns that manufacture less than five vehicles and those doing only repair work were not fully reported for the censuses of 1909 and 1904. The figures for 1859 and 1869 given in Table 225 probably include a great number of small repair shops, and also many establishments making only parts, so there is considerable duplication in the value of the products.

Table 160 (p. 233) presents statistics of the number and value of the different kinds of vehicles for 1919, 1914, 1909, and 1904.

Carriage and wagon materials.—Under this classification are included establishments making carriage and wagon bodies, hubs, felloes, spokes, wheels, axles, whipple-trees, eveners, neck yokes, poles, reaches, dashboards, tops, cushions, lamp brackets, gears, washers, whip sockets, etc. The manufacture of carriage and wagon springs is, however, classed as a separate industry (see Table 69). The figures for 1859 and 1869 in Table 225, which presents comparative statistics, are for the industry designated "carriage trimmings," and therefore are not as wide in their scope as those for later censuses.

TABLE 160.—CARRIAGES AND WAGONS, INCLUDING REPAIRS: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Total value ¹	\$91,463,225	\$106,697,437	\$125,366,912	\$125,332,976
Complete vehicles of all classes:				
Number.....	610,492	1,126,026	1,519,782	1,711,529
Value.....	\$57,969,491	\$69,899,107	\$91,263,264	\$97,190,693
Carriages (family and pleasure):				
Number.....	13,704	538,071	828,411	937,409
Value.....	\$1,562,023	\$33,329,879	\$47,756,118	\$55,750,276
Buggies and light pleasure vehicles:				
Number.....	202,105	(²)	(²)	(²)
Value.....	\$18,114,423	(²)	(²)	(²)
Wagons:				
Number.....	356,837	533,601	587,685	643,755
Value.....	\$35,183,807	\$34,506,942	\$39,932,910	\$37,195,230
Business—				
Number.....	51,018	139,621	154,631	133,422
Value.....	\$6,919,695	\$13,022,860	\$16,440,816	(²)
Light and package commodity, number.....	18,132	81,393	107,190	71,733
Heavy and bulk commodity, number.....	19,044	31,458	32,780	31,956
Pushcarts, number.....	11,593	14,937	7,330	6,089
Horses, number.....	301	402	807	642
Street sprinklers, number.....	38	197	1,053	157
Other business wagons, number.....	1,910	11,234	5,471	22,845
Farm (including carts and trucks)—				
Number.....	303,231	384,663	429,952	505,025
Value.....	\$27,567,838	\$19,708,423	\$22,615,875	(²)
Government, municipal, etc.—				
Number.....	2,588	9,317	3,102	5,308
Value.....	\$696,274	\$1,775,659	\$876,219	(²)
Ambulances, number.....	1,568	346	598	245
Mail and mail carriers' wagons and carts, number.....	1,007	5,549	1,912	4,703
Patrol wagons (fire and police), hose wagons, and prison vans, number.....	13	3,422	592	360
Public conveyances:				
Number.....	194	1,221	2,243	2,711
Value.....	\$76,957	\$279,656	\$939,267	\$1,314,952
Sleighs and sleds:				
Number.....	35,993	52,010	100,899	127,455
Value.....	\$1,237,122	\$1,207,705	\$2,065,850	\$2,694,560
Automobiles: ³				
Number.....	1,659	1,123	544	199
Value.....	\$1,795,159	\$574,925	\$569,119	\$235,675
All other products, including parts and amount received for repair work, value.....	\$33,493,734	\$36,798,330	\$34,103,648	\$28,142,283

¹ In addition, in 1919, 29,057 carriages, valued at \$3,005,725; 69,665 wagons, valued at \$7,229,026; 83 public conveyances, valued at \$28,495; 469 sleighs and sleds, valued at \$31,076; and parts and repair work valued at \$811,360 were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designation. In 1914, this class of establishments made 12,330 carriages, valued at \$863,489; 38,808 wagons, valued at \$2,026,210; 63 public conveyances, valued at \$45,508; 1,311 sleighs and sleds, valued at \$24,309; and parts and repair work valued at \$1,533,099. In 1909, this class of establishments made 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 \$166,917; and parts valued at \$1,184,256, and in 1904 such establishments made carriages and wagons, valued at \$612,173.

² Not reported separately.

³ Manufactured in establishments devoted primarily to the manufacture of carriages and wagons.

MOTORCYCLES, BICYCLES, 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, and parcel carriers. There is thus considerable duplication in the total value of products for the industry. Some establishments engaged in this industry also manufacture three-wheeled delivery vans and tandems, 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 the latter class of manufacture were classified under "toys and games" in 1909, 1914, and 1919.

Table 161 presents the comparative statistics of the number and value of motorcycles and bicycles manufactured. Table 225 presents the general statistics for the industry for the last six censuses.

TABLE 161.—MOTORCYCLES, BICYCLES, AND PARTS: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Total value ¹	\$53,105,895	\$22,234,262	\$10,698,567	\$5,153,240
Motorcycles:				
Number.....	59,214	62,154	18,628	2,800
Value.....	\$16,170,055	\$12,161,775	\$3,015,988	\$354,980
Bicycles:				
Number.....	470,675	299,020	168,824	225,309
Value.....	\$12,277,341	\$3,757,318	\$2,436,996	\$3,203,505
Motorcycle parts, including side and delivery cars	\$11,423,592	\$6,315,169	\$5,245,583	\$1,504,755
Bicycle parts.....	\$4,974,668			
All other products, including repairs.....	\$8,254,239			

¹ In addition, the following products were made by establishments engaged primarily in the manufacture of products other than those covered by this industry: In 1919, 3,488 bicycles, and other products, including parts, etc., valued at \$2,205,748; in 1914, 639 motorcycles, valued at \$144,672; 99,870 bicycles, valued at \$1,603,912; and other products including parts, etc., valued at \$2,089,320; in 1909, 64,883 bicycles, valued at \$791,193; and other products, including parts, etc., valued at \$579,327; in 1904, 25,178 bicycles, valued at \$537,418; 28 motorcycles, valued at \$4,200; and other products, including parts, etc., valued at \$34,341.

CARRIAGES AND SLEDS, CHILDREN'S.

Under this classification are included those establishments engaged primarily in the manufacture of baby and doll carriages, "walkers," go-carts, children's sleds, express wagons, and autocosters. As shown in Table 225, which is a comparative summary covering a period of 50 years, there has not been a great increase in the number of establishments, but the value of products in 1919 was over seventeen times that reported in 1869. 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. In addition to the products covered by the table, children's carriages and sleds to the value of \$3,521,581 in 1919, \$2,213,026 in 1914, and \$1,759,271 in 1909 were made by establishments engaged primarily in the manufacture of other products.

WHEELBARROWS.

Table 225 presents comparative statistics for the manufacture of wheelbarrows for all censuses from 1869 to 1919. Some of the establishments reported products other than wheelbarrows, the more important being porch swings, hand or push carts, warehouse trucks, and minor articles used on farms, such as stone boats, whippletrees, sleds, crates, etc. In addition to the products covered by the table, wheelbarrows to the value of \$1,912,128 in 1919, \$264,896 in 1914, and \$197,659 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

STEAM AND ELECTRIC RAILROAD CARS.

Table 162 presents comparative statistics for the manufacture of cars, steam and electric, and includes those made by establishments engaged primarily in the manufacture of steam cars, of electric cars, and of cars made by both steam and electric railroad repair shops, as well as those reported by establishments assigned to other classifications.

TABLE 162.—STEAM AND ELECTRIC RAILROAD CARS: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Total:				
Number.....	161,531	137,823	101,243	124,634
Value.....	\$403,664,910	\$164,959,665	\$102,147,396	\$110,249,222
Steam-railroad cars:				
Number.....	159,102	134,960	98,471	119,940
Value.....	\$388,754,942	\$154,796,515	\$94,884,287	\$100,346,912
Passenger service—				
Number.....	299	3,568	1,819	2,446
Value.....	\$5,601,739	\$45,245,184	\$15,120,961	\$20,486,260
Freight service—				
Number.....	158,803	131,392	96,652	117,494
Value.....	\$383,153,203	\$109,551,331	\$79,763,326	\$79,860,652
Electric-railroad cars:				
Number.....	2,429	2,863	2,772	4,694
Value.....	\$14,909,968	\$10,163,150	\$7,263,109	\$9,902,310

¹ Includes all service cars not passenger.

Cars, steam and electric 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 and electric railroads. 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 there is some duplication in value of products within the industry. Most concerns engaged primarily in the manufacture of parts or materials for cars, however, are placed under other classifications, such as "brass, bronze, and copper 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 were likewise included. General statistics for each of these two industries, steam and electric railroad cars, for the censuses from 1889 to 1919 are given in Table 225. 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 are not considered comparable with those for later censuses.

Statistics of establishments constructing steam and electric railroad cars, not including the work of railroad companies in their repair shops, are given for the last four censuses in Table 163.

TABLE 163.—CARS, STEAM AND ELECTRIC RAILROAD: 1919, 1914, 1909, AND 1904.

[Not including operations of railroad companies.]

PRODUCT.	1919	1914	1909	1904
Total value ¹	\$556,664,807	\$205,270,622	\$131,539,493	\$122,019,506
Steam-railroad cars:				
Number.....	153,288	120,101	74,945	102,782
Value.....	\$373,945,213	\$140,229,617	\$75,633,245	\$87,348,911
Passenger service ² —				
Number.....	234	3,415	1,601	2,030
Value.....	\$4,854,768	\$4,011,882	\$13,829,607	\$18,140,293
Passenger—				
Number.....	78	1,653	957	428
Value.....	\$1,285,630	\$19,607,416	\$7,209,125	\$2,955,517
Baggage and express, chair, dining and buffet, parlor, sleeping, mail, and all other—				
Number.....	156	1,792	611	1,602
Value.....	\$3,569,138	\$24,404,466	\$6,620,482	\$15,184,770
Freight service—				
Number.....	153,054	116,656	73,341	100,732
Value.....	\$309,690,445	\$96,217,735	\$61,804,638	\$69,208,618
Box—				
Number.....	59,689	50,481	29,728	38,184
Value.....	\$160,903,210	\$40,952,538	\$23,982,146	\$28,508,632
Flat—				
Number.....	4,029	4,781	3,232	5,412
Value.....	\$7,592,168	\$3,120,084	\$2,033,801	\$2,893,154
Gondolas—				
Number.....	54,840	25,077	19,607	9,518
Value.....	\$118,853,843	\$22,808,750	\$18,128,186	\$5,618,084
Hopper ³ —				
Number.....	16,670	9,754	11,473	27,998
Value.....	\$45,757,395	\$10,708,407	\$9,410,655	\$21,367,218
Refrigerator ⁴ —				
Number.....	629	5,800	2,618	3,353
Value.....	\$1,237,557	\$8,077,062	\$2,747,957	\$3,042,835
Stock—				
Number.....	410	3,929	2,449	4,235
Value.....	\$900,018	\$2,587,065	\$1,586,008	\$2,453,123
Tank—				
Number.....	11,592	1,250		
Value.....	\$26,540,682	\$1,255,167		
Other varieties ⁵ —				
Number.....	5,195	15,584	4,337	12,052
Value.....	\$7,245,572	\$4,708,662	\$3,065,585	\$5,425,572
Electric-railroad cars:				
Number.....	1,808	2,542	2,525	4,384
Value.....	\$13,502,053	\$8,789,546	\$6,626,357	\$9,297,100
Passenger—				
Number.....	1,726	2,335	2,345	4,008
Value.....	\$11,495,791	\$8,075,710	\$6,249,415	\$8,809,261
Other varieties—				
Number.....	172	207	180	376
Value.....	\$2,006,862	\$713,836	\$376,942	\$487,905
All other products, value.....	\$169,216,941	\$56,251,459	\$49,279,891	\$25,373,429

¹ In addition 5,814 steam-railroad cars, valued at \$14,809,729; 154 electric-railroad cars, valued at \$779,947, and parts and repairs, valued at \$3,290,165, were reported in 1919; 14,859 steam-railroad cars, valued at \$14,506,898; 321 electric-railroad cars, valued at \$1,373,604, and parts and repairs, valued at \$980,074 were reported in 1914; and 23,526 steam-railroad cars, valued at \$19,251,042; 247 electric-railroad cars, valued at \$636,752, and parts and repairs, valued at \$210,487 were reported in 1909, by establishments engaged primarily in other industries.

² Includes gasoline motor cars for use as passenger cars by steam railroads for 1914 and 1909.

³ Reported as coal and coke cars in 1909 and 1904.

⁴ Includes fruit cars for 1919.

⁵ Includes 2,391 logging, mining, industrial, and dump cars, valued at \$2,916,803 in 1919, and 9,737 cars of the same classes, valued at \$1,825,693 in 1914, and 167 cars in 1914 and 136 cars in 1909 whose type was not specifically designated.

Group 13.—RAILROAD REPAIR SHOPS.

This group includes only two industries, which are designated "cars and general shop construction and repairs by steam-railroad companies" and "cars and general shop construction and repairs by electric-railroad companies." Briefly, they may be called steam-railroad repair shops and electric-railroad repair shops, respectively.

As a rule, steam and electric railroad companies operate one or more repair shops for the purpose of maintaining the rolling stock in proper condition. Incidental to their repair work, however, such shops often manufacture complete cars and locomotives. While the great bulk of the work of repair shops is on the rolling stock, they also do shopwork in connection with the construction and repair of bridges and other fixed property. The products are not assigned a selling or contract value, and the amount reported to the census is usually the cost of production.

TABLE 164.—RAILROAD REPAIR SHOPS: 1919.

INDUSTRY.	Num-ber of estab-lish-ments.	Wage earners (average number).	Capital.	Wages.	Cost of ma-terials.	Value of products.	Value added by manu-facture.
Expressed in thousands.							
Total.....	2,368	515,709	\$776,844	\$726,690	\$547,829	\$1,354,446	\$806,617
Steam-railroad repair shops.....	1,744	484,437	694,286	687,617	515,803	1,279,235	763,432
Electric-railroad repair shops.....	624	31,272	82,558	39,073	32,026	75,211	43,185

CARS AND GENERAL SHOP CONSTRUCTION AND REPAIRS BY STEAM-RAILROAD COMPANIES.

Table 165 presents statistics of the work done by construction and repair shops operated by steam-railroad companies, not including roundhouses where running repairs are made. Most of the value represents that of repairs, comparatively little representing new construction. General statistics for the industry are given in Table 225 for the censuses from 1889 to 1919, inclusive.

TABLE 165.—STEAM-RAILROAD REPAIR SHOPS: 1919, 1914, 1909, and 1904.

	1919	1914	1909	1904
Total value.....	\$1,279,235,393	\$514,041,225	\$405,600,727	\$309,775,089
Motive power and machinery department, value.....	\$622,480,393	\$236,723,724	\$184,971,870	\$149,643,953
Locomotives built—				
Number.....	106	187	215	148
Value.....	\$5,825,096	\$3,594,003	\$3,289,140	\$1,853,939
Repairs to locomotives, motors, etc.....	\$463,952,871	\$169,057,932	\$127,928,773	\$101,326,805
Work for other corporations.....	\$16,889,147	\$7,053,430	\$4,735,004	\$5,681,307
All other products or work.....	\$135,813,279	\$57,018,359	\$49,018,953	\$10,781,902
Car department, value.....	\$573,709,875	\$242,976,774	\$199,768,939	\$149,748,820
Cars built, value.....	\$5,133,115	\$11,999,983	\$13,326,171	\$12,990,011
Passenger—				
Number.....	20	123	218	414
Value.....	\$191,691	\$1,233,302	\$1,291,354	\$2,337,977
Freight—				
Number.....	2,394	10,314	13,972	14,742
Value.....	\$4,590,482	\$10,513,076	\$11,767,664	\$10,006,642
Other—				
Number.....	271	308	359	2,000
Value.....	\$350,942	\$253,005	\$267,153	\$645,392
Repairs to cars of all kinds.....	\$479,229,076	\$183,753,538	\$147,194,065	\$105,319,032
Work for other corporations.....	\$31,101,248	\$14,819,984	\$8,784,239	\$6,946,990
All other products or work.....	\$58,246,436	\$32,403,269	\$30,404,404	\$24,402,787
Bridge and building department (shop work), value.....	\$8,535,303	\$3,127,644	\$2,799,898	\$5,096,141
Repairs and renewals.....	\$7,288,373	\$2,449,821	\$1,906,737	\$4,351,487
Work for other corporations.....	\$22,804	\$37,061	\$46,496	\$40,581
All other products or work.....	\$1,224,126	\$640,762	\$846,666	\$704,073
All other products and work not classified, value.....	\$74,509,822	\$31,213,083	\$18,060,020	\$5,286,175

CARS AND GENERAL SHOP CONSTRUCTION AND REPAIRS BY ELECTRIC-RAILROAD COMPANIES.

Table 166 presents statistics of the operations of the construction and repair shops of electric-railroad companies, including all electric systems and interurban electric lines—all railroads, in fact, except steam roads. The work done, which consists almost wholly of repairs, was not reported in detail in 1899, but its aggregate value in that year was \$9,370,811. General statistics for the industry are given in Table 225 for the census years from 1889 to 1919, inclusive.

TABLE 166.—ELECTRIC-RAILROAD REPAIR SHOPS: 1919, 1914, 1909, and 1904.

	1919	1914	1909	1904
Total value.....	\$75,210,701	\$38,576,565	\$31,962,581	\$13,437,121
Motive power and machinery department, value.	\$7,028,303	\$5,380,573	\$4,510,332	\$510,946
Repairs to motors, etc.....	\$7,081,785	\$4,033,430	\$4,004,336	.....
Work for other corporations.....	\$75,182	\$50,944	\$88,070	\$2,626
All other products or work.....	\$769,386	\$390,103	\$417,026	\$508,320
Car department, value.....	\$61,237,505	\$31,086,043	\$25,835,463	\$12,581,365
Cars built, value.....	\$762,293	\$811,104	\$926,732	\$605,144
Passenger—				
Number.....	88	235	120	288
Value.....	\$935,770	\$737,926	\$408,700	\$580,669
Freight—				
Number.....	48	11	63	13
Value.....	\$95,638	\$21,196	\$59,102	\$11,366
Other—				
Number.....	17	68	51	9
Value.....	\$30,885	\$51,082	\$68,941	\$13,109
Repairs to cars of all kinds.....	\$60,060,255	\$27,628,802	\$22,869,777	\$11,254,505
Work for other corporations.....	\$1,174,282	\$441,323	\$924,805	\$36,714
All other products or work.....	\$2,240,975	\$2,204,814	\$1,714,120	\$685,002
Bridge and building department (shop work), value.....	\$268,655	\$434,427	\$330,948	\$327,855
Repairs and renewals.....	\$261,679	\$199,751	\$273,581	\$253,133
All other products or work.....	\$6,976	\$284,676	\$57,367	\$74,722
All other products and work not classified, value.	\$2,777,938	\$1,675,522	\$1,285,818	\$16,955

¹ Includes the value of 2 electric locomotives.

² Includes the value of 1 locomotive.

³ Includes the value of 3 electric locomotives.

Group 14.—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 nature or use of the products. Some, 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 which constitute the chief products of these industries are also made in considerable quantities by establishments classified under the two groups before mentioned. There is also a considerable overlapping of the products within the miscellaneous group itself. On the other hand, there are few of the industries in the miscellaneous group whose products are chiefly used as materials in other industries of the group or in industries assigned to other groups.

Table 167 shows the number of establishments, average number of wage earners, capital, total wages paid, cost of materials, value of products, and value added by manufacture, for each of the industries included in the general group as reported for the census of 1919.

TABLE 167.—MISCELLANEOUS INDUSTRIES: 1919.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Total.....	21,781	1,227,111	\$5,295,377	\$1,537,110	\$2,867,667	\$6,180,256	\$3,312,589
Aeroplanes, seaplanes, and airships, and parts.....	31	3,543	17,754	4,907	7,127	14,373	7,246
Agricultural implements.....	521	54,368	366,962	66,704	144,572	304,961	160,389
Ammunition.....	42	22,816	94,559	23,588	38,102	88,038	49,936
Artificial flowers.....	224	4,138	6,675	3,741	7,005	16,143	9,138
Artificial limbs.....	177	671	2,231	794	774	3,271	2,497
Artists' materials.....	58	926	4,664	896	2,687	5,508	2,821
Crayons.....	20	414	1,687	348	734	1,742	1,008
All other.....	38	512	2,977	548	1,953	3,766	1,813
Asbestos products, not including steam packing.....	46	3,654	16,405	3,732	12,948	23,978	11,030
Building materials.....	12	1,183	4,456	1,590	2,647	5,636	2,989
Textile-mill products.....	16	1,993	9,450	1,696	8,672	15,456	6,784
All other.....	18	478	2,499	446	1,629	2,886	1,257
Belting and hose, rubber.....	15	5,826	45,920	6,074	18,310	34,211	15,901
Belting.....	8	2,368	19,901	2,374	7,316	13,149	5,833
Hose.....	7	3,458	26,019	3,700	10,994	21,062	10,068
Boots and shoes, rubber.....	25	32,875	131,513	30,883	50,347	116,917	66,570
Brooms.....	1,034	6,313	16,708	5,709	17,365	30,205	12,840
From broom corn.....	1,000	6,197	16,383	5,600	17,148	29,710	12,562
All other.....	34	116	325	109	217	495	278
Brushes.....	379	7,968	27,208	7,113	19,598	39,006	19,408
Toilet.....	44	1,854	5,602	1,557	3,487	7,936	4,449
Paint and varnish.....	44	2,150	7,700	2,064	5,943	11,172	5,229
All other.....	291	3,904	13,906	3,492	10,168	19,808	9,730
Buttons.....	557	15,577	20,978	13,773	16,745	41,840	25,095
Combs and hairpins, not made from metal or rubber.....	45	2,229	3,913	1,809	3,160	6,566	3,397
Dairymen's, poultrymen's, and apiarists' supplies.....	244	6,437	36,095	7,078	18,527	37,397	18,870
Incubators and brooders.....	48	782	3,165	664	1,929	3,932	2,003
All other poultrymen's supplies.....	60	280	1,146	255	1,141	1,935	794
Cream separators.....	19	3,345	20,360	4,143	6,532	16,437	9,905
All other dairymen's supplies.....	90	1,545	8,693	1,571	6,964	11,916	4,952
Apiarists' supplies.....	27	485	2,731	445	1,901	3,177	1,216
Dental goods.....	319	5,224	17,005	4,464	16,420	29,402	12,082
Teeth.....	52	3,134	11,447	2,307	3,870	10,738	6,868
All other.....	267	2,090	6,458	2,157	12,550	18,664	6,114

TABLE 167.—MISCELLANEOUS INDUSTRIES: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.							
Electrical machinery, apparatus, and supplies.....	1,404	212,374	\$857,855	\$238,180	\$425,098	\$997,968	\$572,870
Enameling.....	74	694	2,083	790	950	2,645	1,095
Engravers' materials.....	21	174	826	212	1,484	2,248	764
Fancy articles, not elsewhere specified.....	661	13,961	32,825	12,208	32,591	64,054	31,463
Bead work.....	37	400	669	518	975	1,936	901
Celluloid novelties.....	66	2,941	6,062	2,686	7,440	13,006	5,500
Metal novelties.....	110	2,567	7,986	2,282	5,430	12,325	6,895
Paper novelties.....	63	1,197	2,580	820	1,704	4,201	2,497
Wood novelties.....	30	200	277	151	149	458	309
All other.....	355	6,656	15,251	5,751	16,893	32,128	15,235
Feathers and plumes.....	216	3,504	6,515	3,406	6,695	15,378	8,683
Fire extinguishers, chemical.....	32	777	3,780	761	2,693	5,563	2,870
Fireworks.....	57	1,222	3,547	995	2,108	4,630	2,522
Foundry supplies.....	76	906	7,602	1,032	5,667	9,955	4,288
Fuel, manufactured.....	11	171	2,908	222	1,386	1,974	588
Fur goods.....	1,815	13,639	80,701	24,149	105,597	173,138	67,541
Furs, dressed.....	141	5,075	8,807	7,098	6,339	20,385	11,046
Graphite, ground and refined.....	24	497	4,303	484	1,093	2,240	1,147
Hair work.....	198	1,084	3,581	1,065	3,829	6,903	3,134
Hand stamps.....	298	1,719	4,250	1,833	2,634	7,739	5,105
Hats, straw.....	148	7,302	18,560	6,605	16,910	32,187	15,277
Ice, manufactured.....	2,867	30,247	270,726	34,002	42,877	137,005	94,128
Instruments, professional and scientific.....	351	15,931	51,570	17,500	19,495	58,137	38,642
Medical and surgical.....	127	3,771	10,687	3,799	3,984	12,101	8,117
Optical.....	13	639	1,225	629	591	1,835	1,244
All other.....	211	11,521	39,658	13,072	14,920	44,201	29,281
Ivory, shell, and bone work, not including combs and hairpins..	44	842	1,866	735	1,294	2,817	1,523
Japanning.....	36	295	462	261	222	771	519
Jewelry and instrument cases.....	142	2,734	3,697	2,148	3,506	8,126	4,620
Lapidary work.....	124	1,155	19,210	2,838	19,363	30,051	10,688
Mattresses and spring beds, not elsewhere specified.....	1,041	12,637	46,213	12,805	49,209	81,953	34,744
Models and patterns, not including paper patterns.....	928	6,949	11,754	10,318	6,396	25,300	18,904
Mucilage, paste, and other adhesives, not elsewhere specified..	127	803	7,133	850	7,093	11,230	4,137
Mucilage and paste.....	48	301	2,915	364	3,035	4,796	1,761
All other.....	79	502	4,218	486	4,058	6,434	2,376
Musical instruments and materials, not elsewhere specified.....	240	4,113	7,876	3,985	4,445	12,506	8,061
Musical instruments, organs.....	68	1,941	6,771	1,978	2,217	5,973	3,756
Musical instruments, pianos.....	191	22,957	116,107	25,474	54,365	107,088	52,723
Musical instruments, piano and organ materials.....	113	11,009	32,824	10,467	16,693	30,790	20,097
Piano materials.....	97	10,769	31,769	10,231	16,329	35,957	19,628
Organ materials.....	16	240	655	236	364	833	469
Optical goods.....	506	14,723	37,740	14,388	17,785	53,718	35,933
Paving materials.....	889	10,072	67,421	17,169	10,020	45,741	29,721
Pencils, lead.....	12	8,970	20,641	5,299	9,674	24,134	15,060
Pens, fountain and stylographic.....	50	3,207	9,725	2,981	5,811	15,997	10,186
Photographs and graphophones.....	166	28,721	105,241	33,963	59,740	158,548	98,808
Photographic apparatus.....	68	2,555	7,204	2,643	3,584	9,384	6,800
Cameras.....	12	842	1,929	1,770	1,189	2,999	1,810
Motion-picture machines.....	18	858	2,417	1,077	1,145	3,432	2,287
All other apparatus and parts.....	38	855	2,918	796	1,250	2,953	1,703
Photographic materials.....	169	14,556	87,205	18,966	49,802	115,714	65,912
Motion-picture films, not exposed.....	15	9,652	44,440	11,110	25,918	71,246	45,328
Motion-picture projection films.....	50	3,646	37,254	6,709	10,579	36,705	17,126
All other.....	104	1,258	5,502	1,138	4,305	7,763	3,458
Pipes, tobacco.....	56	2,539	7,035	2,555	3,497	11,554	8,057
Pulp, from fiber other than wood.....	5	64	778	66	396	524	128
Roofing materials.....	178	8,871	57,009	10,344	52,588	85,895	33,307
Metal shingles and ceiling.....	29	455	2,632	542	1,532	2,750	1,218
All other.....	149	8,416	54,437	9,802	51,056	83,145	32,089
Rubber tires, tubes, and rubber goods, not elsewhere specified..	437	119,848	782,638	166,807	525,686	987,088	461,402
Sand and emery paper and cloth..	12	771	9,058	841	5,061	9,304	4,243

TABLE 167.—MISCELLANEOUS INDUSTRIES: 1919—Continued.

INDUSTRY.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Shipbuilding, steel.....	162	344,014	\$1,268,640	\$538,373	\$643,753	\$1,456,489	\$812,736
New vessels.....	105	321,787	1,210,559	500,087	618,903	1,364,294	745,391
Concrete vessels.....	5	2,277	5,111	3,101	3,158	6,896	3,738
Repair work only.....	45	19,736	52,317	34,935	21,291	84,425	63,134
Small boats.....	7	214	653	250	401	874	473
Shipbuilding, wooden, including boat building.....	913	43,432	120,808	59,074	66,770	165,872	99,102
New vessels.....	315	34,122	93,372	45,873	56,898	133,303	76,405
Repair work only.....	277	7,730	22,085	11,286	7,294	26,549	19,255
Small boats.....	294	1,450	4,792	1,750	2,187	5,198	3,011
Masts, spars, oars, and rigging.....	27	130	559	165	391	822	431
Signs and advertising novelties.....	779	10,432	29,249	9,715	16,072	43,343	27,271
Electric signs.....	65	1,031	3,969	1,323	2,108	4,695	2,587
Other signs.....	544	3,212	7,532	3,565	4,368	12,910	8,542
Advertising novelties.....	170	6,189	17,748	4,827	9,596	25,738	16,142
Soda-water apparatus.....	66	2,599	14,712	3,232	6,627	15,185	8,658
Sporting and athletic goods.....	188	6,412	19,951	5,753	11,909	23,340	11,871
Stationery goods, not elsewhere specified.....	223	11,261	36,701	9,578	28,160	58,363	30,203
Penholders.....	5	101	124	60	55	168	113
All other.....	218	11,160	36,577	9,518	28,105	58,195	30,090
Steam packing.....	169	6,147	36,934	7,103	22,725	40,525	17,800
Stencils and brands.....	84	417	1,111	429	614	1,598	1,084
Surgical appliances.....	268	6,390	33,063	6,084	22,214	43,534	21,320
Theatrical scenery.....	17	149	573	238	505	1,067	562
Toys and games.....	541	14,201	27,739	11,847	19,841	45,657	25,816
Umbrellas and canes.....	198	3,368	15,397	3,140	15,633	25,309	9,676
Washing machines and clothes wringers.....	105	5,956	25,986	6,431	23,389	40,771	17,382
Whips.....	26	717	2,461	582	1,097	2,986	1,889
Windmills.....	31	1,932	10,005	2,145	4,960	9,933	4,973
Window shades and fixtures.....	287	4,411	18,699	3,669	18,249	29,191	10,942
All other industries ¹	5	99	131	90	200	362	162

¹ Comprises the following industries with number of establishments as indicated: "Straw goods, not elsewhere specified," 1; "whalebone cutting," 1; and "wood carpet," 3.

AEROPLANES, SEAPLANES, AND AIRSHIPS, AND PARTS.

Establishments included in this classification manufacture biplanes, monoplanes, hydroplanes, balloons, and all other types of aircraft and parts. Statistics for this industry, which has been developed during the past decade, were not shown separately at censuses prior to 1914. The data for any establishments that were in operation at the census of 1909 were included with those for motor cycles, bicycles, and parts. General statistics for the industry are given in Table 225. The classification covers only the establishments that produce the complete machine. Statistics for the manufacture of aeroplane tires, engines, and other equipment, when made by establishments not manufacturing the complete machine, are included in other classifications, such as "rubber tires, tubes, and rubber goods, not elsewhere specified," and "engines, steam, gas, and water." In 1919, the number of establishments reported for this industry was 31, and the production of completed aeroplanes, seaplanes, and parts for that year was valued at \$10,648,463, as compared with 16 establishments reporting similar products valued at \$481,022 in 1914.

Table 168 gives the details for the industry as reported in 1919.

TABLE 168.—AIRCRAFT, NUMBER AND VALUE: 1919.

PRODUCT.	Number.	Value.
Total.....		\$14,372,643
Aeroplanes.....	432	3,466,452
Seaplanes.....	230	4,580,016
Under construction.....	341	1,658,670
Engines.....		253,244
Parts.....		2,601,695
All other products including repair work.....		1,812,266

AGRICULTURAL IMPLEMENTS.

Establishments in this classification manufacture all kinds of plows, cultivators, seeders and planters, harvesting implements, and seed separators. Table 169 gives the value of four principal groups of products and the number of the more important machines and implements manufactured in 1919, 1914, 1909, and 1904. The value of all products increased from \$112,007,344 in 1904, to \$304,961,265 in 1919, or by 172.3 per cent. This includes the value of miscellaneous agricultural implements and parts not classifiable under any of the four groups shown separately, and of a large number of products not distinctively agricultural, but made by manufacturers of agricultural implements, such as windmills, carriages and wagons, engines, presses, castings, lawn swings, etc. Table 225 presents statistics for the industry from 1849 to 1919, inclusive.

TABLE 169.—AGRICULTURAL IMPLEMENTS: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Products, total value ¹	\$304,961,265	\$164,086,835	\$146,329,268	\$112,007,344
Plows and cultivators.....	65,329,111	38,662,037	30,784,477	30,607,960
Planters and seeders.....	17,490,403	12,188,757	12,141,474	11,225,122
Harvesting implements:				
Hayrakes and hay toddlers.....	4,772,493	3,233,630	34,568,131	30,862,435
Mowers and reapers.....	40,169,591	30,974,709		
Other.....	9,282,656	5,372,947		
Seed separators:				
Thrashers.....	16,593,273	9,832,043	11,030,412	6,630,883
Other.....	5,771,670	3,264,246		
All other agricultural implements, including parts.....	64,105,527	27,844,180	48,690,082	30,703,648
All other products.....	68,500,033	31,277,021		
Amount received for repair work.....	12,946,508	1,437,265	3,114,692	1,968,296
<i>Principal kinds of implements.</i>				
Implements of cultivation:				
Cultivators—	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>
Beet.....	7,088	2,184	3,172	3,450
Hand, garden, or garden plows.....	419,085	238,081	469,696	239,173
One and two horse.....	300,122	254,158		
Wheeled—				
One row.....	144,259	347,329	435,420	313,088
Two rows.....	44,847	31,605		
Cotton scrapers.....	10,807	17,537	20,180	22,519
Fertilizing machines.....	82,554	180,854	(²)	(²)
Harrow—				
Disk.....	175,712	209,077	193,000	101,323
Spring-tooth.....	79,532	187,370	112,832	86,408
Spike-tooth.....	222,799	368,219	394,088	262,442
Land rollers.....	8,654	22,470	(³)	(³)
Land packers.....	19,501	(³)	(³)	(³)
Listers.....	31,680	37,953	44,840	23,012
Plows—				
Disk.....	15,431	15,708	22,132	39,146
Gang.....	42,240	75,830	91,686	(⁴)
Shovel.....	108,887	181,550	254,737	121,899
Engine.....	4,052	3,265	4,355	1,599
Sulky (single).....	60,909	108,232	134,696	138,899
Tractor.....	95,836	(⁵)	(⁵)	(⁵)
Walking.....	720,174	870,414	1,110,006	956,898
Pulverizers.....	7,134	12,724	(²)	(²)
Other.....	29,295	80,096	(²)	(²)
Planters and seeders:				
Seeders—				
Broadcast.....	18,360	34,175	461,970	33,546
Wagon or endgate.....	10,391	16,122	(⁶)	(⁶)
Seeder attachments.....	34,330	10,000	(²)	(²)
Corn planters—				
Hand.....	28,085	101,850	96,465	86,553
Horse.....	93,976	114,667	122,780	99,929
Cotton planters.....	87,408	101,256	79,271	127,052
Potato planters.....	5,964	37,191	23,092	35,756
Drills—				
Corn.....	29,809	55,710	20,137	28,228
Grain.....	63,255	89,370	689,903	76,929
All other.....	5,870	10,688	32,507	606

¹ In addition to the amounts shown, agricultural implements to the value of \$14,938,340 in 1919, \$4,033,797 in 1914, \$2,980,276 in 1909, and \$1,349,679 in 1904 were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designated.

² Not reported.

³ Not reported separately.

⁴ Includes 23,963 combination seeders.

⁵ Includes 21,292 disk drills of all kinds.

TABLE 169.—AGRICULTURAL IMPLEMENTS: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
<i>Principal kinds of implements—Continued.</i>				
Planters and seeders—Continued.	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>
Seed sowers, hand, field.....	86,763	12,608	7,847	59,910
Seed drills, hand, garden.....	8,971	43,113	(¹)	(¹)
Other planters and seeders.....	16,198	4,124	(¹)	(¹)
Harvesting implements:				
Binders—				
Grain.....	155,466	215,386	129,274	108,810
Corn.....	22,886	52,087	19,693	6,924
Grain cradles.....	58,239	38,728	22,635	30,056
Grain elevators for use on farm.....	5,995	(²)	(²)	(²)
Harvesters—				
Bean.....	9,528	3,401	1,409	665
Push.....	2,337	(²)	(²)	(²)
Harvesters and thrashers combined.....	2,392	270	543	(²)
Other.....	22,887	2,758	1,707	3,161
Headers.....	4,187	(²)	(²)	(²)
Hay carriers.....	11,865	44,277	45,064	85,121
Hay forks, horse.....	6,323	31,976	43,675	62,801
Hay loaders.....	20,570	25,865	34,705	27,174
Hay rakes.....				
Sulky.....	61,265	139,565		
Sweep.....	18,398	23,304	266,260	236,297
Side delivery.....	14,270	20,213		
Hay stackers.....	7,699	6,437	17,212	8,670
Hay tedders.....	10,282	9,796	34,396	35,745
Hay presses.....	7,154	(²)	(²)	(²)
Mowers.....	151,133	274,521	350,264	273,385
Other haying tools.....	130,032	37,706	(¹)	(¹)
Potato diggers, horse.....	12,454	25,758	25,632	11,703
Reapers.....	8,368	56,982	58,294	60,996
Stalk cutters.....	19,033	(²)	(¹)	(²)
Other.....	1,096,087	13,746	(¹)	(¹)
Seed separators:				
Clover hullers.....	597	324	437	351
Corn huskers.....	1,194	341	318	1,327
Corn huskers and shredders.....	2,884	4,338	1,294	(¹)
Corn pickers.....	3,078	(²)	(²)	(²)
Corn shellers—				
Hand.....	37,272	63,206	74,223	47,189
Power.....	8,486	11,113	9,049	6,082
Fanning mills.....	13,302	23,047	33,805	22,994
Feed mills.....	10,314	(²)	(²)	(²)
Thrashers—				
Horsepower.....	3,766	302	822	2,237
Engine.....	16,162	13,246	12,957	7,950
Other.....	9,586	6,212	(¹)	(¹)
Miscellaneous:				
Dairy machinery—				
Cream separators.....	11,255			
Other.....	1,001			
Manure spreaders.....	80,891			
Equalizers.....	13,989			
Knife grinders.....	22,173			
Feed grinders.....	13,971	(²)	(²)	(²)
Enslage cutters.....	18,013			
Saw trucks.....	328			
Pumps.....	21,172			
Windmills.....	419			
Spraying outfits.....	14,044			

¹ Not reported.² Not reported separately.

AMMUNITION.

Establishments in this industry manufacture small-arms ammunition, including metallic and paper cartridges, empty and loaded gun shells, exploder shells, gun wads, caps, primers, shot, and bullets; also blasting caps and electric blasting caps, fuses and electrical exploder fuses, miners' squibs, railway torpedoes, etc. The ammunition for large guns is made in steel works and rolling mills and Federal establishments, and the value was not reported separately. Establishments making powder, dynamite, etc., as their chief product are classed under "explosives." Statistics for the industry for the censuses from 1849 to 1919, inclusive, are given in Table 225. 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 fuses;" 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 accounts for the decrease shown for the decade 1849-1859. In addition to the products covered by the table, ammunition to the value of \$55,639,646 in 1919 and \$3,101,645 in 1914 was reported by establishments assigned to other classifications.

Table 170 gives details as to the products of the industry for 1919.

TABLE 170.—AMMUNITION: 1919.

KIND.	Value.
Total value.....	\$143,677,669
The ammunition industry, all products.....	88,038,222
Subsidiary ammunition products of other industries.....	55,639,646
Ammunition and allied products¹.....	122,457,859
Artillery ammunition ²	53,416,368
Ammunition for small arms.....	39,550,789
Blasting and detonating caps.....	2,630,365
Detonating fuses.....	3,839,517
Safety fuses.....	3,322,195
Other fuses and naval torpedores.....	9,648,331
Railroad torpedores.....	4,293,422
Contract settlements.....	3,351,393
Miscellaneous allied products, not classified.....	2,407,263
Firearms, products of ammunition establishments.....	6,604,803
Ordinance, products of ammunition establishments.....	5,224,182
All other products, other than ammunition or allied products.....	9,387,055
AMMUNITION AND ALLIED PRODUCTS.	
Artillery ammunition.....	53,416,368
Ammunition for small arms.....	39,550,789
Paper shells.....	16,935,149
Loaded.....	9,079,453
Unloaded.....	4,809,196
Not specified.....	2,146,488
Metal shells, loaded and unloaded.....	1,717,371
Cartridges.....	16,426,969
Revolver.....	7,228,652
Rifle.....	7,233,174
Not specified.....	1,965,173
Percussion caps.....	676,081
Primers.....	408,165
Shot (8,836 tons, value \$1,364,630; for balance, \$1,306,000, quantity not reported).....	2,761,299
Wads.....	630,735

¹ Not including products of 5 Governmental establishments, \$15,908,181.

² Includes shot and shell other than for small arms, valued at \$16,287,326 of which quantity was reported for \$6,322,485, viz. 12,569 tons; for balance quantity not reported.

ARTIFICIAL FLOWERS AND FEATHERS AND PLUMES.

The statistics for the preparation or manufacture of feathers and plumes are combined in Table 171 with those for the manufacture of artificial flowers because both kinds of products are often reported by a single establishment. General statistics for the two industries are shown separately in Table 225, but there is considerable overlapping between them.

The classification "feathers and plumes" was a part of "artificial feathers and flowers" at the census of 1904 and at previous censuses covered by Table 171, except as indicated in the footnote. At the census of 1859, 3 establishments were reported under the heading of "flowers"; 7 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, and received \$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 the table, but the fact that small neighborhood establishments were included for 1889, but excluded from the comparative totals shown for 1899 is also responsible for part of the decrease.

TABLE 171.—ARTIFICIAL FLOWERS AND FEATHERS AND PLUMES: 1869 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	440	7,642	1,062	\$13,100	\$7,147	\$13,700	\$31,521	\$17,821
1914.....	450	9,291	606	8,745	3,979	9,310	19,065	9,755
1909.....	412	10,016	334	9,693	3,974	13,627	23,981	10,354
1904.....	213	4,343	184	2,568	1,397	2,014	5,247	3,233
1899.....	224	5,331	113	3,633	1,561	2,763	6,293	3,530
1889.....	251	6,357	36	3,633	2,126	4,646	9,079	4,433
1879.....	174	4,342	(¹)	1,253	1,081	2,444	4,879	2,435
1869 ²	73	2,034	32	803	420	836	1,846	1,010

¹ Figures not available.

² Designated as "artificial feathers, flowers, and fruits" and "feathers, cleaned, dressed, and dyed."

Artificial flowers.—This classification includes establishments engaged in the manufacture of artificial leaves, palms, grasses, wreaths, plants, foliage and vines, thorns, buds and fruits, wax flowers, and in the preservation of flowers and plants, stems, tubing, and other materials for use in the manufacture of artificial flowers. In addition to the products covered by the table, artificial flowers to the value of \$1,018,652 were reported in 1919 and \$820,520 in 1914 by establishments assigned to other classifications, principally "feathers and plumes."

Feathers and plumes.—This classification includes establishments producing fancy feathers, plumes—horse, theatrical, hearse, military, and society—boas, muffs, and quills, and also those engaged in the dyeing, curling, and renovating of ostrich feathers. Statistics for the industry, for 1919, 1914, and 1909, are given in Table 225. In addition to the products covered by the table, feathers and plumes to the value of \$986,246 were reported for 1919 and \$1,339,869 for 1914 by establishments assigned to other classifications.

ARTIFICIAL LIMBS.

Artificial legs, arms, hands, fingers, feet, and orthopaedic appliances and joints are the principal products of the establishments included in this industry. Crutches, extension shoes, and artificial-leg wood, prepared for sale as such, were also reported. Statistics for the industry for the censuses from 1849 to 1919 are given in Table 225.

The decrease in value of products from 1869 to 1879 was doubtless due to changes in the classification of individual establishments. In addition to the products covered by the table, artificial limbs to the value of \$44,482 were reported for 1919 and \$11,727 for 1914 by establishments assigned to other classifications.

ARTISTS' MATERIALS.

Among the many kinds of products manufactured by establishments in this classification are canvas board; prepared canvases or frames; oil colors; air-brushes for portrait work; air compressors for art work; easels; drawing tables and boards; palettes; sketch boxes; pantographs; wax crayons; gold and bronze mixtures, powders, paints, and size; gold and aluminum enamel and paint for china painting; pyrography goods, including platinum points; brass-craft goods; drafting tools and materials; blue-print and brown-print cloth and paper; and drawing ink. The statistics given in Table 225 are for the censuses from 1859 to 1919, 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 167 gives separate statistics for those establishments whose principal product was crayons—dustless crayons; wax crayons; school crayons; tailors' chalk; marking, checking, and carpenters' crayons; toy crayons; crayon pencils, etc.—and for other artists' materials. In addition to the products covered by Table 225, artists' materials to the value of \$999,633 were reported by establishments assigned to other classifications in 1919.

ASBESTOS PRODUCTS, NOT INCLUDING STEAM PACKING.

This classification includes the recovery of mineral wool from the mineral and its manufacture into building materials—slates, sheathing, siding, air-cell covering, flooring, etc.—and other articles, such as mats, pads, holders for sadirons, rings, tapes, yarns, cloths, packing for ice boxes and refrigerating cars, friction and transmission facings and linings, etc. The industry was not shown separately prior to 1914, being included with "steam packings" and "roofing materials" for 1909. Table 167 gives separate statistics for those establishments making building materials, textile-mill products, and for those making other products.

Table 225 gives the principal statistical items for the asbestos-product industry for 1914 and 1919. In addition to the products covered by the table, asbestos products to the value of \$2,468,739 were reported in 1919 and \$790,082 in 1914 by establishments assigned to other classifications.

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, 1869, as well as for 1909, 1914, and 1919. For comparative purposes the two industries are combined in Table 172, which presents the statistics from 1849 to 1919, inclusive. Separate data for each industry are given in Table 225 and in other tables of the census reports, each establishment being assigned according to its product of chief value.

TABLE 172.—BROOMS AND BRUSHES: 1849 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage owners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	1,413	14,281	13,446	\$43,916	\$12,822	\$36,963	\$49,211	\$32,248
1914.....	1,227	12,855	10,892	23,039	6,085	17,211	31,979	14,768
1909.....	1,282	12,153	8,800	18,982	5,404	15,578	29,126	13,548
1904.....	316	11,425	6,441	12,052	4,380	10,990	21,104	10,105
1899.....	1,523	10,346	4,482	9,616	3,788	9,541	18,484	8,940
1889.....	1,235	9,556	1,952	7,744	3,209	6,901	14,156	7,255
1879.....	980	8,773	(1)	4,187	2,424	5,605	10,561	4,806
1869.....	792	7,631	574	3,700	1,960	4,980	9,317	4,331
1859.....	349	3,562	(1)	1,419	882	1,808	3,525	1,637
1849.....	449	3,589	(1)	1,026	799	1,167	2,514	1,347

¹ Figures not available.

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 from 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 brass and steel, of rattan, of basswood fiber, or of split bamboo. Scrub and toy brooms are included. Table 167 gives separate figures for brooms made from broom corn and from other materials. In addition to the products covered by the table, brooms to the value of \$228,705 in 1919, as compared with \$167,466 in 1914, were reported by establishments assigned to other classifications.

Brushes.—Brushes, composed principally of bristles, vegetable fiber, the hair of animals, feathers, wool, and wire, are the products of establishments in this classification. They include (1) brushes for toilet purposes—hairbrushes, military brushes, toothbrushes, nailbrushes, and shaving brushes; (2) brushes for artists and painters; and (3) all other, such as clothes, bonnet, and hat brushes; brushes for household use, for cleaning and polishing, and for dairy use; tanners' and brewers' brushes; gun and rifle brushes; fruit-cleaning brushes; textile-machinery 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 ferrules and brush fibers. The dressing of bristles is a branch of the industry. Table 167 gives separate statistics for the three classes of brushes. There is considerable overlapping among the groups. Toilet brushes to

the value of \$76,757 in 1919 and \$637,870 in 1914 were made by paint and varnish and other brush manufacturers and by manufacturers in other industries. Paint and varnish brushes were reported by paint manufacturers to the value of \$5,160 in 1919, and \$351,669 in 1914 by establishments assigned to the "toilet" and "all other" groups and to other classifications, principally "paints." "All other" brushes to the value of \$274,762 in 1919 and \$946,283 in 1914 were reported by establishments in other classifications.

BUTTONS.

Plain and fancy buttons 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. General statistics for the industry for the census years from 1849 to 1919, inclusive, are given in Table 225.

Table 173 shows the quantities and values of the various kinds of buttons manufactured in 1919 and 1914.

TABLE 173.—BUTTONS: 1919 AND 1914.

KIND.	1919		1914	
	Quantity (gross).	Value.	Quantity (gross).	Value.
Products, total value ¹		\$41,840,459		\$20,711,979
Buttons.....	68,981,823	34,550,707	62,318,824	16,121,873
Bone.....	2,170,800	509,105	2,198,946	329,934
Celluloid, plastic.....	2,210,181	3,323,148	623,169	724,354
Collar and cuff.....	974,140	80,114	1,771,053	56,251
Glass.....	570,949	200,948	217,224	100,201
Horn.....	2,574,822	1,110,957	537,096	299,487
Metal (not including trouser, or collar and cuff)—				
Dress or uniform.....	338,026	433,888	257,823	283,352
All other.....	433,341	183,093	614,740	172,133
Pearl or shell—				
Fresh-water.....	23,969,125	8,199,639	21,664,436	4,879,844
Ocean.....	5,892,344	6,564,105	4,516,969	2,489,364
Shoe.....	5,295,169	632,217	15,820,037	610,796
Covered.....	2,871,980	1,769,162	3,017,436	1,600,178
Trouser.....	8,113,327	2,811,991	6,694,795	2,337,059
Ivory or vegetable ivory (not including trouser).....	7,835,296	7,676,455	3,221,163	1,842,760
Others, not specified.....	5,732,317	1,001,915	1,463,937	396,180
Parts of buttons.....	3,554,122	1,069,705	388,201	111,325
Blanks or mold.....	13,082,734	3,091,971	14,304,148	2,349,406
Snap fasteners and clasps ²	377,798	193,054	1,150,046	411,385
All other products.....		2,025,932		1,717,990

¹ In addition, in 1919, buttons to the value of \$1,147,093 were manufactured by establishments engaged primarily in other industries; and, in 1914, to the value of \$482,061.

² In 1919 approximately 2,122,000 great gross of snap fasteners were reported by manufacturers of needles, pins, and hooks and eyes, and in 1914, approximately 280,000 great gross.

DAIRYMEN'S, POULTRYMEN'S, AND APIARISTS' SUPPLIES.

This classification covers establishments manufacturing (1) incubators and brooders; (2) other poultrymen's supplies, which include coops of iron or wood, hovers, houses, incubator regulators, egg carriers, exercisers, 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; (3) cream separators, centrifugal and gravity, and accessories; (4) other dairymen's supplies, which include automatic sanitary butter machines; butter workers, vats, colors, packers, ladles, cutters, printers, and molds; cheese boxes, hoops, presses, and bandages; rennet extract and lactic ferment; ripeners; junket tablets; creamery machinery and supplies; churns, barrel, dash, and other; dairy tinware; ice-cream freezers; milk cans, tanks, measures, and coolers; bottle sterilizers and fillers; milk testers; capping machines, caps, and rings; pasteurizers; portable stalls; skim-milk weighers; washers and sinks; tanks of steel or cypress; and milking machines; and (5) products intended for apiarists' use, including bee escapes, bee veils, comb foundation, hives, and honey boxes and sections. Table 167 gives separate statistics for these five groups.

In addition to the products shown in the table, incubators and brooders to the value of \$111,908, other poultrymen's supplies to the value of \$397,539, cream separators to the value of \$455,348, other dairymen's supplies to the value of \$190,092, and apiarists' supplies to the value of \$118,563 were reported in 1919 by establishments assigned to other industries. The statistics for 1919, 1914, 1909, and 1904 are the only figures available, the industry having been merged with others in the classifications employed prior to 1904. (See Table 225.)

DENTAL GOODS.

The statistics for establishments in this classification are grouped so as to give separate figures for the manufacture of (1) teeth and (2) all other dental goods, consisting principally of dental alloys; carborundum disks and wheels; paper and emery cloth disks; casting machines; cauterizing supplies and cotton pellets; dental files; filling materials; fine gold and silver plate and anodes; gold cups, plates, and crown and bridge work; gold foil, cylinders, and shells; solders and wire; impression materials; linen and celluloid finishing strips; mandrels; working compounds; nerve branches; dental plasters; platenoid specialties; aluminum plates; polishing cups; porcelain enamel; rubber plate work and suction plates and cups; swages; and wax preparations.

Table 167 gives separate statistics for the two groups of establishments. There is considerable overlapping between these two groups. General statistics for the industry for the censuses from 1859 to 1919, inclusive, are presented in Table 225.

ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES.

Establishments manufacturing machinery and apparatus employed directly in the generation, storage, transmission, or ultimate use of electrical energy are included in this classification. Dynamos, transformers, switchboards, motors, and auxiliary apparatus, batteries, carbons, arc and incandescent lamps, telegraph and telephone apparatus, electric heating apparatus, measuring instruments, mine and railway locomotives, insulated wires and cables, and magnetoignition apparatus are the principal products, some of which are reported in considerable variety, as shown by Table 174. Table 225 represents comparable statistics for the industry for the censuses from 1879 to 1919, inclusive.

Table 174 gives for the census years 1904 to 1919, inclusive, statistics for all products of establishments in the industry and those for electrical machinery, apparatus, and supplies made by establishments in other industries. In general the highest rates of increase follow the development of the automobile industry, as shown by the statistics for small dynamos and automobile starter-generator sets, magnetoignition apparatus, spark-plugs, coils, etc.

TABLE 174.—ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
Products, total value.....	\$1,063,526,297	\$359,432,165	\$240,037,479	\$159,551,402
The electrical industry.—Electrical machinery, apparatus, and supplies.....	\$907,908,119	\$335,170,194	\$221,308,563	\$140,800,309
Subsidiary electrical products of other industries.....	65,558,178	24,261,961	18,728,916	18,742,033
Generating apparatus and parts, value.....	\$80,266,114	\$17,805,542	\$14,077,071	\$11,084,234
Generators (other than small dynamos under 10 kw.):				
Alternating current—				
Steam-turbine driven, under 2,000 kva.—				
Number.....	532			
Kilowatts.....	665,971			
Value.....	(1)			
Steam-turbine driven, 2,000 kva. or over—				
Number.....	144	375		
Kilowatts.....	1,230,827	600,185	2,000	1,324
Value.....	\$8,262,802	\$3,895,291	691,728	355,832
Other, including water-wheel driven—			\$8,370,524	\$4,111,104
Number.....	3,123	2,137		
Kilowatts.....	821,507	587,820		
Value.....	\$4,403,290	\$3,542,154		

¹ Value included with that of generators of 2,000 kva. or over, to avoid disclosure of individual operations.

TABLE 174.—ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
Generating apparatus and parts—Continued.				
Generators—Continued.				
Direct current—				
Steam-turbine driven—				
Number.....	2,262	264		
Kilowatts.....	408,866	14,916		
Value.....	\$2,704,563	\$393,379		
Other, including water-wheel driven—				
Number.....	4,345	9,369	13,882	13,756
Kilowatts.....	485,266	206,305	414,222	640,350
Value.....	\$3,937,080	\$2,569,086	\$4,710,524	\$6,973,130
Small dynamos (under 10 kw), starting motors, and automotive generators, not including control equipment, value.....	\$36,662,797	\$5,933,273		
Self-contained lighting outfits (as farm-lighting outfits)—				
Number.....	61,357	(1)	(1)	(1)
Value.....	\$24,078,536	(1)	(1)	(1)
Parts and supplies, value.....	\$6,217,046	\$1,527,359	\$906,023	(2)
Transformers and feeder potential regulators, total value.....	\$53,495,570	\$28,276,338	\$14,630,715	\$7,142,026
Transformers:				
Number.....	382,929	115,843	76,729	66,698
Kilowatts.....	14,484,179	2,644,794	1,635,429	728,181
Value.....	\$25,500,901	\$13,120,065	\$8,801,019	\$4,468,567
Under 50 kilowatts—				
Number.....	331,099	110,177	72,776	63,311
Value.....	\$10,613,234	\$7,316,615	\$4,184,832	\$3,292,207
50 to 500 kilowatts—				
Number.....	50,661	4,857		
Value.....	\$9,199,762	\$2,625,414		
500 kilowatts or over—				
Number.....	1,169	809	3,953	3,387
Value.....	\$5,747,905	\$3,178,036	\$4,616,187	\$1,176,360
Rheostats, resistances, controllers, motor starters, speed-controlling devices, reactances, regulators, etc., value.....	\$23,083,265	\$9,788,378	\$2,674,963	\$932,925
Converting apparatus—synchronous condensers, motor generator sets, double-current generators, dynamotors, frequency changers, and rotary-phase converters.....	\$4,851,404	\$5,367,895	\$3,154,733	\$1,740,534
Motors, parts, and supplies, total value.....	\$116,893,638	\$44,176,235	\$32,087,482	\$22,370,626
Stationary motors:				
Number.....	1,533,407	441,992	4257,223	492,175
Horsepower.....	3,791,062	42,882,795	42,410,369	41,392,091
Value.....	\$76,171,558	\$32,286,149	\$24,604,938	\$18,070,743
Direct current—				
Number.....	380,182	133,492		
Horsepower.....	734,691	980,820		
Value.....	\$20,200,313	\$13,316,489		
Alternating current—				
Under 200 horsepower—				
Number.....	1,151,286	284,500	257,223	92,175
Horsepower.....	2,559,526	1,901,975	2,410,369	1,392,091
Value.....	\$52,430,381	\$18,989,660	\$24,604,938	\$18,070,743
200 horsepower or over—				
Number.....	1,939			
Horsepower.....	496,845			
Value.....	\$3,540,864			
Marine motors:				
Number.....	2,630	(1)	(1)	(1)
Horsepower.....	8,428	(1)	(1)	(1)
Value.....	\$816,371	(1)	(1)	(1)
For vehicles and railways:				
Number.....	49,256	11,880	2,796	1,819
Horsepower.....	351,286	36,858	12,471	19,907
Value.....	\$6,355,102	\$1,351,442	\$294,152	\$152,685
For fans:				
Number.....	709,350	(2)	(2)	(2)
Horsepower.....	60,915	(2)	(2)	(2)
Value.....	\$9,908,001	\$4,835,850	\$2,450,739	\$1,168,254
For miscellaneous uses:				
Number.....	198,305	(2)	(2)	(2)
Horsepower.....	141,610	(2)	(2)	(2)
Value.....	\$4,920,311	\$1,190,564	\$1,942,874	\$2,978,944
Parts and supplies.....	\$18,722,295	\$4,512,230	\$2,794,779	(2)

1 No segregation reported.

2 Figures not available.

3 Rheostats and resistances only.

4 Includes railway motors.

5 Vehicle motors only.

TABLE 174.—ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
Electric locomotives, mining, industrial, and railway.....	\$8, 159, 825	\$3, 720, 914	(¹)	(¹)
Batteries, parts, and supplies, value.....	\$92, 463, 195	\$23, 402, 455	\$10, 612, 470	\$1, 263, 893
Storage.....	\$60, 036, 152	\$13, 080, 964	\$1, 678, 209	\$2, 645, 749
Value of batteries.....	\$56, 618, 317	\$10, 615, 150	\$1, 233, 984	\$1, 569, 371
Weight of plates, pounds.....	38, 438, 510	41, 079, 047	23, 119, 331	16, 113, 072
Value of parts and supplies.....	\$3, 987, 805	\$2, 465, 814	\$334, 225	\$1, 076, 378
Primary.....	\$32, 427, 043	\$10, 321, 491	\$5, 331, 261	\$1, 698, 144
Dry—				
Number.....	79, 300, 082			
Value.....	\$17, 805, 611	71, 082, 438	31, 988, 884	4, 888, 361
Dry, small, for flash lights—				
Number.....	91, 483, 894	\$8, 719, 161	\$4, 583, 082	\$513, 026
Value.....	\$7, 514, 833			
Liquid, including testing—				
Number.....	2, 050, 946	306, 351	344, 650	1, 734, 801
Value.....	\$3, 508, 624	\$402, 525	\$720, 513	\$515, 530
Value of parts and supplies.....	\$3, 597, 075	\$709, 802	\$621, 066	\$569, 588
Carbons—furnace, lighting, and welding; brushes, battery and miscellaneous.....	\$13, 291, 615	\$3, 662, 741	\$1, 934, 864	\$2, 710, 035
Arc lamps.....	\$606, 771	\$742, 142	\$1, 706, 959	\$1, 574, 422
Searchlights, projectors, and focusing lamps.....	\$4, 342, 246	\$2, 081, 545	\$955, 874	\$114, 795
Incandescent lamps, value.....	\$57, 646, 900	\$17, 350, 385	\$15, 714, 809	\$6, 963, 205
Tungsten—				
Number.....	211, 383, 193	74, 434, 050	11, 738, 619	
Value.....	\$46, 628, 343	\$11, 886, 354	\$6, 241, 133	112, 711, 558
Carbon filament—				
Number.....	13, 330, 273	14, 092, 055	55, 038, 378	\$6, 308, 299
Value.....	\$1, 830, 644	\$1, 397, 572	\$6, 157, 066	
Decorative and miniature lamps, X-ray bulbs, vacuum tubes, etc.....	\$5, 892, 211	\$1, 702, 720	\$600, 619	\$249, 751
Gem and vacuum and vapor lamps.....	\$2, 512, 435	\$2, 363, 730	\$2, 715, 991	\$395, 155
Other types.....	\$783, 267			
Rectifying apparatus, including rotating commutators, electric valves, mercury rectifiers, and vibrating commutators.....	\$1, 964, 876	\$147, 965	(¹)	(¹)
Telegraph apparatus.....	\$12, 816, 344	\$2, 248, 375	\$1, 957, 432	\$1, 111, 194
Intelligence (key, sounder, etc.), all kinds.....	\$2, 649, 365	\$201, 956	\$197, 669	\$187, 744
Police, fire, district, and miscellaneous.....	\$2, 002, 340	\$1, 253, 954	\$1, 126, 658	\$592, 070
Radio and wireless.....	\$7, 834, 698	\$672, 575	\$448, 262	\$114, 050
Switchboards, parts, and supplies.....	\$239, 938	\$119, 899	\$184, 843	\$217, 330
Telephone apparatus.....	\$46, 214, 342	\$22, 815, 640	\$14, 239, 357	\$15, 863, 698
Central switchboards:				
Manual—				
Central battery—				
Number.....	1, 330	(¹)		
Value.....	\$6, 500, 560	\$10, 701, 764		
Magneto—				
Number.....	4, 504	(¹)		
Value.....	\$1, 344, 404	\$374, 851		
Automatic, value.....	\$4, 327, 516	\$1, 082, 722		
Substation instruments:				
Central battery—				
Number.....	642, 093	641, 082	\$10, 137, 534	\$13, 227, 008
Value.....	\$3, 830, 978	\$3, 916, 809		
Magneto—				
Number.....	280, 502	216, 879		
Value.....	\$3, 276, 604	\$1, 799, 834		
Interior systems:				
Number.....	173, 709	62, 258		
Value.....	\$1, 678, 778	\$510, 569		
Private branch exchange switchboards—				
Number.....	6, 880	3, 693	2, 252	3, 917
Value.....	\$2, 287, 122	\$448, 203	\$369, 915	\$564, 795
Parts and supplies, value.....	\$23, 059, 380	\$4, 060, 888	\$4, 751, 908	\$2, 071, 895
Household and industrial apparatus and devices:				
Welding apparatus (not including motor generator sets).....	\$54, 793, 195	\$4, 048, 915	\$1, 954, 112	\$395, 827
Electric furnaces (for iron and steel and brass industries).....	\$2, 701, 378	\$231, 082	\$81, 505	(²)
Heaters (industrial heaters; air heaters, including those for cars; water heaters).....	\$1, 040, 337	(²)	(²)	(²)
Stoves and ranges.....	\$2, 889, 734	\$352, 617		
Miscellaneous cooking devices (griddles, grills, toasters, percolators, etc.).....	\$3, 444, 170	\$671, 413	\$919, 533	(²)
Flatirons.....	\$7, 815, 212	\$1, 327, 183		
	\$5, 646, 421	\$1, 466, 620	\$951, 074	(²)

¹ Figures not available.² Includes vacuum and vapor, and glower lamps only.³ Not reported separately.

TABLE 174.—ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES: 1919, 1914, 1909, AND 1904—Continued.

	1919	1914	1909	1904
Household and industrial apparatus and devices—Continued.				
Vacuum cleaners, vibrators, clippers, cutters, etc.	\$21,842,430	(¹)	(¹)	(¹)
Other portable motor-driven devices (motor built in)	\$6,985,800	(¹)	(¹)	(¹)
Other stationary motor-driven apparatus (motor built in)	\$2,427,695	(¹)	(¹)	(¹)
Electric measuring instruments	\$19,322,164	\$8,786,506	\$7,800,010	\$5,004,763
Station meters and apparatus	\$7,084,983	\$1,585,500	\$1,639,202	\$418,998
Testing and scientific instruments	\$3,336,172	\$1,073,060	\$546,970	\$1,000,685
Meters for consumers' circuits	\$8,901,009	\$0,127,946	\$5,613,838	\$3,585,050
Magnetoignition apparatus, generators, spark plugs, and coils	\$51,286,793	\$22,260,847	\$6,002,343	\$678,077
Switchboards, panel boards, and cut-out cabinets for light and power	\$17,735,780	\$8,989,111	\$5,971,804	\$3,766,044
Railway switches, signals, and attachments	\$4,466,611	\$6,393,551	\$5,377,843	\$1,451,337
Circuit breakers, oil	\$2,733,535	(¹)	(¹)	(¹)
Circuit breakers, air and carbon	\$1,391,911	(¹)	(¹)	(¹)
Fuses, cut-outs, and fuse plugs	\$7,895,098	\$1,757,430	\$1,001,719	\$868,079
Insulators	\$6,504,147	(¹)	(¹)	(¹)
Sockets, receptacles, bases, and attachment plugs	\$15,008,365	\$5,512,609	\$1,521,729	\$2,010,860
Wiring supplies (current carrier)	\$6,857,819	(¹)	(¹)	(¹)
Lightning arresters, choke coils, reactors, and other protective devices	\$2,353,416	\$1,188,773	\$940,171	\$587,124
Insulated wire	\$67,578,732	\$60,505,573	\$51,624,737	\$34,519,699
Insulated cables, rubber insulation	\$34,314,305			
Insulated cables, paper insulation	\$20,789,302			
Pole-line hardware	\$9,379,145	(¹)	(¹)	(¹)
Circuit fittings, not elsewhere provided for	\$5,052,904	\$2,067,683	\$1,080,287	\$3,525,446
Underground conduits	\$890,749	\$4,874,709	\$5,098,264	\$2,416,245
Interior conduits	\$18,375,880			
Electric-lighting fixtures of all kinds ^a	\$2,703,266	\$3,383,955	\$2,200,668	\$3,294,606
Annunciators and push buttons	\$709,941	\$263,806	\$235,567	\$185,870
Electric clocks and time mechanisms	\$1,797,909	\$410,774	\$352,513	\$373,926
Bells, buzzers, and signal gongs	\$3,616,281	(¹)	(¹)	(¹)
Therapeutic apparatus, including X-ray tubes	\$8,895,402	\$2,653,098	\$1,107,858	\$1,036,962
All other electrical machinery, apparatus, and supplies	\$95,232,300	\$27,276,294	\$18,995,176	\$20,267,509
All other products	\$76,573,808	\$17,951,652	\$17,765,645	
Amount received for custom work and repairing	\$27,106,016	\$5,676,592		

¹ Not reported separately.^a Reported as "electric switches, signals, and attachments."^b Not including fixtures made by establishments engaged primarily in the manufacture of "gas and electric fixtures."

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 classification. The kinds of goods enameled include metallic art tile, automobile parts, badges, bathtubs, bedsteads, bicycles, conduit pipe, signs, 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 enameled 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." For 1909, 1914, and 1919 the bureau employed, in part, the method of classification used prior to 1899. In 1909 "enameling" was shown as a subgroup under "enameling and japanning," and in 1919 and 1914 as a separate industry, "enameled goods" being added to "stamped ware," and the classification designated "stamped and enameled ware, not elsewhere specified." This change transferred several large establishments enameling their own stamped ware from "enameling and enameled goods," under which they were placed for 1904 and 1899, to "stamped and enameled ware" for 1909, 1914, and 1919, so that the statistics for some of the earlier censuses as shown in Table 225 are not comparable with those for the three years named. At the census of 1899 one establishment with products valued at \$10,000 was reported under "enameling."

In addition to the products covered by the table, enameling to the value of \$47,565 in 1919 and \$19,451 in 1914 was reported by establishments assigned to other classifications.

ENGRAVERS' MATERIALS.

Establishments in this classification are engaged primarily in the preparation of boxwood for engravers' use, cherry and maple 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 225 presents comparable statistics for the censuses from 1879 to 1919, inclusive.

In addition to the products covered by the table, engravers' materials valued at \$90,807 in 1919, \$29,332 in 1914, and \$87,414 in 1909 were reported by establishments engaged primarily in the manufacture of other products. There is some overlapping between this industry and others, such as "engraving, wood," and "photo-engraving." 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.

Establishments assigned to this industry make a wide variety of articles. 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; burnt-wood novelties; calendars (novelty); candle and electric-light shades of paper and silk; cane mounts; college goods—pennants, pillow tops, etc.; composition ornaments; cork-screws; corn files; decalcomania; decorative goods covered with moss, bark, leather, etc.; fan handles and fans; hand-painted silk novelties; jewel bags and powder puffs; ladies' belt and bag stands and racks; mail boxes; 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; picture puzzles; tally cards; pipe cases; fancy receptacles for ice cream, punches, etc.; salt and pepper shakers; sachet cases; theatrical and costumers' supplies; thermos bottles; tourists' cups; tweezers; and umbrella tassels. Articles similar to those included in this group, but for which separate values were not reported, were also manufactured to some extent by establishments assigned to the classification, "ivory, shell, and bone work, not including combs and hairpins."

Table 167 shows separate statistics for those establishments whose chief products were (1) beadwork (bead and glass necklaces, beaded bags, collars, lamp shades, and novelties), (2) celluloid novelties, (3) metal novelties, (4) paper novelties, (5) wood novelties, and (6) all other fancy articles not specified, such as novelties made of cloth, leather, felt, hair, ribbon, glass, etc.

Establishments assigned to other classifications reported fancy articles similar to those enumerated to the value of \$5,755,665 in 1919, and \$2,327,866 in 1914. This amount is not included in the value of products covered by the table. Statistics for the industry for each census from 1879 to 1919, inclusive, are presented in Table 225. Those for 1869 are not comparable, and the close relation between this industry and certain others may affect the comparability of the data for the later censuses.

IVORY, SHELL, AND BONE WORK, NOT INCLUDING COMBS AND HAIRPINS.

The products of establishments in this industry include a wide variety of articles for use or ornament, such as mosaics; whip handles; devices for curling hair; knife handles and tips; fobs; collar supports; novelties of various sorts; napkin rings; pacifier and teething rings; buckles, slides, and other fittings for jewelers' use; letter openers; handles and settings for umbrellas, whisk brooms, etc.; manicure implements; watch chains; hatpins; stick pins; inlaying for musical instruments, 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. General statistics for the industry are given in Table 225 for the census years from 1849 to 1919, inclusive.

In addition to the products covered by the table, ivory, shell, and bone work to the value of \$92,722 in 1919 and \$250,608 in 1914 was reported by establishments assigned to other classifications. Articles similar in character, but for which separate values were not reported, were manufactured by establishments classified as "fancy articles, not elsewhere specified." 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."

COMBS AND HAIRPINS, NOT MADE FROM METAL OR RUBBER.

Combs and hairpins for dressing or ornamenting the hair are the principal products of establishments in this classification. Among the materials of which these combs and hairpins are made are fiber, bone, horn, tortoise shell, celluloid, and ivory. Novelties for ladies' headdress, barrettes, hair-puff pins, hair ornaments, and comb mountings are included. The statistics for the manufacture of hairpins and of combs were combined for 1909. For prior years the figures are for combs only, the production of hairpins being included in other classifications. The statistics for 1919 and 1914 do not include figures for rubber combs and hairpins or for metal hairpins. The former are included with "rubber tires, tubes, and rubber goods, not elsewhere specified," and the latter with "needles, pins, and hooks and eyes."

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 the comb and hairpin industry. Combs and hairpins were manufactured to some extent in establishments reported under "fancy articles, not elsewhere specified," and "ivory, shell, and bone work, not including combs and hairpins," but separate values were not reported for these articles, and it is, therefore, impossible to indicate the extent of overlapping in the products of the three industries.

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. Statistics for the industry for the census years from 1879 to 1919, inclusive, are given in Table 225. In addition to the products covered by the table, chemical fire extinguishers to the value of \$163,945 in 1919, \$404,364 in 1914, and \$56,572 in 1909 were reported by establishments engaged primarily in other industries.

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, colored fire, lances, electric sparklers, fire-crackers, paper balloons, and roman candles. Statistics for the industry for the census years from 1859 to 1919 are given in Table 225. The manufacture of explosives, which was included with that of fireworks in 1879, has been placed in a separate classification at subsequent censuses. 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 mixed sand and bituminous coal facings; dry sand and loam facings; plumbago and sea-coal facings; the soapstone and charcoal facings used to keep the metal from contact with the molding sand; 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, pipe blacking, cement filler, etc.; and foundry flour, plumbago, soapstone, and welding compounds.

It is probable that some foundries make their own facings and other supplies. If so, these are not generally reported separately. The industry was first reported separately at the census of 1859, as "foundry facings." Seven establishments in that year 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. Table 225 gives statistics for the census years from 1879 to 1919, inclusive.

In addition to the products covered by the table, foundry supplies to the value of \$209,580 in 1919 and \$78,992 in 1914 were reported by establishments assigned to other industries.

FUEL, MANUFACTURED.

Briquettes made of bituminous coal and anthracite dust mixed with tar and pitch as a binder; briquettes of crude carbon, a by-product of oil-gas generators; coal-ette; 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 industry. This classification first appeared at the census of 1879, when one establishment reported 70 wage earners and products valued at \$102,000. For 1889 two establishments were reported, but no separate statistics could be shown. Table 225 presents statistics for the censuses of 1919, 1914, and 1909. According to the annual report of the United States Geological Survey the production of briquetted fuel in 1919 amounted to 295,734 tons of 2,000 pounds, valued at \$2,301,054 and in 1914 to 250,635 tons, valued at \$1,154,678. In addition to the products covered by Table 225, manufactured fuel to the value of \$384,779 was reported by establishments assigned to other classifications in 1919.

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 coats and cloaks, fur and fur-lined overcoats, other fur garments, fur robes, and fur hats, caps, gloves, and mittens. Various other minor products were reported, including bands, rugs, tippets, heads, tails, and paws. The principal kinds of fur skins used are bear; caracal; coney; ermine; fox; hare; lynx; marmot; marten; mink; muskrat; beaver; rabbit; Chinese weasel; wildcat; 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-fur industry. Table 225 presents statistics for the industry for the census years from 1889 to 1919, inclusive.

At the census of 1859, 95 establishments were reported under "furs," and for 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 table, fur goods to the value of \$2,421,327 in 1919, \$813,550 in 1914, and \$532,781 in 1909 were reported by establishments engaged primarily in other industries.

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 and dyeing of the pelts. Hatters' fur, dressed hair, and bristles are also reported as products. Sheepskins with the wool on and horse and cattle hides are tanned and finished by some establishments. Statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225. 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 the output of some establishments manufacturing fur goods which dressed their own materials.

In addition to the products covered by the table, dressed furs to the value of \$1,207,049 in 1919 and \$8,850 in 1914 were reported by establishments assigned to other classifications.

GRAPHITE, GROUND AND REFINED.

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. Statistics for the industry for the census years from 1879 to 1919, inclusive, are given in Table 225.

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 granite. There is some overlapping between this

industry and the manufacture of foundry supplies, crucibles, and lead pencils, graphite made for sale to the value of \$526,773 in 1919 and \$687,217 in 1914 being reported by these manufacturers.

HAIR WORK.

Establishments in this classification clean, bleach, curl, and otherwise prepare human hair, including that of Chinese and Japanese, mohair and yak, horse, camel, and other hairs, and manufacture them into articles of adornment. The products include ornamental hair work, puffs, rats, refined yak hair, rolls, theatrical and other wigs, toupees, transformations, foundations, switches, fronts, braids, beards, bangs, turbans and turban pads, waves, and wavy hair for switches and wigs. Table 225 presents comparable statistics for the census years from 1849 to 1919, inclusive. Prior to 1899 the returns included small local establishments manufacturing chiefly to individual order. In addition to the products covered by the table, hair work to the value of \$91,762 in 1919 and \$11,615 in 1914 was reported by establishments assigned to other industries.

HAND STAMPS AND STENCILS AND BRANDS.

These classifications include, respectively, establishments manufacturing hand stamps and those manufacturing stencils and brands. Separate statistics for the two industries are given in Table 225, but there is so great an overlapping in the products that the combined figures are shown in Table 175.

TABLE 175.—HAND STAMPS AND STENCILS AND BRANDS: 1879 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
				Expressed in thousands.				
1919.....	382	2,136	1,848	\$5,361	\$2,262	\$3,148	\$9,337	\$6,189
1914.....	384	1,767	1,384	3,136	1,149	1,425	4,486	3,061
1909.....	361	1,651	903	2,439	952	1,127	3,673	2,546
1904.....	327	1,506	721	1,915	797	737	2,811	2,074
1899.....	360	1,470	462	1,736	696	663	2,611	1,948
1889.....	340	1,062	149	1,444	554	600	2,316	1,716
1879.....	150	468	(¹)	328	223	248	791	543

¹ Figures not available.

Hand stamps.—The establishments included in this classification manufacture principally rubber and metal stamps, dies, seals, and presses, steel letters and figures, door and name plates, metal badges and checks, check protectors, time stamps, numbering machines, rubber type, copper and brass stamps for marking textiles, and steel shoe stamps. General statistics for the industry are given in Table 225 for the census years 1869 to 1919, inclusive. In addition to the products covered by the table, hand stamps to the value of \$245,753 were reported in 1919 and \$229,754 in 1914 by establishments assigned to other classifications.

Stencils and brands.—Establishments in this industry manufacture principally stencils of metal, cardboard, or other material, for use in painting and marking or in addressing machines; and branding irons or irons to be heated and used in marking casks, boxes, articles of merchandise, etc. Stencil cutters and punchers are also reported as subsidiary products. Statistics for the census of 1859 and for each subsequent census except that of 1869 are given in Table 225. In addition to the products covered by the table, stencils and brands to the value of \$179,298 in 1919 and \$231,372 in 1914 were reported by establishments assigned to other classifications.

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. (See Table 225.) In addition to the products covered by the table, straw hats to the value of \$1,590,160 in 1919, \$2,474,553 in 1914, and \$1,271,973 in 1909 were reported by establishments assigned to 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.

TABLE 176.—ICE, MANUFACTURED: 1919, 1914, 1909, AND 1904.

	1919	1914	1909	1904
QUANTITY AND COST OF AMMONIA.				
Total cost.....	\$2,658,658	\$1,887,359	(1)	(1)
The ice industry.....	\$2,410,100	\$1,528,975	\$1,021,913	\$613,138
Other industries manufacturing ice as a subsidiary product.....	\$248,558	\$358,384	(1)	(1)
Anhydrous—				
Pounds.....	7,758,984	6,777,617	(1)	(1)
The ice industry.....	7,003,581	5,405,917	3,466,284	1,932,497
Other industries.....	755,403	1,371,700		
Used in—				
Compressor system.....	6,875,012	6,021,506	(1)	(1)
Absorption system.....	883,972	756,111		
Cost.....	\$2,519,427	\$1,777,095	(1)	(1)
The ice industry.....	\$2,274,880	\$1,421,196	\$926,505	\$522,275
Other industries.....	\$244,538	\$355,899	(1)	
Aqua—				
Pounds.....	1,740,825	1,071,046	(1)	(1)
The ice industry.....	1,675,626	1,027,664	1,670,698	1,495,934
Other industries.....	65,199	43,382		
Used in—				
Compressor system.....	94,102	(1)	(1)	(1)
Absorption system.....	1,646,723	1,071,046	(1)	(1)
Cost.....	\$139,231	\$110,264	(1)	(1)
The ice industry.....	\$135,211	\$107,779	\$35,408	\$90,803
Other industries.....	\$4,020	\$2,485	(1)	(1)
PRODUCTS.				
Total value.....	\$149,515,630	\$67,320,353	\$47,202,845	\$25,689,957
The ice industry.....	\$137,061,798	\$60,386,267	\$42,953,055	\$23,790,045
Subsidiary products from other industries.....	\$12,510,832	\$6,934,086	\$4,249,790	\$1,899,912
Ice:				
Tons (2,000 pounds).....	27,948,463	21,043,003	14,230,208	8,014,137
The ice industry.....	25,292,846	18,324,691	12,647,949	7,190,448
Other industries.....	2,655,617	2,718,312	1,582,259	814,689
Value.....	\$138,795,342	\$62,192,413	\$44,139,053	\$24,350,415
The ice industry.....	\$126,284,510	\$55,268,327	\$39,889,263	\$22,450,503
Other industries.....	\$12,510,832	\$6,934,086	\$4,249,790	\$1,899,912
By kinds—				
Can ice—				
Tons.....	26,577,637	19,635,368	13,177,991	(1)
The ice industry.....	24,083,632	17,145,590	11,671,547	6,695,789
Other industries.....	2,494,005	2,489,769	1,506,444	(1)
Value.....	\$133,082,307	\$58,693,861	\$41,123,901	(1)
The ice industry.....	\$121,235,615	\$52,150,488	\$37,085,533	\$21,020,547
Other industries.....	\$11,846,692	\$6,443,373	\$4,038,368	(1)
Plate ice—				
Tons.....	1,370,826	1,407,695	1,052,217	(1)
The ice industry.....	1,209,214	1,179,092	970,402	503,659
Other industries.....	161,612	228,603	75,815	(1)
Value.....	\$5,713,035	\$3,698,552	\$3,015,152	(1)
The ice industry.....	\$5,048,895	\$3,107,839	\$2,803,730	\$1,420,956
Other industries.....	\$664,140	\$490,713	\$211,422	(1)
Cold storage receipts.....	\$7,142,998	\$5,127,940	\$3,063,792	\$1,339,542
All other products.....	\$3,577,290			
EQUIPMENT.				
Machines:				
Number.....	5,323	4,949	(1)	(1)
Capacity, tons (per day of 24 hours).....	269,179	129,998		
Storage space, cubic feet:				
For ice storage.....	115,313,000	100,574,000		
For cold storage.....	79,953,000	82,694,000		

¹ Figures not available.

The statistics represent the production of ice for sale by establishments classified in this industry, but breweries, creameries, and meat-packing establishments often manufacture ice for sale as well as for their own use. General statistics for the industry are given in Table 225 for the census years from 1869 to 1919, inclusive.

Table 176 (p. 256) shows the quantities and cost of the ammonia used and the quantities and values of ice produced for 1919, 1914, 1909, and 1904.

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, aseptic hospital furniture; auriphones; automobile speed indicators and odometers; barometers; Bunsen burners; coal-testing apparatus; combustion furnaces; dental mirrors, dental-engine equipments, and other dental appliances; drafting instruments; embalming instruments; engineer transits and levels; eye, ear, and nose instruments; gauge dials; glass syringes; head mirrors; high-frequency vacuum electrodes; hydrometers; hypodermic syringes and needles; marine compasses, binnacles, and binnacle lamps; mercury testing columns; micrometers and micrometer gauges; ophthalmoscopes; optical projection apparatus; oven indicators; oxygenators; perimeters; pitometers and photopitometers; platinum burner points, needles, etc.; prisms; pulmotors; pyrometers; range-finder telescopes; rifle telescopes; retinasopes; speed indicators (for machinery); saccharometers; spectroscopes; telescopes; textile microscopes (thread-counting instruments); thermometers; throat mirrors; vulcanizers; weights and measures; and wind gauges. Table 167 gives separate statistics for those establishments whose products of chief value were medical and surgical instruments; for those making optical instruments; and for those manufacturing all other instruments, which include those for scientific, educational, and commercial purposes.

In addition to the products covered by the table, medical and surgical instruments to the value of \$606,754, optical instruments to the value of \$497,567, and "all other" to the value of \$4,223,936, making a total of \$5,328,257 in 1919, as compared with a total of \$1,941,589 in 1914 and \$299,149 in 1909, were reported by establishments assigned to other industries.

General statistics for the industry are given in Table 225 for the censuses from 1849 to 1919, inclusive. There are so many classifications 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.

JAPANING.

Most of the work done by establishments in this classification consists of the japaning and decorating of sheet metals, castings, sewing-machine parts, automobile parts, tags, zinc for shoe-lace tips, wood, brass beds, gas and electric fixtures, jewelry, paper, 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. General statistics for the census years from 1849 to 1919, inclusive, are given in Table 225.

For 1909, 1914, and 1919, establishments manufacturing lacquered and lithographed tin boxes were included under "boxes, paper and other, not elsewhere specified," instead of under "japaning," as in 1904. This difference in classification accounts for the decrease shown.

JEWELRY AND INSTRUMENT CASES.

Establishments in this classification manufacture principally leather, metal, and wooden boxes, cases, bags, and trays, lined with plush, satin, silk, cotton, 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, articles for religious use, pipes, fountain pens, stationery articles, novelties, toilet sets, scissors, files, and silverware. Statistics for the industry for the census years from 1859 to 1919 are given in Table 225.

In addition to the products covered by the table, jewelry and instrument cases to the value of \$726,394 in 1919, \$115,368 in 1914, and \$215,571 in 1909 were reported by establishments engaged primarily in other industries.

Because of the overlapping between this industry and others, comparisons of 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, onyx, beryl, garnet, spodumene, shell cameos, and other precious and semiprecious stones, and the drilling of pearls 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 surveyor's and electrical instruments and for watches and chronometers, and real and imitation stones for emblems. Statistics for the industry for the census years from 1859 to 1919, inclusive, are given in Table 225. 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.

MATTRESSES AND SPRING BEDS, NOT ELSEWHERE SPECIFIED.

The manufacture of quilted or otherwise fastened mattresses filled with cotton, curled hair, excelsior, feathers, felt, fiber, leather tufts, shoddy, tow, husk, etc., and the fabrication of wire springs, either plain or woven, for use on beds, couches, and cots, are the principal lines of industry followed by establishments in this classification. Spiral springs and spring cushions for hospital use, and renovated mattresses, feather pillows, beds and cots, were also reported. Statistics for the industry for each census year from 1879 to 1919 are given in Table 225. 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.

In addition to the products covered by the table, mattresses and spring beds to the value of \$11,535,108 in 1919, \$3,342,390 in 1914, and \$1,408,649 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

MODELS AND PATTERNS, NOT INCLUDING PAPER PATTERNS.

Establishments in this classification manufacture principally patterns or models for making matrices or cavities into which molten lead is poured for casting, but also produce both miniature and full-sized representations of the castings or other objects to be made, and forms on which to display textiles, hair work, or other goods, etc. These products are made for the most part of various metals—including aluminum, spelter, and lead—papier-mâché, plaster, rubber, wax, and wood. Table 225 presents general statistics for the industry for the census years from 1849 to 1919, inclusive.

In addition to the products covered by the table, models and patterns to the value of \$1,105,565 in 1919, \$351,391 in 1914, and \$401,683 in 1909 were reported by establishments assigned to other industries.

MUCILAGE, PASTE, AND OTHER ADHESIVES, NOT ELSEWHERE SPECIFIED.

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 (rubber, leather, asbestos, vulcanizing, elastic, and roofing) are the principal products of establishments in this classification. Among products not clearly indicated by this description are sealing wax and compounds of various sorts, pneumatic-tire fillers, and sizing. The manufacture of glue is not included. Statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225. 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.

In addition to the products covered by the table, mucilage and paste to the value of \$1,396,955 in 1919, \$853,471 in 1914, and \$659,736 in 1909 were reported by establishments assigned to other classifications.

MUSICAL INSTRUMENTS AND MATERIALS.

This group includes statistics for five classes of establishments engaged in the manufacture of pianos; organs; piano and organ materials; metal and stringed instruments and materials; and phonographs, graphophones, and talking machines. Table 225 presents separate statistics for each of the five industries, and table 177 gives combined figures for the census years from 1849 to 1919, inclusive.

TABLE 177.—MUSICAL INSTRUMENTS AND MATERIALS: 1840 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1910.....	778	68,741	91,258	\$268,319	\$75,868	\$137,460	\$320,905	\$183,445
1914.....	737	48,768	57,902	168,618	30,856	49,324	119,689	70,365
1909.....	712	45,041	49,417	120,895	26,594	47,754	104,744	56,990
1904.....	639	38,617	34,259	80,966	21,373	33,278	79,811	46,533
1899.....	630	24,981	23,288	51,054	13,383	19,404	46,665	27,261
1890.....	674	18,096	11,788	29,650	11,649	14,436	36,868	22,432
1880.....	429	11,350	(²)	14,447	7,099	8,361	19,255	10,894
1870.....	337	7,167	2,018	9,555	5,107	4,835	13,906	9,071
1860.....	248	4,758	(²)	4,623	2,530	2,325	6,968	4,643
1850.....	204	2,331	(²)	1,546	1,055	698	2,581	1,883

¹ Exclusive of two establishments reported under "all other industries" in 1880.

² Figures not available.

Pianos and organs.—General statistics for the manufacture of each of these two classes of musical instruments are presented in Table 225 for 1859 and for the census years from 1904 to 1919, inclusive.

Table 178 presents statistics for the number and value of organs and pianos manufactured during 1919, 1914, and 1909.

TABLE 178.—PIANOS AND ORGANS: 1919, 1914, AND 1909.

PRODUCT.	1919	1914	1909
Total value ¹	\$113,061,318	\$69,072,383	\$70,056,223
Pianos:			
Number.....	336,557	326,274	364,545
Value.....	\$94,521,930	\$56,311,803	\$58,493,846
Upright—			
Without player attachment—			
Number.....	135,999	227,686	321,309
Value.....	\$28,957,498	\$31,431,382	\$45,180,176
With player attachment—			
Number.....	174,729	88,078	34,495
Value.....	\$52,515,928	\$20,265,514	\$9,275,001
Grand—			
Baby grand—			
Without player attachment—			
Number.....	17,900	9,670	8,720
Value.....	\$8,619,054	\$4,201,302	\$4,009,769
With player attachment—			
Number.....	2,034	831	21
Value.....	\$1,711,314	\$413,665	\$28,900
Parlor—			
Without player attachment—			
Number.....	2,172		
Value.....	\$1,109,501		
With player attachment—			
Number.....	125		
Value.....	\$119,378		
Concert—			
Number.....	87	(²)	(²)
Value.....	\$54,055		
Automatic—			
Number.....	2,145		
Value.....	\$896,346		
Electric—			
Number.....	1,366		
Value.....	\$538,865		
Player attachments and actions made separately—			
Number.....	21,822	6,493	10,598
Value.....	\$1,840,438	\$854,774	\$1,474,660
Organs—			
Number.....	28,301	42,806	65,335
Value.....	\$6,620,616	\$6,378,312	\$5,309,016
Pipe—			
Number.....	1,151	2,273	1,224
Value.....	\$4,185,535	\$4,660,301	\$2,713,587

¹ In addition, products to the value of \$1,382,353 in 1919 and \$754,148 in 1914 were reported by establishments engaged primarily in other industries.

² Not reported separately.

TABLE 178.—PIANOS AND ORGANS: 1919, 1914, AND 1909—Continued.

PRODUCT.	1919	1914	1909
Organs—Continued.			
Reed—			
Number.....	26,429	40,533	61,111
Value.....	\$1,888,677	\$1,718,011	\$2,505,429
Orchestrions—			
Number.....	721		
Value.....	\$546,494		
Perforated music rolls, value.....	\$3,193,554	\$833,357	\$216,150
Parts, materials, and supplies.....	\$1,432,797		
Pianos and organs, value.....	\$1,258,303	\$2,913,197	\$2,442,611
Other musical instruments, value.....	\$174,494		
Repairs, value.....	\$1,252,156		
All other products, value.....	\$1,280,818	\$1,780,880	\$2,119,970

Piano and organ materials.—Establishments in this classification make various parts used in the manufacture of pianos, organs, and players. These include piano strings, plates, keys, actions, keyboards, cases, back frames, pedal attachments, hammers, sounding boards, legs, trusses, etc.; organ reeds and reed boards, pipes, pipe-organ actions, pipe feet, stops, knobs, stems and tablets, keyboards, pedals and pumping pedals, reed poles, and tremolos; piano and organ hardware, etc. Table 167 shows separate statistics for those establishments whose product of chief value was piano materials and for those engaged primarily in the manufacture of organ materials. General statistics for the industry for the census years from 1904 to 1919 are given in Table 225. Prior to 1904 piano materials were included with pianos, and organ materials with organs.

TABLE 179.—PHONOGRAPHS AND GRAPHOPHONES: 1919, 1914, 1909, AND 1904.

PRODUCT.	1919	1914	1909	1904
Total value	\$158,547,870	\$27,115,916	\$11,725,996	\$10,237,075
Phonographs, graphophones, and talking machines: ¹				
For disc records—				
Number.....	2,137,596			
Value.....	\$88,836,368			
For cylinder records—				
Number.....	65,957	514,154	344,681	(²)
Value.....	\$1,315,886	\$15,290,491	\$5,406,684	\$2,966,343
Dictating machines—				
Number.....	22,853			
Value.....	\$1,416,689			
Records and blanks—				
Number.....	106,996,510	27,221,290	27,183,959	(²)
Value.....	\$44,689,795	\$11,111,418	\$6,007,104	\$4,678,547
Disc records—				
Number.....	101,084,961	23,314,176	8,572,895	(²)
Value.....	\$42,930,923	\$10,377,475	\$2,567,717	
Cylinder records and blanks—				
Number.....	5,911,549	3,907,114	18,611,154	(²)
Value.....	\$1,758,872	\$733,943	\$2,430,387	
Needles:				
Steel, value.....	\$1,359,754			
Other, value.....	\$249,248	(⁴)	(⁴)	(⁴)
Parts and accessories, not included in finished instruments reported:				
Cabinets, value.....	\$3,053,418	(⁵)	(⁵)	(⁵)
Other parts and accessories, value.....	\$10,515,739	\$366,935	\$844,631	(⁵)
Custom work and repairing.....	\$268,803	\$2,116	(⁵)	(⁵)
All other products.....	\$6,242,170	\$354,956	\$467,577	\$2,802,185

¹ In addition, in 1919, phonographs, graphophones, and parts, valued at \$7,173,143, in 1914 valued at \$66,531, and in 1909, valued at \$31,899 were made by establishments engaged primarily in the manufacture of products other than those covered by this industry designation.

² Not segregated, to avoid disclosure of individual operations.

³ Figures not available.

⁴ Included in "parts and accessories."

⁵ Included in "all other products."

Phonographs and graphophones.—Mechanical devices, by whatever names known, for registering and reproducing speech, music, and other sounds, 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 1919, 1914, 1909, 1904, and 1899—the only censuses for which separate figures are shown—are given in Table 225. 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 179 (p. 260) presents statistics for the number and value of phonographs, graphophones, and talking machines, for 1919, 1914, 1909, and 1904.

Musical instruments and materials, not elsewhere 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, accordions; banjos; bones; bugles; castanets; concertinas and parts; cornets, trombones, tubas, and other brass instruments for band and orchestral use; cymbals; drums, bass and snare, and drummers' traps and accessories; dulcimers; fifes, flageolets, flutes, and piccolos; guitars; harps; jew's-harps; lutes; lyres; mandolins; mechanical musical instruments; musical bells; sonnettes of wood and metal; ukuleles; tambourines; tympanies; 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 bows and 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. General statistics for the industry are given in Table 225 for the census years from 1859 to 1919, inclusive.

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 furriers' and taxidermists' trade 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, stereopticons, stereoscopes, and eye-testing sets. There is considerable overlapping between this industry and "jewelry," "instruments, professional and scientific," "photographic apparatus," and "photographic materials." Statistics for the industry for the census years from 1869 to 1919 are given in Table 225. 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, and the cost of materials was \$590.

In addition to the products covered by the table, optical goods to the value of \$1,095,786 in 1919, \$199,416 in 1914, and \$307,771 in 1909 were reported by establishments assigned to other industries.

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, bituminized brick, cedar, hardwood, creosoted wood, bluestone, cement, concrete, rubble stone, granite, and limestone. The unmixed paving materials reported include crushed furnace slag, granite, sandstone, and limestone; distillates; dry natural asphalt; pitch; tar; coal-tar oil; flux; screenings; macadam; riffraff; and ballast. 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 are therefore not comparable with the figures given in Table 225.

In addition to the products covered by Table 225, paving materials to the value of \$534,842 in 1919, \$2,741,194 in 1914, and \$94,359 in 1909 were reported by establishments assigned to other classifications.

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. Statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225.

PENS, FOUNTAIN AND STYLOGRAPHIC.

Establishments included in this industry manufacture principally complete fountain pens. A few reported stylographic pens and ink pencils, either as their sole product or in addition to the ordinary fountain pens. Some manufacture gold and plated pen points for their own use and for separate sale. Other establishments make exclusively the rubber holders and other parts, including mountings in gold, silver, and plate. Table 225 gives statistics for the industry for the census years from 1889 to 1919, inclusive.

In addition to the products covered by the table, fountain and stylographic pens to the value of \$868,039 in 1919 and \$167,967 in 1914 were reported by establishments assigned to other classifications. Table 82 presents statistics for fountain and stylographic, steel, and gold pens.

PHOTOGRAPHIC APPARATUS.

In Table 167 which presents statistics for this industry the establishments are classified in three groups, according to their products of chief value: (1) Those manufacturing cameras of all kinds; (2) those making motion-picture machines; and (3) those manufacturing blue-printing machines, flash-light apparatus, tripods, film rewinders and reels, plate holders, developing tanks, shutters, and other parts for sale as such.

In addition to the products covered by the table, photographic apparatus to the value of \$15,184,556 was reported in 1919, almost wholly by establishments engaged chiefly in the manufacture of photographic materials and in 1914 to the value of \$685,949 by establishments assigned to other classifications. Comparable statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225.

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 1919 was placed wholly under "photographic materials," while at the census of 1904 its business was in part assigned to "photographic apparatus." The decrease from 1869 to 1879 may perhaps be accounted for both by changes in classification and by the depreciated currency in which values 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 industry. These include, among others, sensitized paper and cloth of many varieties, sensitized cards and novelties, developing and other chemicals, dry plates, photographic mounts and frames, films, flash-light materials, lantern and stereopticon slides, sensitized ferro-type plates, and sheet gelatin. Table 167 gives separate figures for those establishments making motion-picture films (not exposed), for those making motion-picture projection films, and for those making other photographic materials. In addition to the products covered by the table, photographic materials to the value of \$634,771 in 1919 and \$114,751 in 1914 were reported by establishments assigned to other classifications. No census statistics for the industry were shown for 1869. Table 225 gives the general statistics for the census of 1859 and for each census from 1879 to 1919, inclusive.

PIPES, TOBACCO.

A great variety of pipes are made by establishments in this industry. The materials for the pipe bowls include apple and brier wood, clay, corncobs, dogwood, hazel wood, 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. Cigar and cigarette holders are also reported. Statistics for the industry are presented in Table 225 for the census years 1869 to 1919, inclusive.

In addition to the products covered by the table, pipes to the value of \$6,400 in 1919, \$2,500 in 1914, and \$3,880 in 1909 were reported as subsidiary products by tobacco manufacturers.

PULP, FROM FIBER OTHER THAN WOOD.

In 1919 there were five establishments in this industry with products valued at \$524,444. (See Table 225.) In 1914 there were only three establishments—one in Connecticut, one in Michigan, and one in Ohio—reporting the product covered by this classification. Separate figures could not be shown for that year.

ROOFING MATERIALS.

Waterproof substances for use upon roofs are the principal products of establishments in this classification. Table 167 gives separate statistics (1) for metal shingles and ceilings, and (2) for all other roofing materials, which embrace asbestos shingles and sheets, asphalt, asphalt paint and shingles, various kinds of roofing and building paper, roofing cement, crushed furnace slag, plaster board of paper and stucco, cement roofing tile, 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 covered such construction work and, therefore, are not comparable. (See Table 225.)

There is considerable overlapping between this and other industries, roofing materials to the value of \$8,415,514 in 1919, \$5,210,372 in 1914, and \$3,019,842 in 1909 being reported by establishments engaged primarily in the manufacture of other products. Prior to 1909 this classification included establishments making roofing slate.

RUBBER GOODS.

The manufacture of rubber goods is covered by three classifications: "Belting and hose, rubber," "boots and shoes, rubber," and "rubber tires, tubes, and rubber goods, not elsewhere specified." Table 180 gives statistics of quantities and values for the three industries for 1919. In 1914 the total production of rubber goods was valued at \$300,993,796 as compared with \$1,138,216,019 in 1919.

TABLE 180.—RUBBER GOODS: 1919.

	Number and amount.		Number and amount.
Products, total value.....	\$1,138,216,019	Tires—Continued.	
Boots, rubber:		Solid—	
Pairs.....	9,207,703	Truck—	
Value.....	\$26,066,647	Number.....	1,454,807
Shoes, rubber:		Value.....	\$43,917,152
Pairs.....	66,145,541	All other—	
Value.....	\$64,713,182	Number.....	6,873,650
Shoes, canvas with rubber soles:		Value.....	\$9,004,543
Pairs.....	21,034,664	Rubberized fabrics, sold as such or	
Value.....	\$25,176,684	on hand:	
Heels, sold as such and on hand:		Automobile and carriage—	
Pairs.....	138,468,769	Yards.....	40,750,500
Value.....	\$10,103,501	Value.....	\$10,696,547
Soles, including composition or		All other—	
fiber:		Yards.....	47,162,085
Pairs.....	9,777,085	Value.....	\$13,712,376
Value.....	\$2,455,306	Belting, value.....	\$22,436,242
Tires:		Hose, value.....	\$26,998,292
Pneumatic—		Packing, value.....	\$7,310,819
Automobile—		Clothing, value.....	\$8,824,430
Casings—		Druggists' and stationers' sundries,	
Number.....	32,835,509	value.....	\$15,801,892
Value.....	\$603,896,200	Hard rubber goods, value.....	\$34,383,231
Inner tubes—		All other manufactures of rubber,	
Number.....	33,255,410	value.....	\$80,719,898
Value.....	\$81,312,576	Reclaimed rubber, sold and on	
Motorcycle and bicycle—		hand:	
Casings—		Pounds.....	125,758,882
Number.....	4,656,121	Value.....	\$20,173,040
Value.....	\$13,449,225	All other products, value.....	\$9,711,224
Inner tubes—			
Number.....	1,125,097		
Value.....	\$1,347,012		

¹ In addition, products to the value of \$9,134,403 were reported by establishments assigned to other classifications.

Boots and shoes, rubber.—All kinds of rubber footwear for men, women, and children are made by establishments in this classification. Canvas shoes with rubber soles and rubber heels are also reported. General statistics for the census years from 1879 to 1919, inclusive, are given in Table 225. 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. For detailed statistics see Table 180.

Belting and hose, rubber.—The chief products of establishments in this industry are fire, garden, and other hose and machinery belting made of rubber. In many instances factories assigned to this industry also reported other rubber articles, such

as tiling, mats, matting, and tubing. Table 225 gives general statistics for the censuses from 1889 to 1919, inclusive. Table 167 gives separate statistics for the establishments whose product of chief value was belting, and for those whose chief product was hose.

Rubber tires, tubes, and rubber goods, not elsewhere specified.—Establishments in this classification manufacture a great variety of articles from india rubber. These embrace solid tires and pneumatic casings and inner tubes for automobiles; tires for carriages, bicycles, and motorcycles; tire reinforcements and accessories; hard and soft rubber goods; and rubberized cloth and clothing. In detail, the list includes automobile-top material; air cushions and mattresses; rubber bands; bath brushes; bumpers; card cloth; carriage cloth; collars, cuffs, etc.; rubber-covered wire; diaphragms; disks; dip-rubber goods, including gloves, finger stalls, balloons, and other specialties; doormats; dress shields; car 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. Table 225 gives statistics for 1919, 1914, and 1909. The statistics for 1904 and prior census years cover elastic woven goods, and are therefore not comparable with those for 1909, 1914, and 1919.

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. Statistics for the industry for the census years from 1889 to 1919, inclusive, are given in Table 225.

Changes in classification account 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. In addition, products to the value of \$2,764,150 were reported by establishments assigned to other industries in 1919.

SHIPBUILDING, INCLUDING BOAT BUILDING.

The statistics for this industry cover establishments engaged in the construction or repair of iron and steel and wooden vessels, large and small, and rowboats and canoes. Some establishments make only parts of vessels, 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.

TABLE 181.—SHIPBUILDING, INCLUDING BOAT BUILDING: 1840 TO 1919.

CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Primary horse-power.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Expressed in thousands.								
1919.....	1,075	387,446	553,711	\$1,389,448	\$597,447	\$710,523	\$1,622,362	\$911,839
1916.....	1,137	72,497	(¹)	243,218	60,576	89,269	185,852	96,583
1914.....	1,147	44,489	115,333	156,060	32,931	38,597	88,682	50,085
1909.....	1,353	40,506	88,063	126,118	25,268	31,214	73,300	42,146
1904.....	1,097	50,754	78,127	121,624	29,241	37,493	82,769	45,306
1899.....	1,107	46,747	61,797	77,341	24,825	33,475	74,532	41,057
1889.....	1,006	22,148	18,192	27,263	13,084	16,521	38,065	21,544
1879.....	2,188	21,345	(¹)	20,980	12,714	19,736	30,800	17,064
1869.....	964	13,915	5,136	11,463	7,073	9,380	21,484	12,104
1859.....	675	10,071	(¹)	5,953	4,539	5,789	13,424	7,635
1849.....	953	12,976	(¹)	5,373	6,056	7,420	16,988	9,518

¹ Figures not available.

Table 225 gives separate statistics for iron and steel shipbuilding and for wooden shipbuilding, for the census years from 1899 (when the industries were first shown separately) to 1919, inclusive. Table 181 presents the combined statistics for the two industries for the census years from 1849 to 1919, inclusive.

Table 167 gives for each industry separate statistics for shipyards engaged chiefly in the construction of new vessels, steel, concrete, or wood, of 5 tons or more; shipyards engaged in repair work exclusively; establishments constructing chiefly boats of under 5 tons; and establishments making a specialty of masts, spars, oars, and the rigging of vessels.

Table 182 presents comparable figures for 1919, 1916, 1914, and 1909 so far as figures for these subdivisions are available. Only two subclasses were given for iron and steel shipbuilding at the census of 1909.

TABLE 182.—SHIPBUILDING, IRON AND STEEL, AND WOODEN: 1919, 1916, 1914, AND 1909.

ESTABLISHMENTS ENGAGED PRIMARILY IN—	Number of estab- lish- ments.	Wage earners (average num- ber).	Primary horse- power.	Capital.	Wages.	Cost of mate- rials.	Value of products.	Value added by manu- facture.
Total:								
1919.....	1,075	387,446	553,711	\$1,389,448	\$597,447	\$710,523	\$1,622,361	\$911,838
1916.....	1,137	72,497	(¹)	243,218	60,576	89,269	185,852	96,583
1914.....	1,147	44,489	115,333	156,060	32,931	38,597	88,682	50,085
1909.....	1,353	40,506	88,063	126,118	25,268	31,214	73,360	42,146
Iron and steel shipbuilding:								
New construction on ves- sels of 5 tons and over—								
1919.....	117	324,278	443,384	1,216,323	503,438	622,462	1,372,065	749,603
1916.....	72	48,142	(¹)	190,392	39,145	61,958	119,156	57,198
1914.....	46	28,142	63,888	112,630	20,719	25,826	54,340	28,514
1909.....	38	24,242	(²)	88,710	14,756	19,584	42,722	23,138
Repair work only—								
1919.....	45	19,736	32,183	52,317	34,935	21,291	84,425	63,134
1916.....	37	8,095	(¹)	19,126	8,875	8,003	25,463	17,460
1914.....	33	5,366	19,818	20,082	4,447	3,414	11,877	8,433
1909.....	15	3,901	(²)	11,462	2,459	2,133	6,895	4,762
Wooden shipbuilding and boat building:								
New construction on ves- sels of 5 tons and over—								
1919.....	315	34,122	59,593	93,372	45,873	56,898	133,303	76,405
1916.....	339	9,364	(¹)	17,395	7,338	11,701	24,902	13,201
1914.....	273	4,802	14,148	9,580	3,416	4,601	10,427	5,736
1909.....	309	6,613	(²)	12,789	4,665	6,817	13,495	7,678
Repair work only—								
1919.....	277	7,730	14,675	22,085	11,286	7,294	26,549	19,255
1916.....	248	4,405	(¹)	10,204	3,394	3,101	8,764	5,603
1914.....	179	4,109	11,180	8,947	2,946	2,518	7,256	4,738
1909.....	134	3,065	(²)	7,357	1,758	1,417	4,458	3,041
Boats under 5 tons—								
1919.....	294	1,450	3,370	4,792	1,750	2,187	5,198	3,011
1916.....	416	2,275	(¹)	5,403	1,657	4,241	7,059	2,818
1914.....	588	1,895	5,770	4,614	1,280	1,956	4,414	2,458
1909.....	707	2,554	(²)	5,563	1,550	2,118	5,458	3,340
Masts, spars, oars, and rigging—								
1919.....	27	130	506	559	165	391	821	430
1916.....	25	216	(¹)	698	167	205	508	303
1914.....	28	175	529	207	123	162	368	206
1909.....	30	131	(²)	237	80	145	332	187

¹ Not reported.

² Not shown separately.

³ Includes 4 establishments making boats under 5 tons, and 1 making masts, spars, oars, and the rigging of vessels.

⁴ Includes 1 establishment making boats under 5 tons.

Number of vessels launched.—Table 183 gives statistics as to number, and, so far as available, as to tonnage, for vessels launched during the census years 1919, 1916, 1914, and 1909, distinguishing Government shipyards from those privately owned. A large part of the work on vessels launched during the year was performed during prior years, and, conversely, much work was done during each census year on ves-

sels not yet ready for launching at the end of the year. The gross tonnage of a ship is the total internal capacity, expressed in "tons" of 100 cubic feet. The displacement tonnage is the weight of the volume of water displaced, or the weight of the vessel and its load. While gross tonnage and displacement tonnage are not by any means the same, it was necessary to combine the tonnage of vessels whose capacity is reckoned in one way with that of vessels whose capacity is reckoned by the other method in order to obtain a total which should represent approximately the total tonnage launched during the year.

TABLE 183.—NUMBER AND GROSS TONNAGE OF VESSELS LAUNCHED, AND NUMBER OF POWER BOATS: 1919, 1916, 1914, AND 1909.

CLASS.	ALL ESTABLISHMENTS.		PRIVATE ESTABLISHMENTS IN THE SHIPBUILDING INDUSTRY.		PRIVATE ESTABLISHMENTS IN OTHER INDUSTRIES.		GOVERNMENT SHIPYARDS.	
	Number.	Gross ¹ tonnage.	Number.	Gross tonnage.	Number.	Gross tonnage.	Number.	Displacement tonnage.
Vessels of 5 gross tons and over:								
1919.....	2,202	4,662,433	2,033	4,489,809	64	51,970	105	120,654
1916.....	1,403	772,167	1,377	734,108	.....	.....	86	38,060
1914.....	1,255	455,507	1,113	425,060	94	13,654	48	16,853
1909.....	1,037	481,813	1,584	407,219	22	12,535	31	2,050
Classified by material:								
Steel—								
1919.....	2,181	3,882,804	2,005	3,734,201	59	47,194	27	101,499
1916.....	214	518,858	230	485,860	.....	.....	14	32,998
1914.....	215	268,870	126	212,959	69	9,792	20	16,119
1909.....	169	260,765	158	254,986	8	5,429	3	350
Wooden—								
1919.....	1,021	779,539	938	755,008	5	4,776	78	19,155
1916.....	1,219	253,309	1,147	248,248	.....	.....	72	5,061
1914.....	1,040	186,697	987	182,101	25	3,862	28	734
1909.....	1,408	221,048	1,426	212,233	14	7,106	28	1,709
Classified by power:								
Steam—								
1919.....	1,230	4,109,652	1,203	4,010,724	.....	.....	27	98,928
1916.....	206	472,597	186	442,354	.....	.....	20	30,243
1914.....	148	243,011	139	234,636	.....	.....	9	8,375
1909.....	194	235,315	181	234,633	3	429	10	253
Motor—								
1919.....	254	60,399	241	57,174	.....	.....	13	3,225
1916.....	434	30,316	403	29,866	.....	.....	31	450
1914.....	382	10,867	370	10,821	4	6	8	40
1909.....	447	9,413	445	9,389	2	24	.....	.....
Sail, with auxiliary power—								
1919.....	28	19,242	27	17,754	1	1,488	.....	.....
1916.....	62	30,625	62	30,625	.....	.....	.....	.....
1914.....	66	6,575	58	2,799	8	3,776	.....	.....
1909.....	68	2,652	68	2,652	.....	.....	.....	.....
Sail, without auxiliary power—								
1919.....	58	64,579	57	63,091	1	1,488	.....	.....
1916.....	62	15,456	62	15,456	.....	.....	.....	.....
1914.....	40	2,224	40	2,224	.....	.....	.....	.....
1909.....	51	14,807	51	14,807	.....	.....	.....	.....
Unrigged—								
1919.....	632	408,561	595	341,066	62	48,994	65	18,501
1916.....	699	228,173	664	215,807	.....	.....	35	7,366
1914.....	619	192,890	596	174,680	82	9,872	31	8,438
1909.....	877	219,626	839	205,738	17	12,082	21	1,806
Power boats of less than 5 tons:								
1919.....	1,716	.....	1,159	.....	206	.....	351	.....
1916.....	3,710	.....	3,606	.....	.....	.....	104	.....
1914.....	4,518	.....	3,706	.....	758	.....	54	.....
1909.....	9,042	.....	8,577	.....	412	.....	53	.....

¹ Includes a comparatively small amount of "displacement tonnage."

² Includes 14 concrete vessels, 18,034 gross tons.

Table 184 shows the value of the construction work done, the amount received for repair work, and the value of all other work done by establishments assigned to the shipbuilding industry, for those that built vessels in connection with other industries, and for Government shipyards.

TABLE 184.—KIND AND VALUE OF SHIPBUILDING WORK: 1919, 1916, 1914, AND 1909.

KIND OF WORK.	All establish- ments.	Private establishments in the shipbuilding industry.	Private establish- ments in other industries.	Government shipyards.
Total:				
1919.....	\$1,865,728,609	\$1,622,361,261	\$3,764,105	\$239,603,243
1916.....	224,526,683	185,852,192	(1)	38,674,491
1914.....	119,423,028	88,682,071	1,523,692	29,217,265
1909.....	100,009,054	73,360,315	776,706	25,872,033
Work on new vessels and boats, all kinds:				
1919.....	1,446,789,596	1,391,688,655	3,317,305	51,783,636
1916.....	114,434,137	105,270,935	(1)	9,163,202
1914.....	52,401,805	46,334,134	1,279,630	4,788,041
1909.....	45,036,492	42,310,925	594,244	2,131,323
Vessels of 5 gross tons and over—				
1919.....	1,439,443,338	² 1,386,839,158	2,670,433	49,933,747
1916.....	110,343,073	101,531,210	(1)	8,811,863
1914.....	48,105,561	42,545,445	947,805	4,612,311
1909.....	40,145,084	37,718,018	449,089	1,977,977
Boats of less than 5 gross tons—				
1919.....	7,346,258	4,849,497	646,872	1,849,889
1916.....	4,091,064	3,739,725	(1)	351,339
1914.....	4,206,244	3,788,089	331,825	175,730
1909.....	4,891,408	4,592,907	145,155	153,346
Repair work:				
1919.....	272,358,656	183,721,737	200,400	88,436,519
1916.....	71,225,368	63,508,514	(1)	7,716,854
1914.....	39,968,076	32,835,212	185,777	3,945,687
1909.....	38,304,658	20,078,043	80,461	11,545,554
All other work done:				
1919.....	146,580,357	³ 46,950,809	246,400	⁴ 99,383,088
1916.....	38,807,178	⁵ 17,072,743	(1)	⁶ 21,794,435
1914.....	30,054,547	⁷ 9,512,725	58,285	20,433,537
1909.....	16,667,904	4,370,747	102,001	12,195,156

¹ Not reported in 1916.² Includes work on concrete vessels to the value of \$7,018,955.³ Includes work on engines to the value of \$20,447,019.⁴ Includes work on engines to the value of \$299,270.⁵ Includes work on engines to the value of \$3,335,055.⁶ Includes work on engines to the value of \$169,141.⁷ Includes work on engines to the value of \$4,498,703.

SIGNS AND ADVERTISING NOVELTIES.

Establishments in this classification make signs and novelties of wide variety. The instructions to the special agents who gathered the data directed that certain classes of establishments—among them those engaged in “house and sign painting”—must not be reported. This rule excluded from the canvass local establishments doing custom sign painting for offices, stores, or billboards.

The signs made by establishments in this classification are principally of brass, bronze, copper, sheet iron, steel, cardboard, celluloid, cloth, fiberoid, glass, porcelain-enameled iron, silver, tin, wire, and wood. They comprise (1) electric signs; (2) other signs, including illuminated signs, “talking signs,” triple signs, those used on street cars to show their destination, painted and decorated show cards, and gold-plated, metallic, enameled-wood, and other letters; and (3) the advertising novelties, which include many tools, utensils, and conveniences marked with advertising notices, for example, corkscrews, match boxes, diaries, calendars, fans, purses, memorandum books, card cases, pencils, bottle openers, celluloid novelties, and devices for advertising purposes. 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. (See Table 225.) 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, not elsewhere specified,” and “stationery goods, not elsewhere specified.” There is some overlapping between this new class and those specified, as well as others.

Table 167 gives separate figures for the three groups, “electric signs,” “other signs,” and “advertising novelties.” Establishments assigned to other classifications re-

ported electric signs to the value of \$30,404, other signs to the value of \$1,744,148, and advertising novelties to the value of \$627,471, making a total of \$2,402,023 in 1919 compared with \$951,006 in 1914, and \$695,470 in 1909.

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.") Statistics for the industry for the census years from 1869 to 1919, inclusive, are given in Table 225. In addition to the products covered by the table, soda-water apparatus to the value of \$1,657,841 in 1919, \$111,707 in 1914, and \$400,221 in 1909 was reported by establishments assigned to other industries.

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 spears and tongs; gun cases; oars and paddles; shell boxes; bait baskets and boxes; decoy ducks; duck, crow, turkey, and snipe calls; reels; leaders; floats; leads; toboggans; skis; bows and arrows; magazine-shell vests; etc. The manufacture of firearms and ammunition falls under a separate classification.

Athletic goods are represented by baseballs and bats, gloves, mitts, masks, 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, mallets, and saddles; roller skates; punching bags and punching-bag platforms; tennis rackets, balls, and supplies; track suits; toe clips; playground apparatus; bulletin and score boards; medicine balls; circus apparatus; juggling goods; water wings; Indian clubs and dumbbells; and similar products. Statistics for the industry for the census years from 1879 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, sporting and athletic goods to the value of \$1,495,072 in 1919, \$838,645 in 1914, and \$239,266 in 1909 were reported by establishments assigned to other classifications.

STATIONERY GOODS, NOT ELSEWHERE SPECIFIED.

Manufacturers of various articles used in writing and in connection therewith, in manifolding, in filing written matter, and for miscellaneous purposes, are included in this classification. Table 167 gives separate statistics for those establishments whose product of chief value was "penholders" and for those making "all other" stationery goods. The latter group comprises establishments manufacturing, among other products, albums; copying baths; binders for loose leaves and all sorts of loose-leaf devices; blackboard erasers and supplies; blotters; boxes for documents; card files and indexes; cardcases; 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; stenographers' copyholders; thumb tacks; and tin plates for mounting. In addition products to the value of \$5,944,798 in 1919 and \$3,012,637 in 1914 were reported by establishments assigned to other classifications. The corresponding total for 1909 was \$1,505,600. "Stationery goods, not elsewhere specified" does not appear at the census of 1869. Table 225 gives statistics for 1859 and for each census year from 1879 to 1919, inclusive.

The production of envelopes and of writing paper is reported under the classifications for envelopes and for paper and wood pulp. (See Table 225.)

Table 185 presents statistics for typewriter supplies. These figures were included in Table 69 with those for the group of industries "iron and steel and their products" (which includes the manufacture of typewriters).

TABLE 185.—TYPEWRITER SUPPLIES: 1919 AND 1914.

PRODUCT AND CENSUS YEAR.	Number of estab- lish- ments.	Wage earners (av- erage num- ber).	Primary horse- power.	Capital.	Wages.	Cost of mater- ials.	Value of products.	Value added by manu- facture.
Total:								
1919.....	51	791	1,285	\$5,270	\$756	\$5,131	\$9,425	\$4,294
1914.....	57	788	1,462	3,354	456	1,894	4,649	2,755
Carbon paper:								
1919.....	24	441	533	3,218	440	3,092	5,894	2,802
1914.....	23	317	539	1,526	190	855	2,192	1,337
Ribbons:								
1919.....	21	303	673	1,930	264	1,855	3,178	1,323
1914.....	20	304	824	1,607	197	925	2,121	1,196
All other:								
1919.....	6	47	79	122	52	184	353	169
1914.....	14	167	99	221	69	114	336	222

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 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 comprise duck cloth, flax, hemp, rubber, and cotton waste; the animal materials, wool and leather; and the mineral materials, antimony, asbestos, brass, graphite, cast iron, lead, lead wool, magnesia, mineral wool from slag and limestone, mica, and tin. Statistics for the industry for the census years from 1889 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, steam packing to the value of \$3,391,145 in 1919, \$1,319,286 in 1914, and \$876,425 in 1909 were reported by establishments assigned to other industries.

SURGICAL APPLIANCES.

Establishments included in this industry manufacture all kinds of surgical appliances, bandages, and dressings, except surgical instruments and dental appliances, which fall under the classifications "instruments, professional and scientific" and "dental goods." (See Table 167.) The products embrace, among others, trusses, elastic hosiery and belts, braces, extension shoes, arch supports for insteps, obesity belts, surgical gauze, douches, pneumatic splints, abdominal supporters, shoulder braces, magnetic insoles, sutures, ear drums, electric belts, anklets, knee caps, suspensories, etc. Statistics for the industry for the census years from 1879 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, surgical appliances to the value of \$1,064,504 in 1919 and \$105,486 in 1914 were reported by establishments assigned to other classifications.

THEATRICAL SCENERY.

This industry includes the production of theatrical scenery, for theaters or opera houses, halls, and schools; advertising curtains; stage hardware and equipment; floats for street pageants; etc., but does not include the incidental work done on theatrical scenery in theaters.

Statistics for the industry were not secured for censuses prior to 1914.

TOYS AND GAMES.

The articles made by establishments assigned to this class are numerous. They include indoor ball games; swings; checkers; dominoes; dolls; stuffed toy 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; hobby-

horses and rocking-horses; velocipedes and tricycles; kites; magic lanterns and slides; magical apparatus, tricks, and novelties; masks; mechanical toys; toy railways, engines, and cars; toy savings banks; play suits; wigwams; doll clothing; marbles; fabric and leather covered balls; educational boards; game boards; toy tools, balloons, canes, pistols, and bells; etc. Statistics for the industry as reported at the censuses from 1859 to 1919, inclusive, are given in Table 225.

In addition to the products covered by the table, toys and games to the value of \$3,150,013 in 1919, \$1,609,555 in 1914, and \$1,156,411 in 1909 were reported by establishments assigned to other industries. On the other hand, there is considerable overlapping between "toys and games" and such industries as "paper goods, not elsewhere specified," "leather goods, not elsewhere specified," "fancy articles, not elsewhere specified," "boxes, paper and other, not elsewhere specified," "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, 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. Statistics for this industry for the census years from 1849 to 1919 are given in Table 225. 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 and from 1909 to 1914 may be attributed to changes in the classification of individual establishments.

In addition to the products covered by the table, umbrellas and canes to the value of \$81,964 in 1919, \$28,368 in 1914, and \$61,216 in 1909 were reported by establishments assigned to other classifications.

WASHING MACHINES AND CLOTHES WRINGERS.

Establishments in this classification manufacture principally machines for washing, for wringing, for drying, and for ironing clothing, table linen, bed linen, etc. They are operated by hand or by steam, water, electric, or other power. Statistics for the industry for the census years from 1859 to 1919 are given in Table 225. 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. In addition to the products covered by the table, washing machines and clothes wringers to the value of \$2,310,585 in 1919, \$432,092 in 1914, and \$233,611 in 1909 were reported by establishments assigned to other industries.

WHALEBONE CUTTING.

Only one establishment in 1919 as in 1914, situated in New York City, was reported for this industry. Its product is whalebone cut for corsets, dresses, and whips. The statistics can not be given separately. (See "All other industries," Table 167.)

WHIPS.

Establishments in this classification manufacture whips, crops, lashes, and parts of whips, of rattan, rawhide, reed, whalebone, wood, and iron. Statistics for the industry as reported at each census from 1849 to 1919, inclusive, are given in Table 225. In addition to the products covered by the table, whips to the value of \$219,695 in 1919, \$142,524 in 1914, and \$114,306 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

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 the vanes or sails that catch the wind, but also the towers, cylinders, and tanks are manufactured by these establishments. The first census at which windmills were reported separately was that 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 225 gives statistics for the census years from 1879 to 1919, inclusive. In addition to the products covered by the table, windmills to the value of \$529,665 in 1919, \$116,122 in 1914, and \$1,033,787 in 1909 were reported by establishments assigned to other classifications.

WINDOW SHADES AND FIXTURES.

Window shades of cotton, linen, muslin, lonsdale, silk, 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, as well as various other incidental products are included. At the census of 1859, 15 establishments were reported under "window blinds and shades." Their products were valued at \$134,620. For 1879 the classification was "window blinds and shades," and for 1889, "window shades." Comparable statistics are presented in Table 225 for the census years from 1879 to 1919, inclusive. In addition to the products covered by the table, window shades and fixtures to the value of \$1,263,644 in 1919, \$499,876 in 1914, and \$200,665 in 1909 were reported by establishments engaged primarily in the manufacture of other products.

LOCAL CONCENTRATION OF CERTAIN INDUSTRIES.

There is much more local concentration in some industries than in others. This condition, however, may be set forth more clearly by selecting from among the large number of industries those which are of importance and which also show a marked degree of concentration. Table 186 presents statistics for 57 selected industries of this character for states, and 37 for cities.

In the presentation of these statistics important cities and states are sometimes omitted because to show the figures might disclose the operations of individual establishments.

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES: 1919, 1914, AND 1909.

INDUSTRY AND STATE.	VALUE OF PRODUCTS.		
	1919	1914	1909
AGRICULTURAL IMPLEMENTS.....	\$304,961,265	\$164,086,835	\$146,329,268
Illinois.....	128,284,716	65,337,663	57,268,325
Wisconsin.....	43,623,368	20,119,058	11,411,303
Indiana.....	31,823,733	12,791,461	13,669,824
Ohio.....	26,556,031	17,484,615	14,440,461
New York.....	20,421,368	14,576,694	14,970,980
Michigan.....	11,090,669	7,731,217	9,272,787
AUTOMOBILES, INCLUDING BODIES AND PARTS.....	3,080,073,970	632,831,474	240,202,075
Michigan.....	1,620,383,356	398,289,022	96,651,451
Ohio.....	379,436,478	85,710,585	38,838,754
New York.....	211,137,153	42,115,276	30,979,527
Indiana.....	179,064,863	29,389,088	23,764,070
Wisconsin.....	119,380,641	18,478,196	11,440,242
Pennsylvania.....	113,820,134	10,084,083	6,581,733
Illinois.....	104,883,442	11,018,162	7,153,818
BAGS, PAPER, EXCLUSIVE OF THOSE MADE IN PAPER MILLS.....	47,263,990	17,602,543	15,697,959
New York.....	14,071,692	6,753,572	5,613,241
Ohio.....	12,609,656	2,893,011	2,393,385
BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS.....	1,379,070,154	590,028,167	512,797,642
Massachusetts.....	573,037,489	255,188,013	236,342,915
New York.....	198,228,192	71,412,755	48,185,914
Missouri.....	142,466,748	52,522,006	48,761,235
New Hampshire.....	96,259,103	46,694,765	39,439,544
Pennsylvania.....	77,974,265	28,939,470	20,218,784
BOOTS AND SHOES, RUBBER.....	116,917,434	53,822,123	49,720,567
Massachusetts.....	44,807,961	23,788,788	18,722,363
Connecticut.....	22,451,339	(1)	(1)
BRASS, BRONZE, AND COPPER PRODUCTS.....	482,312,790	162,199,019	149,989,058
Connecticut.....	109,550,248	69,353,103	66,932,969
New York.....	66,662,045	23,964,582	22,184,139
Michigan.....	62,708,335	16,868,725	13,890,220
Pennsylvania.....	33,490,320	9,779,626	8,454,620
Ohio.....	27,801,760	7,843,092	6,572,022
Illinois.....	25,106,607	7,570,456	6,841,735
Wisconsin.....	22,509,723	5,409,200	5,387,273

* Figures can not be shown without disclosing individual operations.

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES:
1919, 1914, AND 1909—Continued.

INDUSTRY AND STATE.	VALUE OF PRODUCTS.		
	1919	1914	1909
BUTTER, CHEESE, AND CONDENSED MILK.			
Wisconsin	\$1,066,125,489	\$304,285,150	\$274,557,718
New York	221,447,273	72,858,502	53,843,240
Minnesota	129,008,365	43,262,300	42,458,345
Michigan	93,585,605	33,797,436	25,287,462
Ohio	64,786,598	21,549,597	14,287,499
Illinois	60,012,831	19,325,977	9,689,670
Iowa	58,208,271	21,792,220	17,798,278
California	57,800,148	27,605,068	25,849,866
	56,420,383	20,466,428	12,760,670
CANNING AND PRESERVING¹.			
California	628,287,925	243,430,850	157,101,201
New York	219,278,576	61,162,840	32,014,829
Maryland	54,557,674	25,944,634	19,039,735
New Jersey	30,566,067	18,028,779	13,709,449
Pennsylvania	29,821,737	13,764,955	3,604,098
Illinois	29,489,000	14,949,551	9,484,026
Indiana	28,340,663	10,121,497	7,019,586
Washington	27,823,348	13,866,383	8,758,343
Maine	27,515,650	9,449,549	9,595,387
Oregon	24,550,574	10,742,738	7,688,833
	20,591,135	4,738,067	3,207,060
CARPETS AND RUGS, OTHER THAN RAG.			
New York	123,253,828	69,128,185	71,188,152
Pennsylvania	48,717,885	26,075,521	25,606,262
Massachusetts	47,479,830	23,069,647	24,879,232
	13,593,900	10,081,344	12,811,081
CHEMICALS.			
New York	438,658,869	158,053,602	117,741,103
New Jersey	88,101,532	42,876,880	35,346,072
Pennsylvania	84,033,941	31,686,865	22,824,140
Michigan	73,332,932	22,387,835	15,978,162
Ohio	37,850,834	13,891,415	12,890,206
Illinois	32,719,466	11,388,140	7,742,045
	22,060,803	8,618,118	4,683,003
CLOCKS.			
Connecticut	23,380,190	11,631,720	12,235,031
	12,904,421	4,523,975	6,809,746
CLOTHING, MEN'S, INCLUDING SHIRTS.			
New York	1,368,312,766	554,025,908	568,076,635
Illinois	641,906,069	238,626,691	266,078,427
Pennsylvania	201,816,154	80,144,448	89,472,755
Maryland	97,944,365	40,370,330	39,681,780
	72,589,181	39,047,875	36,921,294
CLOTHING, WOMEN'S.			
New York	1,208,543,128	473,888,354	384,761,649
Pennsylvania	886,983,509	345,315,642	272,517,792
Illinois	77,473,720	37,059,174	32,837,424
	68,044,268	29,759,550	16,638,236
COKE, NOT INCLUDING GAS-HOUSE COKE.			
Pennsylvania	316,515,838	99,275,020	95,690,622
Ohio	119,730,589	42,996,443	51,816,449
Alabama	46,514,213	2,156,814	850,615
	24,660,105	10,353,477	8,842,512
COLLARS AND CUFFS, MEN'S.			
New York	47,564,949	18,530,840	17,230,452
	40,488,046	17,719,796	15,897,376
CORSETS.			
Connecticut	75,541,959	40,550,702	33,257,187
New York	20,674,864	12,935,805	12,814,736
	16,608,992	6,393,526	5,160,686
COTTON GOODS, INCLUDING COTTON LACE AND COTTON SMALL WARES.			
Massachusetts	2,195,565,881	701,300,933	628,391,813
North Carolina	604,937,749	197,322,111	186,462,313
South Carolina	318,368,181	90,743,683	72,680,385
Georgia	228,440,242	78,446,145	65,929,585
Rhode Island	192,185,896	59,982,008	48,036,817
Connecticut	177,423,087	49,718,837	50,312,597
	105,054,383	30,808,918	24,231,881
DYEING AND FINISHING TEXTILES, EXCLUSIVE OF THAT DONE IN TEXTILE MILLS.			
New Jersey	323,967,683	109,291,536	83,556,432
Massachusetts	79,305,174	27,986,512	15,795,788
New York	75,261,815	22,455,086	21,892,890
Pennsylvania	44,693,507	16,802,576	9,673,228
Rhode Island	42,475,000	15,451,576	12,059,297
	42,257,545	16,300,783	13,955,700

¹ Includes "pickles, preserves, and sauces."² Excludes statistics for 1 establishment, to avoid disclosure of individual operations.³ Excludes statistics for 2 establishments, to avoid disclosure of individual operations.

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES:
1919, 1914, AND 1909—Continued.

INDUSTRY AND STATE.	VALUE OF PRODUCTS.		
	1919	1914	1909
ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES.	\$907,968, 119	\$335,170, 194	\$221,308, 563
New York.....	179,972, 580	73,944, 708	49,289, 815
Ohio.....	156,024, 143	36,120, 878	18,776, 769
Pennsylvania.....	132,673, 856	44,395, 789	31,351, 512
New Jersey.....	120,341, 356	40,740, 810	28,865, 377
Illinois.....	119,528, 022	45,667, 450	26,826, 177
Massachusetts.....	91,938, 738	43,869, 294	28,142, 889
Connecticut.....	51,911, 332	14,330, 156	9,824, 373
FERTILIZERS	281,143, 587	153,196, 152	103,960, 213
Georgia.....	47,479, 842	29,045, 903	16,800, 301
Maryland.....	37,014, 097	13,980, 704	9,672, 786
South Carolina.....	30,411, 575	13,824, 659	9,024, 900
North Carolina.....	27,551, 316	10,307, 856	6,310, 485
Virginia.....	22,891, 353	11,350, 120	8,034, 543
FUR GOODS.	173,137, 739	43,632, 693	55,937, 549
New York.....	134,219, 190	30,312, 136	41,301, 451
FURNISHING GOODS, MEN'S.	107,834, 695	52,453, 338	42,129, 938
New York.....	53,260, 883	23,205, 074	19,763, 785
Maryland.....	14,595, 923	1,142, 429	894, 912
GLASS.	261,884, 080	123,085, 019	92,095, 203
Pennsylvania.....	80,479, 752	39,797, 822	32,817, 936
West Virginia.....	42,730, 338	14,631, 171	7,779, 483
Ohio.....	35,240, 877	19,191, 342	14,358, 274
Indiana.....	30,106, 652	14,881, 372	11,593, 094
GLOVES AND MITTENS, LEATHER.	46,940, 511	21,614, 109	23,630, 598
New York.....	26,763, 200	12,845, 284	14,336, 365
HARDWARE.	154,524, 888	73,319, 697	64,911, 561
Connecticut.....	61,751, 355	28,808, 363	28,969, 162
Illinois.....	22,442, 643	10,407, 290	7,232, 568
Ohio.....	16,694, 357	9,069, 625	5,153, 629
New York.....	15,648, 344	6,374, 719	4,065, 432
Pennsylvania.....	12,080, 144	7,687, 845	7,820, 951
HATS, FUR-FELT.	82,745, 308	37,349, 744	47,864, 630
Connecticut.....	23,152, 468	9,475, 778	10,399, 860
New York.....	19,887, 862	6,637, 380	10,218, 660
Pennsylvania.....	17,995, 301	11,040, 820	13,022, 617
New Jersey.....	16,625, 357	7,969, 344	8,825, 217
INK, PRINTING.	26,244, 470	13,830, 312	8,865, 504
New York.....	11,075, 790	6,169, 815	4,058, 557
Ohio.....	5,514, 817	2,763, 537	1,907, 369
IRON AND STEEL, BLAST FURNACES.	794,466, 558	317,653, 983	391,420, 283
Pennsylvania.....	311,080, 081	135,806, 067	168,578, 413
Ohio.....	179,233, 435	72,969, 368	83,699, 238
Illinois.....	64,762, 411	25,861, 528	38,299, 897
Alabama.....	67,018, 105	20,065, 739	21,235, 984
New York.....	51,601, 999	18,485, 638	26,620, 948
IRON AND STEEL, STEEL WORKS AND ROLLING MILLS.	2,828,902, 376	918,064, 565	985,722, 534
Pennsylvania.....	1,296,412, 070	448,106, 324	500,343, 995
Ohio.....	626,370, 025	205,023, 391	197,780, 043
Indiana.....	199,273, 518	58,882, 522	38,651, 848
Illinois.....	173,344, 650	64,995, 121	86,608, 137
New York.....	100,592, 636	32,077, 757	39,632, 414
JEWELRY.	203,939, 230	81,006, 289	80,349, 874
New York.....	67,400, 968	21,810, 245	20,362, 620
Rhode Island.....	48,599, 440	21,622, 251	20,685, 100
Massachusetts.....	34,816, 822	14,175, 857	15,210, 738
New Jersey.....	27,889, 565	11,347, 455	13,272, 004
KNIT GOODS.	713,139, 689	258,912, 903	200,143, 527
New York.....	195,376, 641	78,228, 235	67,130, 296
Pennsylvania.....	188,260, 800	64,153, 449	49,667, 506
Massachusetts.....	52,424, 235	17,419, 077	14,736, 025
Wisconsin.....	40,777, 704	13,292, 305	7,848, 389

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES:
1919, 1914, AND 1909—Continued.

INDUSTRY AND STATE,	VALUE OF PRODUCTS.		
	1919	1914	1909
LEATHER, TANNED, CURRIED, AND FINISHED.....	\$928,501,701	\$367,201,705	\$327,874,187
Pennsylvania.....	211,380,340	85,252,532	77,926,321
Massachusetts.....	129,504,962	45,265,434	40,002,079
New York.....	98,094,503	36,018,342	27,642,383
Wisconsin.....	94,762,230	42,204,202	41,667,676
New Jersey.....	78,012,101	31,651,831	28,430,955
Illinois.....	60,323,659	17,509,256	14,911,782
Delaware.....	50,138,251	9,183,205	12,079,225
Michigan.....	45,800,786	25,503,573	15,331,104
LUMBER AND TIMBER PRODUCTS.....	1,387,471,413	715,310,333	753,388,368
Washington.....	220,512,359	78,130,001	82,742,563
Louisiana.....	120,716,435	62,077,611	58,457,604
Mississippi.....	87,508,220	36,506,812	40,120,623
Oregon.....	85,847,711	27,589,638	25,779,373
Arkansas.....	84,008,300	39,507,781	36,812,113
Wisconsin.....	67,221,434	37,494,011	37,036,705
Alabama.....	55,159,362	21,333,482	23,310,142
North Carolina.....	54,028,222	30,529,211	26,391,807
MACHINE TOOLS.....	212,400,158		
Ohio.....	62,554,169		
Massachusetts.....	23,442,547	(1)	(1)
Rhode Island.....	22,301,200		
Connecticut.....	18,435,440		
Pennsylvania.....	16,797,040		
Illinois.....	15,008,096		
MILLINERY AND LACE GOODS, NOT ELSEWHERE SPECIFIED	255,724,922	114,160,462	85,803,632
New York.....	165,718,131	72,328,556	52,106,200
New Jersey.....	24,506,009	10,485,723	6,895,339
Illinois.....	19,848,622	9,221,978	7,281,914
NEEDLES, PINS, AND HOOKS AND EYES.....	29,304,995	7,890,870	6,604,085
Connecticut.....	13,904,280	5,108,556	4,236,036
OIL AND CAKE, COTTONSEED.....	581,244,798	213,137,024	147,807,894
Texas.....	102,111,850	41,944,689	29,915,772
Georgia.....	90,320,307	32,714,801	23,040,779
Louisiana.....	57,161,578	18,106,257	13,084,886
North Carolina.....	40,995,107	15,209,394	8,504,477
Tennessee.....	42,258,452	11,414,243	6,592,776
Mississippi.....	39,202,188	17,599,651	15,965,543
South Carolina.....	38,674,794	16,379,858	10,902,935
Alabama.....	31,714,872	14,982,159	9,178,016
Arkansas.....	25,304,034	9,249,457	7,788,885
PAPER AND WOOD PULP.....	788,059,377	332,147,175	267,656,964
New York.....	129,381,032	56,335,081	48,859,610
Maine.....	93,916,628	40,179,744	33,950,230
Massachusetts.....	87,159,890	43,352,545	40,096,713
Wisconsin.....	80,328,483	31,205,365	25,062,099
Michigan.....	66,299,513	23,049,990	13,922,124
Pennsylvania.....	64,715,767	25,439,346	19,872,717
Ohio.....	55,098,190	23,284,192	16,965,280
New Hampshire.....	41,825,551	17,708,138	13,994,251
PEANUTS, GRADING, ROASTING, CLEANING, AND SHELL- ING.....	33,354,377	14,096,369	9,736,551
Virginia.....	23,162,211	10,981,159	7,983,440
PENS, FOUNTAIN, STYLOGRAPHIC, AND GOLD.....	17,798,268	7,507,535	4,738,603
New York.....	9,701,647	5,169,218	3,195,814
PETROLEUM REFINING.....	1,632,532,766	396,361,406	236,997,659
New Jersey.....	280,994,553	90,876,993	(4)
Texas.....	241,757,313	(2)	(3)
California.....	213,292,194	55,327,651	17,878,006
Pennsylvania.....	178,825,632	52,876,101	53,088,199
Oklahoma.....	150,673,468	13,014,372	1,055,011
Louisiana.....	75,023,726	(3)	(4)
PIPES, TOBACCO.....	11,553,777	4,220,084	5,311,900
New York.....	9,448,718	2,689,133	3,212,262
PLATED WARE.....	41,634,585	18,484,235	18,526,193
Connecticut.....	22,661,906	11,942,797	14,333,213
New York.....	15,070,862	4,611,100	2,414,334

1 Not reported separately.

2 Figures can not be shown without disclosing individual operations.

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES:
1919, 1914, AND 1909—Continued.

INDUSTRY AND STATE.	VALUE OF PRODUCTS.		
	1919	1914	1909
RICE, CLEANING AND POLISHING.	\$90,038,412	\$23,030,204	\$22,371,457
Louisiana.....	41,220,471	12,966,600	12,528,656
California.....	20,264,263	(1)	
Texas.....	17,900,547	7,216,359	8,142,438
RUBBER TIRES, TUBES, AND RUBBER GOODS, NOT ELSEWHERE SPECIFIED.	987,088,045	223,610,784	128,435,747
Ohio.....	551,118,488	109,658,605	53,910,531
Massachusetts.....	93,376,505	23,011,349	15,796,490
New Jersey.....	84,129,058	25,458,216	19,543,489
Michigan.....	50,318,116	(1)	(1)
SHIPBUILDING, INCLUDING BOAT BUILDING.	1,622,361,261	88,682,071	73,360,315
New Jersey.....	238,014,659	11,860,965	8,840,515
Pennsylvania.....	237,324,970	9,539,865	6,178,145
California.....	185,882,234	8,101,033	4,132,176
Washington.....	166,519,787	3,101,446	1,550,187
New York.....	132,012,124	14,195,208	11,417,189
SILK GOODS, INCLUDING THROWSTERS.	688,469,523	254,011,257	196,911,667
Pennsylvania.....	231,711,352	80,938,554	62,061,302
New Jersey.....	215,050,560	75,706,449	65,420,550
New York.....	81,682,572	20,260,763	26,518,821
Connecticut.....	68,053,429	30,561,825	21,062,687
SLAUGHTERING AND MEAT PACKING.	4,246,290,614	1,651,965,424	1,355,544,431
Illinois.....	1,284,103,016	485,302,180	386,305,962
Kansas.....	427,663,145	151,647,123	165,360,516
Nebraska.....	303,848,903	104,593,333	92,282,759
New York.....	256,038,393	144,236,162	125,072,944
Missouri.....	246,610,195	91,608,121	79,325,733
Iowa.....	226,361,698	74,171,865	58,913,482
SMELTING AND REFINING, COPPER.	651,101,591	444,021,958	378,805,974
New Jersey.....	244,268,519	159,198,876	125,651,087
Arizona.....	94,184,312	53,438,160	41,059,240
SMELTING AND REFINING, LEAD.	196,794,519	171,578,587	167,405,650
Utah.....	27,518,050	21,752,102	13,169,675
SMELTING AND REFINING, ZINC.	104,122,938	53,538,398	34,205,894
Illinois.....	24,953,952	18,421,039	9,003,624
Oklahoma.....	19,517,566	9,938,743	3,002,233
SOAP.	316,740,115	127,942,441	111,357,777
New York.....	50,843,837	27,526,199	23,582,977
New Jersey.....	37,381,759	16,602,406	13,673,942
Illinois.....	25,733,832	21,420,035	20,130,799
Massachusetts.....	18,720,572	4,671,310	4,282,566
Pennsylvania.....	16,063,276	10,098,393	9,124,356
SUGAR, REFINING, NOT INCLUDING BEET SUGAR.	730,986,706	289,398,715	248,628,659
New York.....	268,318,172	124,941,470	(1)
Pennsylvania.....	133,796,119	45,930,147	(1)
TOBACCO, CHEWING AND SMOKING, AND SNUFF.	239,270,718	175,280,925	156,606,871
Missouri.....	44,922,230	31,063,327	28,418,701
North Carolina.....	33,187,979	46,484,216	33,842,667
New Jersey.....	24,419,300	18,369,309	12,625,702
Kentucky.....	20,547,825	14,785,239	16,694,705
TOBACCO, CIGARS AND CIGARETTES.	773,662,495	314,884,297	260,088,233
North Carolina.....	226,635,811	11,377,162	2,143,972
New York.....	163,104,747	86,489,307	75,135,915
Pennsylvania.....	98,370,923	52,021,430	46,124,206
Virginia.....	63,273,138	21,330,634	11,748,614
TURPENTINE AND ROSIN.	53,051,294	20,990,101	25,295,017
Florida.....	21,508,553	9,573,083	11,937,518
Georgia.....	10,874,714	4,607,590	6,938,957
WOOLEN AND WORSTED GOODS.	1,065,434,072	379,484,379	419,743,521
Massachusetts.....	342,626,145	127,351,434	138,315,926
Rhode Island.....	175,312,358	60,888,755	74,600,240
Pennsylvania.....	166,714,768	63,113,060	75,449,183
New Jersey.....	100,325,294	35,738,853	33,023,697

¹ Figures can not be shown without disclosing individual operations.

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES:
1919, 1914, AND 1909—Continued.

INDUSTRY AND CITY.	VALUE OF PRODUCTS.		
	1919	1914	1909
AGRICULTURAL IMPLEMENTS:			
Racine, Wis.....	\$38,904,257	\$16,284,010	\$7,174,690
Moline, Ill.....	21,141,274	9,738,631	11,493,184
Springfield, Ohio.....	7,205,752	5,761,511	5,442,397
AUTOMOBILES, INCLUDING BODIES AND PARTS:			
Detroit, Mich.....	550,227,781	164,075,944	59,530,154
Cleveland, Ohio.....	154,567,436	27,116,595	21,403,926
Indianapolis, Ind.....	73,299,492	12,693,027	8,840,075
Chicago, Ill.....	69,545,464	4,700,133	3,939,735
BOOTS AND SHOES, INCLUDING CUT STOCK AND FINDINGS:			
Brockton, Mass.....	101,598,206	44,122,125	39,293,118
Lynn, Mass.....	96,667,708	43,801,058	46,659,709
St. Louis, Mo.....	88,554,268	31,048,945	33,970,372
Haverhill, Mass.....	84,049,062	35,611,354	29,149,009
New York, N. Y.....	70,908,908	26,161,767	18,376,429
Boston, Mass.....	66,427,028	27,162,708	26,146,755
Manchester, N. H.....	50,423,909	18,800,729	17,646,652
BRASS, BRONZE, AND COPPER PRODUCTS:			
Waterbury, Conn.....	86,483,986	32,624,187	31,461,875
Detroit, Mich.....	49,239,768	14,620,751	12,297,331
New York, N. Y.....	28,928,172	10,499,280	8,784,837
Chicago, Ill.....	20,422,138	6,313,930	5,131,391
CARPETS AND RUGS, OTHER THAN RAG:			
Philadelphia, Pa.....	43,111,096	20,580,553	22,628,537
CHEMICALS:			
Niagara Falls, N. Y.....	30,831,880	16,723,285	11,966,726
New York, N. Y.....	27,290,843	12,302,023	12,948,352
Philadelphia, Pa.....	22,405,518	11,444,625	9,642,702
Newark, N. J.....	14,953,344	6,076,622	4,805,295
CLOTHING, MEN'S, INCLUDING SHIRTS:			
New York, N. Y.....	564,407,739	192,112,210	218,316,169
Chicago, Ill.....	193,050,809	84,389,611	85,206,407
Baltimore, Md.....	70,405,075	38,485,444	36,269,212
Philadelphia, Pa.....	68,257,018	29,153,294	29,000,899
Rochester, N. Y.....	40,422,892	19,780,253	18,878,598
CLOTHING, WOMEN'S:			
New York, N. Y.....	866,243,561	339,842,534	266,477,381
Philadelphia, Pa.....	69,183,831	34,142,518	30,132,842
Chicago, Ill.....	64,203,210	19,211,137	15,676,925
COLLARS AND CUFFS, MEN'S:			
Troy, N. Y.....	42,906,452	16,702,773	13,638,745
CORSETS:			
New York, N. Y.....	12,865,474	5,170,942	4,610,171
Bridgeport, Conn.....	11,565,285	7,639,733	6,898,871
COTTON GOODS, INCLUDING COTTON LACE AND COTTON SMALL WARES:			
New Bedford, Mass.....	¹ 177,058,520	² 51,766,234	42,505,067
Fall River, Mass.....	137,731,235	49,995,011	48,576,114
Pawtucket, R. I.....	63,001,795	13,461,269	14,337,874
Lowell, Mass.....	60,831,322	23,178,333	24,744,240
Philadelphia, Pa.....	³ 44,022,406	10,383,216	22,303,014
Lawrence, Mass.....	20,937,148	⁴ 7,143,127	6,825,500
Passaic, N. J.....	20,656,800	(⁵)	2,950,443
Utica, N. Y.....	17,221,118	(⁵)	(⁵)
Baltimore, Md.....	² 12,849,731	(⁵)	(⁵)
Gastonia, N. C.....	10,593,582	3,623,654	(⁵)

¹ Excludes statistics for establishments manufacturing boot and shoe findings in 1919 to avoid disclosure of individual operations.² Excludes statistics for 1 establishment to avoid disclosure of individual operations.³ Excludes statistics for 3 establishments to avoid disclosure of individual operations.⁴ Figures can not be shown without disclosing individual operations.⁵ Figures not available.

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES:
1919, 1914, AND 1909—Continued.

INDUSTRY AND CITY.	VALUE OF PRODUCTS.		
	1919	1914	1909
DYEING AND FINISHING TEXTILES, EXCLUSIVE OF THAT DONE IN TEXTILE MILLS:			
Philadelphia, Pa.....	\$26,548,236	\$7,596,570	\$6,327,261
New York, N. Y.....	25,992,335	8,380,858	6,002,643
Paterson, N. J.....	20,022,112	7,526,704	6,250,098
Providence, R. I.....	10,988,462	3,641,006	2,521,315
ELECTRICAL MACHINERY, APPARATUS, AND SUPPLIES:			
Chicago, Ill.....	78,347,552	17,568,424	20,668,505
Cleveland, Ohio.....	52,324,151	11,357,538	4,035,808
New York, N. Y.....	48,404,444	14,145,003	14,787,736
Philadelphia, Pa.....	33,729,133	8,899,003	7,065,145
Lynn, Mass.....	33,149,457	(1)	(1)
Newark, N. J.....	32,134,906	8,920,485	5,617,326
FUR GOODS:			
New York, N. Y.....	132,145,251	29,070,984	39,874,386
FURNISHING GOODS, MEN'S:			
New York, N. Y.....	50,292,860	21,446,080	18,819,024
Baltimore, Md.....	13,961,385	1,142,429	890,783
GLOVES AND MITTENS, LEATHER:			
Gloversville, N. Y.....	16,031,529	7,309,017	8,869,706
Johnstown, N. Y.....	5,830,896	2,914,259	3,258,302
HARDWARE:			
New Britain, Conn.....	20,782,720	8,938,293	9,180,533
Chicago, Ill.....	10,589,350	5,141,763	3,228,314
New Haven, Conn.....	8,497,119	(1)	4,300,973
New York, N. Y.....	7,522,877	3,347,378	2,277,159
HATS, FUR-FELT:			
Danbury, Conn.....	16,089,308	7,065,765	7,114,683
Philadelphia, Pa.....	15,952,099	9,914,443	10,401,794
New York, N. Y.....	11,700,387	3,601,944	4,765,029
INK, PRINTING:			
New York, N. Y.....	10,976,067	6,113,476	3,965,174
IRON AND STEEL, STEEL WORKS AND ROLLING MILLS:			
Pittsburgh, Pa.....	203,051,815	61,007,875	82,306,627
Cleveland, Ohio.....	84,424,721	33,388,829	38,463,316
JEWELRY:			
New York, N. Y.....	65,391,579	20,467,868	19,236,368
Providence, R. I.....	47,447,575	20,933,990	20,166,003
Newark, N. J.....	27,484,352	11,215,214	13,152,340
Attleboro, Mass.....	21,330,720	8,353,935	7,396,558
KNIT GOODS:			
Philadelphia, Pa.....	85,848,934	31,350,085	23,970,740
New York, N. Y.....	69,308,818	19,006,880	13,565,408
Reading, Pa.....	33,735,625	6,500,704	4,551,087
Milwaukee, Wis.....	24,015,467	7,184,755	3,416,729
Utica, N. Y.....	22,008,428	9,475,541	8,063,844
Amsterdam, N. Y.....	18,705,170	7,916,442	8,158,701
Lowell, Mass.....	17,172,099	(1)	(1)
LEATHER, TANNED, CURRIED, AND FINISHED:			
Philadelphia, Pa.....	89,019,381	23,557,091	23,526,421
Milwaukee, Wis.....	54,007,415	22,893,306	27,483,829
Chicago, Ill.....	50,519,773	15,632,742	13,243,550
Newark, N. J.....	48,276,048	20,118,019	18,858,046
Peabody, Mass.....	44,385,244	14,720,944	12,893,653
Camden, N. J.....	24,998,370	7,733,358	5,920,238
MACHINE TOOLS:			
Cincinnati, Ohio.....	25,047,625	(2)	(2)
Cleveland, Ohio.....	18,656,823		
Providence, R. I.....	18,307,419		
Worcester, Mass.....	9,595,959		

¹ Figures can not be shown without disclosing individual operations.² Not reported separately.

TABLE 186.—CONCENTRATION OF SELECTED INDUSTRIES, BY STATES AND CITIES:
1919, 1914, AND 1909—Continued.

INDUSTRY AND CITY.	VALUE OF PRODUCTS.		
	1919	1914	1909
MILLINERY AND LACE GOODS, NOT ELSEWHERE SPECIFIED:			
New York, N. Y.....	\$102,186,055	\$70,800,274	\$51,238,787
NEEDLES, PINS, AND HOOKS AND EYES:			
Waterbury, Conn.....	7,013,062	(1)	(1)
PEANUTS, GRADING, ROASTING, CLEANING, AND SHELLING:			
Suffolk, Va.....	12,543,041	4,390,031	(2)
Petersburg, Va.....	4,322,805	2,800,861	1,721,576
PENS, FOUNTAIN, STYLOGRAPHIC, AND GOLD:			
New York, N. Y.....	9,701,647	5,169,218	3,195,814
PIPES, TOBACCO:			
New York, N. Y.....	9,321,088	2,024,873	3,136,671
RICE, CLEANING AND POLISHING:			
New Orleans, La.....	12,918,939	5,484,304	5,124,836
San Francisco, Calif.....	8,355,082	(1)	
Houston, Tex.....	6,661,665	2,397,004	(1)
RUBBER TIRES, TUBES, AND RUBBER GOODS, NOT ELSEWHERE SPECIFIED:			
Akron, Ohio.....	402,092,527	92,547,496	49,329,235
Trenton, N. J.....	30,392,955	8,008,138	4,909,259
SILK GOODS, INCLUDING THROWSTERS:			
Paterson, N. J.....	139,497,179	44,672,401	39,993,311
New York, N. Y.....	54,526,901	15,008,138	16,949,664
Allentown, Pa.....	22,770,437	10,200,972	7,455,528
SLAUGHTERING AND MEAT PACKING: 3			
Chicago, Ill.....	1,092,907,747	410,709,225	325,001,657
Kansas City, Kans.....	381,694,618	133,826,338	148,459,212
Omaha, Nebr.....	4 288,092,034		
New York, N. Y.....	191,837,831	110,700,686	95,892,422
Sioux City, Iowa.....	110,088,503	(1)	26,987,536
Indianapolis, Ind.....	104,805,746	5 37,780,039	39,133,737
St. Louis, Mo.....	96,307,505	36,633,630	26,609,956
SOAP:			
New York, N. Y.....	36,276,984	17,360,636	13,925,009
Chicago, Ill.....	25,594,617	21,255,430	19,939,041
Philadelphia, Pa.....	12,411,698	9,023,926	7,319,189
Buffalo, N. Y.....	12,106,907	8,834,862	8,652,900
SUGAR, REFINING, NOT INCLUDING BEET SUGAR:			
Philadelphia, Pa.....	133,796,110	45,936,147	(1)
TOBACCO, CIGARS AND CIGARETTES:			
New York, N. Y.....	140,033,207	74,891,916	62,019,688
Richmond, Va.....	54,107,156	17,119,451	(1)
Tampa, Fla.....	28,472,094	10,364,673	
Philadelphia, Pa.....	26,790,996	12,539,378	10,597,921
WOOLEN AND WORSTED GOODS:			
Lawrence, Mass.....	6 125,780,608	51,584,407	58,535,950
Philadelphia, Pa.....	124,665,928	48,608,227	54,570,286
Providence, R. I.....	55,355,050	20,841,256	29,920,448
Passaic, N. J.....	51,274,600	(1)	16,581,824

1 Figures can not be shown without disclosing individual operations.

2 Figures not available.

3 Includes "sausage, not made in slaughtering and meat-packing establishments."

4 Excludes statistics for 3 establishments to avoid disclosure of individual operations.

5 Excludes statistics for 1 establishment to avoid disclosure of individual operations.