CHEMICALS AND ALLIED INDUSTRIES.

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SUMMARY AND ANALYSIS.

Closely associated with chemicals, as generally understood, are a number of related products which, at prior censuses, have been included in the chemical industry. At the census of 1879 the operations of establishments engaged in the manufacture of dyestuffs, tanning materials, explosives, fertilizers, pigments, wood-distillation products, salts, and certain elementary substances, such as bromine and phosphorus, were included in the chemical industry along with the manufacture of acids, sodas, potashes, alums, etc.; and in addition establishments engaged in the manufacture of soap, candles, castor oil, glucose, and sulphur. In 1889 the latter industries were not included in the special report, but the manufacture of pharmaceutical preparations and of paint and varnish were added. At the census of 1899 there were added the manufacture of essential oils, and bone, ivory, and lamp black, while pharmaceutical preparations were dropped from this group. The special reports for 1904 and 1909 embrace all of the industries included in 1899. Establishments engaged in the manufacture of supplies for calcium lights, comprising chiefly lime cylinders and oxygen gas, were classed as a separate industry at the censuses of 1879 to 1909, inclusive. These establishments (few in number) have been taken into the chemical industry at the present census.

The industries which are respectively the subjects of separate reports, and which are here treated as a group, are the following: Chemicals; sulphuric, nitric, and mixed acids; fertilizers; paint and varnish; explosives; dyestuffs and extracts; wood distillation; essential oils; and bone, carbon, and lamp black.

Summary for the group.—Table 1 summarizes the consolidated statistics for the allied industries for the censuses of 1914, 1909, 1904, and 1899.

The number of establishments increased from 1,710 in 1899 to 2,461 in 1914, or 43.9 per cent, and the wage earners employed from 46,755 to 86,788, or 85.6 per cent. The greatest development, measured by the number of establishments and value of products, was during the census period from 1904 to 1909, while the greatest increase in number of wage earners is shown for the five years from 1909 to 1914.

The value of products for the combined industry necessarily involves a large amount of duplication because the products of establishments in certain industries are used as material for establishments in other industries, and because of the inter-use of products and materials by establishments within the same industry. The amount of this duplication may vary at different censuses, and for this reason the increase in the value added by manufacture, which is the value of products less the cost of materials, is a better measurement of growth than that in the value of products. The value added by manufacture in 1899 was, in round numbers, $78,572,000, which increased to $105,833,000 in 1904, to $166,997,000 in 1909, and to $207,585,000 in 1914, an increase for the last semidecade of $40,588,000, or 24.3 per cent.

Table 1

	CHEMICALS AND ALLIED INDUSTRIES.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	2,461	2,150	1,807	1,710	14.5	19.0	5.7
Persons engaged	111,458	88,123	71,533	(2)	26.5	23.2	.....
Proprietors and firm members	1,108	1,162	1,153	(2)	−4.6	0.8	.....
Salaried employees	23,562	16,520	11,158	8,608	42.6	48.1	29.6
Wage earners (average number)	86,788	70,441	59,222	46,755	23.2	18.9	26.7
Primary horsepower	575,442	398,933	280,977	191,569	44.2	42.0	46.7
Capital	$722,988,871	$483,784,616	$324,034,684	$238,566,404	49.4	49.3	35.8
Salaries and wages	89,653,331	62,716,229	44,544,283	33,153,540	43.0	40.8	34.4
Salaries	36,631,960	24,046,606	15,019,442	11,345,787	52.3	60.1	32.4
Wages	53,021,371	38,669,623	29,524,841	21,807,753	37.1	31.0	35.4
Paid for contract work	750,453	333,066	380,858	(2)	125.3	−12.5	.....
Rent and taxes (including internal revenue)	5,599,664	3,098,793	[3] 1,866,110	(2)	80.7	.....	.....
Cost of materials	340,216,702	258,139,868	176,380,026	124,053,026	31.8	46.4	42.2
Value of products	547,801,937	425,136,756	282,212,862	202,624,742	28.9	50.6	39.3
Value added by manufacture (value of products less cost of materials)	207,585,235	166,996,888	105,832,836	78,571,716	24.3	57.8	34.7

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Exclusive of internal revenue.

Summary, by industries.—Table 2 presents, for 1914, a summary of the statistics of the several industries constituting the "chemical" group as a whole. In this table the paint and varnish industries have been consolidated.

Table 2

CHEMICALS AND ALLIED INDUSTRIES: 1914.

	Total.	Chemicals.	Sulphuric, nitric, and mixed acids.	Fertilizers.	Paint and varnish.	Explosives.	Dyestuffs and extracts.	Wood distillation, not including turpentine and rosin.	Essential oils.	Bone, carbon, and lamp black.
Number of establishments	2,461	395	32	784	800	111	112	95	105	27
Persons engaged	111,458	37,881	3,604	28,301	25,682	8,425	3,551	3,142	435	437
Proprietors and firm members	1,108	99	.....	373	391	20	56	36	116	17
Salaried employees	23,562	5,471	540	5,113	9,208	2,099	656	324	70	81
Wage earners (average number)	86,788	32,311	3,064	22,815	16,083	6,306	2,839	2,782	249	339
Primary horsepower	575,442	282,385	24,927	114,281	70,611	45,778	23,290	10,045	2,309	1,816
Capital	$722,988,871	$224,345,921	$35,233,806	$217,064,890	$129,533,935	$71,351,414	$21,283,974	$17,562,849	$1,616,682	$4,995,400
Salaries and wages	89,653,331	31,086,915	3,082,747	17,774,447	24,369,021	7,795,623	3,001,959	1,968,011	238,807	336,001
Salaries	36,631,960	9,020,703	870,200	7,242,442	14,188,733	3,307,335	1,388,843	403,189	105,335	105,180
Wages	53,021,371	22,066,212	2,212,547	10,532,005	10,180,288	4,488,288	1,613,116	1,564,822	133,272	230,821
Paid for contract work	750,453	375,435	6,315	192,859	91,602	7,645	2,487	72,260	1,500	350
Rent and taxes (including internal revenue)	5,599,664	1,733,251	217,278	1,271,417	1,647,370	322,132	225,582	146,533	14,106	21,995
Cost of materials	340,216,702	89,450,694	6,734,428	107,954,644	88,465,757	25,626,539	13,237,995	6,495,570	1,564,835	686,240
Value of products	547,801,937	158,053,602	15,215,474	153,196,152	145,623,691	41,432,970	20,620,336	9,882,537	2,313,606	1,463,569
Value added by manufacture (value of products less cost of materials)	207,585,235	68,602,908	8,481,046	45,241,508	57,157,934	15,806,431	7,382,341	3,386,967	748,771	777,329

Chemicals was the leading branch in the number of wage earners and value of products, reporting 37.2 per cent of the total for the combined industries for wage earners and 28.9 per cent for value of products, followed by fertilizers and paint and varnish, with 26.3 per cent for wage earners and 28 per cent for value of products, and 18.5 per cent for wage earners and 26.6 per cent for value of products, respectively. In value added by manufacture, chemicals was first, with 33 per cent of the total, followed by paint and varnish and fertilizers, with 27.5 per cent and 21.8 per cent, respectively. These three branches together reported 82 per cent of the average number of wage earners in the combined industries, 83.4 per cent of the value of products, and 82.4 per cent of the value added by manufacture.

Table 3 shows, for 1914, by states and geographic divisions, the number of establishments producing the various products, reported separately for the chemical and allied industries.

Table 3

	KIND.	NUMBER OF ESTABLISHMENTS MANUFACTURING SPECIFIED PRODUCTS, BY GEOGRAPHIC DIVISIONS: 1914.										NUMBER OF ESTABLISHMENTS MANUFACTURING SPECIFIED PRODUCTS, BY STATES: 1914.									
		United States.	New England.	Middle Atlantic.	East North Central.	West North Central.	South Atlantic.	East South Central.	West South Central.	Mountain.	Pacific.	Alabama.	Arkansas.	California.	Colorado.	Connecticut.	Delaware.	District of Columbia.	Florida.	Georgia.	Idaho.
	Chemicals:																				
	Acids—																				
1	Sulphuric	194	5	40	26	1	80	22	7	2	11	11		10	2	2	1		4	34	
2	Nitric	52	4	26	9	4	1	1		2	5	1		4	2	2					
3	Mixed	37	2	18	9	3		1		1	3	1		2	1						
4	Acetic	14	3	7	3											1					
5	Boric	5		4							1			1							
6	Citric	3		3																	
7	Hydrofluoric	9	1	6	2											1					
8	Muriatic	31	4	19	5	1				1	1			1	1	2					
9	Oleic	7		5	2																
10	Phosphoric	7	1	4	1		1														
11	Stearic	10		5	5																
12	Tannic	5		4	1																
13	Sodas	69	5	20	17	7	4			3	13			12						1	1
14	Bicarbonate of soda	5		2	1		1				1			1							
15	Caustic soda	14	1	7	5		1														
16	Sal soda, including monohydrate crystals.	50	4	12	13	5	3			3	10			9						1	1
17	Soda ash	10		2	4	2	1				1			1							
18	Borax	7		4	1						2			2							
19	Potash and potassium salts	42	1	20	18	1	2										1				
20	Alums	19	4	9	5						1			1		1					
21	Aluminum sulphate	8	1	3	4											1					
22	Alum cake	5	1	3							1			1							
23	Concentrated alum	3	1	2																	
24	Burnt alum	4		3	1																
25	Potash alum	5	1	4																	
26	Soda alum	3	1	2																	
27	Coal-tar products	40	4	12	9	4	2	6	1		2	3						1		1	
28	Cyanides	6	1	4	1																
29	Bleaching materials	56	7	23	14	4	3			1	1			1	1	1	1			1	
30	Hypochlorites, chiefly chloride of lime and bleaching powder.	14		7	6		1														
31	Hydrogen peroxide	20	1	13	2	3					1			1		1					
32	Bisulphite of soda, lime, etc.	14	5	5	2	1	1										1			1	
33	Chlorine	7		3	3		1														
34	Chemical substances produced by the aid of electricity.	36	1	20	5	3	3	1			3			3							
35	Chlorates	5	1	3	1																
36	Hypochlorites	4		3	1																
37	Caustic soda, caustic potash, and lye.	6		3	3																
38	Ferro and other alloys	7		4			2				1			1							
39	Oxygen and hydrogen	5			1	2					2			2							
40	Plastics	24	6	15	1	1	1									1					
41	Compressed or liquefied gases	106	9	36	24	14	6	2	4	2	9			8	1	1		1		3	
42	Anhydrous ammonia (NH_3)	14	1	5	3	2	1			1	1				1			1			
43	Carbonic acid gas or carbon dioxide (CO_2).	38	2	11	9	3	4	1	3	1	4			4	1					2	
44	Laughing gas, or nitrous oxide (N_2O).	7		3	2	1					1			1							
45	Oxygen	51	6	15	12	9	2	1	1	1	4			4		1				1	
46	Hydrogen	6	1		4	1										1					
47	Other gases, cyanogen, nitrogen, and liquid air.	10		4	5						1			1							
48	Fine chemicals	46	2	32	7	3				2					2						
	Chemicals, not otherwise specified:																				
49	Acetone	8		6	2						2			2							
50	Cream of tartar	8	1	4	1						1			1						1	
51	Epsom salts (magnesium sulphate).	12		5	4		2														
52	Formaldehyde	3		2	1											3					
53	Glycerin	119	16	36	38	12	1	2	2		12			9						1	
54	Arsenate of lead	11	1	3	5		1			1					1						
55	Niter cake	31	4	19	8											2					
	Bone, carbon, and lamp black:																				
56	Bone black	7	1	3	2						1			1							
57	Carbon black	20			1		18		1												
58	Lampblack	12	4	7		1										1					
	Dyestuffs and extracts:																				
	Dyestuffs—																				
59	Natural	15	5	7	1		2									1					
60	Artificial	26	7	17	2																
	Tanning materials—																				
61	Chestnut and oak extract	24		2			14	7			1	1		1							
62	Hemlock extract	7		2	2		1	2													
63	Other tanning extracts and materials.	23	2	11	1		9									1					
64	Mordants, assistants, and sizes	71	24	37	4	1	4			1										2	

NUMBER OF ESTABLISHMENTS MANUFACTURING SPECIFIED PRODUCTS, BY STATES: 1914—continued.

Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Mississippi.	Missouri.	Montana.	Nebraska.	Nevada.	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.	Oklahoma.	Oregon.	Pennsylvania.	Rhode Island.	South Carolina.	South Dakota.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	Wyoming.	
9	2		1	1	3		7	3	3		5						18	6	12	11	1		16		13		5	3			9	1		1		1
3	2		1					2	1			3					10	5		2			11		1							1		1		2
3	2							2	1			3					8	2		2			8									1		1		3
1	1							2	1								2	1					4													4
																	1	2					1													5
																	1	1					1													6
	1																2	2		1			2													7
2	1		1					2									7	5		2			7													8
																	1	3		2			1													9
1							1										3	1						1												10
	1																2	2		4			1													11
									1									4																		12
2	3	1	3				2	3	6			3	1				5	11		3		1	4	2						1			3	1	13
									1									2													1					14
									4								1	5		1			1	1							1					15
2	3	1	1				2	3	2			3	1				4	5		3		1	3	1										3	1	16
			2						2									2		2											1					17
1																	1	2					1													18
						1	1		16			1					9	7		1			4											1		19
3								3	2								1	3					5													20
2									2									1					2													21
								1															3													22
								1															2													23
1																		2					1													24
								1										1					3													25
								1										1					1													26
3				1	1			4	2	1		3					4	3		3			5				2					2		1		27
								1									2	1		1			1													28
3								6	7	1		3					6	17		3			3										1	1		29
									5								1	5		1			1										1			30
2										1		2					3	9					1													31
								5				1					2	1		1			2											1		32
1									2									3																		33
						1			4	1		1		1				18		1			2				1				1		2			34
						1			1									3																		35
									1									3																		36
									3									3																		37
																		3					1								1		1			38
												1		1						1																39
								5	1			1					12	2					1										1			40
5	2	1			1		1	8	4	2		10	1	1			7	17		10			12				2	3			1	1		3		41
1								1				2					3			2			2									1				42
3					1		1	2	1	1		2					3	5		4			3				1	2			1			1		43
												1						2		2			1													44
1	2	1					1	5	1	1		6	1	1			1	8		6			6				1	1						2		45
	1	1																		1														2		46
1	1								2								1	3		1																47
2								2	1			3					19	9		3			4											1		48
									1								1	3		1			2													49
								1										4		1																50
2							1										2	1		2			2													51
									1								2																			52
12	3	2	4	1	1			9	2	1		3		2			7	19		19	1	2	10	4			1					1		2		53
	2						1	1	2								2			1			1													54
4	2							2									7	2		2			10													55
1								1	1								1	1			1		1											18		56
								3				1					2	2					3													57
	1							2									1	4					2	2							2					58
2								6									8	9						1												59
																			3				2				6				9		2			60
									1														2				2				1			1		61
								1	1								4	4					3								7		2			62
													1	1										9										1	1	63
	1							15									14	12	1	2			11													64

Table 3—Continued.

	KIND.	NUMBER OF ESTABLISHMENTS MANUFACTURING SPECIFIED PRODUCTS, BY GEOGRAPHIC DIVISIONS: 1914.										NUMBER OF ESTABLISHMENTS MANUFACTURING SPECIFIED PRODUCTS, BY STATES: 1914.									
		United States.	New England.	Middle Atlantic.	East North Central.	West North Central.	South Atlantic.	East South Central.	West South Central.	Mountain.	Pacific.	Alabama.	Arkansas.	California.	Colorado.	Connecticut.	Delaware.	District of Columbia.	Florida.	Georgia.	Idaho.
	Explosives:																				
1	Dynamite	26		12	5	3		1		1	4	1		2	1						
2	Permissible explosives	20	1	10	3	2		1		1	2	1		1	1						
3	Nitroglycerin	58		22	13	4	6	2	6	1	4	1		2	1						
4	Blasting powder	48		18	11	5	2	4	2	1	5	2	1	4	1		1				
5	Gunpowder (black)	8	1	2	2		1				2			2			1				
6	Guncotton or pyroxylin, sold as such	4		4																	
7	Smokeless powder	5	1	4																	
8	Other explosives	6		2	2						2			2							
	Fertilizers:																				
9	Complete and ammoniated fertilizers	898	28	78	53	17	518	136	45	2	21	101	10	19	2	10	8		19	277	
10	Concentrated phosphate	18		3	3		9	1	2			1								6	
11	Superphosphates	218	4	22	18	1	122	44	4		3	33		3		1	1		8	45	
12	Other fertilizers	461	31	97	63	18	171	53	9	3	16	31		9		3	6	1	5	65	
	Essential oils:																				
13	Oils	102	7	9	82		1	2			1			1		6					
14	Witch-hazel extract	11	8	3												6					
	Paint and varnish:																				
	Colors (pigments)—																				
15	White lead, dry	20		9	8	2					1			1							
16	Lead oxides	24	3	10	7	3					1			1		1					
17	Barytes	6		1		1	2	2													
18	Iron buff and other earth colors	23	1	9	6	1	2	2			2			2		1					
19	Lithopone	7		5		1	1										1				
20	Prussian blue	15	1	10	4																
	Paints—																				
21	In paste form	351	21	124	106	29	18	16	7	5	25	2		19	3	3	3	1	2	4	
22	In oil, already mixed for use	448	26	154	129	40	23	22	8	8	38	2		26	5	6	2	1	2	5	
	Varnishes and japans—																				
23	Oleoresinous varnishes	168	11	71	58	7	3	4	4	1	9	2		9		4				1	
24	Spirit varnishes, not turpentine	161	15	81	42	7	2	4			10			8		3				1	
25	Damar and similar turpentine and benzine varnishes	167	11	74	63	3	3	5	1	1	6	1		5	1	2			1	1	
26	Pyroxylin varnishes	24	3	13	4	4										1					
27	Drying japans and dryers	203	15	83	76	6	4	8	2	2	7	1		6	1	4			1		
28	Baking japans and lacquers	118	4	54	48	3	1	3			5			4		2					
29	Fillers	318	21	109	93	29	17	16	6	4	23	2		19	2	4	2		1	3	
30	Water paints and kalsomine	69	4	33	17	6	1	3			5			4						1	
31	Bleached shellac	20	2	13	4			1				1									
	Wood distillation:																				
32	Wood alcohol	86	1	67	15		1	2													
33	Acetate of lime	[1] 79	1	60	15		1	2													
34	Turpentine (from wood)	14			2		5	5	2			3							2	1	

[1] Includes one establishment in Michigan which consumed its entire production.

NUMBER OF ESTABLISHMENTS MANUFACTURING SPECIFIED PRODUCTS, BY STATES: 1914—continued.

Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Mississippi.	Missouri.	Montana.	Nebraska.	Nevada.	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.	Oklahoma.	Oregon.	Pennsylvania.	Rhode Island.	South Carolina.	South Dakota.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	Wyoming.	
																																2		1		1
2	1								1			3					3	1					8									1				2
2	1					1						2					2						8									2	6	1		3
5	1		1	1					1			3					4	2		5	5		16					1				1	1	1		4
4	1	1	2							1		1					1	1		5	1		16				2									5
1								1									1	1		1																6
																	3						1													7
								1									4																	1		8
																	1			1			1													
14	10	3	4	4	12	6	43	8	3	1	20	6		2			22	10	54	25	2	1	46	3	83	1	11	21		1	32	1	2	1		9
	2				1		2										2			1			1		1			1								10
2	2				4	2	14	1	1		7	1					9	1	18	13			12		22		4				13		1			11
21	9	4	2	7	4	3	21	21	7	2	3	8		1		3	24	30	18	18		3	43	1	27	1	12	5	2		25	4	3	8	1	12
																																				13
	29			1				1	53								3	5					1				1									14
																2		2					1													
																																				15
									1			1		1			2	3		2			4													16
5								2	1			3					2	3		3			5								1					17
2	1											1						1	1								1								3	18
				1														5		2			4				2									19
1		1					2					1					3	1					1													20
																	4	6																		
4								1																												21
31	12	2		9	1	1	4	14	11	5		18		4			15	48	1	46		3	61	3	1		5	6	2		2	3		6		22
34	14	5	2	13	1	1	6	15	17	9		20		4	1		23	63	2	58	1	5	68	4	1		7	6	2		3	7	1	6		
																																				23
18	3	1	1	1	1	1	1	6	6	2		2		1			22	28		31			21				1	3	1		1					24
11	6	1		4		1		8	7	2		4					17	39		17		1	25	3							1	1		1		25
24	6			3				8	5			3					16	28		27			30	1			1	1			1	1		1		
																																				26
2								2				3		1			2	8		2			3													27
22	8			6			2	10	7	1		4		1			21	30		39			32	1			1	2	1		1	1				28
15	5			2				2	5			3					14	23		23			17				1				1	1				
																																				29
27	10	1		9	1	2	5	13	13	7		17		4			14	40	2	39	1	2	55	2			5	4	2		3	2	1	4		30
9	1			1				3	2			5		1			4	20		5		1	9	1			2									31
1								1	1								2	8		2			3	1												
																																				32
				1					12								1	20					46				1			1			1	3		33
				1					12									15					45				1			1			1	3		34
					2				1		2								2															1		

CHEMICALS.

GENERAL STATISTICS.

Scope of the industry.—The term "chemical industry" as employed in the census statistics of manufactures covers establishments engaged in the manufacture of a variety of products which are grouped under the following heads:

1. Acids.
2. Sodas and sodium compounds.
3. Potash and potassium salts.
4. Alums.
5. Coal-tar products.
6. Cyanides.
7. Bleaching materials.
8. Chemical substances produced by the aid of electricity.
9. Plastics.
10. Compressed or liquefied gases.
11. Fine chemicals.
12. Chemicals, not otherwise specified.

This classification does not include all chemical products, in the ordinary acceptance of the term, as some are included under distinctive classifications. Establishments engaged primarily in the manufacture of sulphuric, nitric, and mixed acids are grouped separately. The production of wood alcohol (methyl alcohol) is included under the classification "wood distillation, not including turpentine and rosin," and "explosives" and "fertilizers" under their respective titles.

The scope of the statistics was the same in 1914 as in 1909, with the exception of the addition of establishments previously classified as calcium lights.

Comparison with earlier censuses.—Table 4 summarizes the statistics of establishments engaged in the manufacture of chemicals for each census from 1899 to 1914, and gives percentages of increase.

Table 4	CHEMICALS.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909-1914	1904-1909	1899-1904
Number of establishments	395	359	297	316	10.0	20.9	-6.0
Persons engaged	37,881	27,817	22,792	(2)	36.2	22.0	.....
Proprietors and firm members	99	161	151	(2)	-38.5	6.6	.....
Salaried employees	5,471	3,927	2,794	1,596	39.3	40.6	75.1
Wage earners (average number)	32,311	23,729	19,847	15,163	36.2	19.6	30.9
Primary horsepower	282,385	208,657	132,394	(2)	35.3	57.6	.....
Capital	$224,345,921	$155,198,945	$96,764,847	$68,453,931	44.6	60.4	41.4
Salaries and wages	31,086,915	20,236,551	14,873,791	9,717,475	53.6	36.1	53.1
Salaries	9,020,703	6,140,628	4,060,033	2,327,854	46.9	51.2	74.4
Wages	22,066,212	14,095,923	10,813,758	7,389,621	56.5	30.4	46.3
Paid for contract work	375,435	181,011	155,558	(2)	107.4	16.4	.....
Rent and taxes (including internal revenue)	1,733,251	860,490	[3] 545,264	(2)	101.4	.....	.....
Cost of materials	89,450,694	64,145,429	42,097,957	27,092,591	39.4	52.4	55.4
Value of products	158,053,602	117,741,103	75,357,495	48,158,261	34.2	56.2	56.5
Value added by manufacture (value of products less cost of materials)	68,602,908	53,595,674	33,259,538	21,065,670	28.0	61.1	57.9

[1] A minus sign (-) denotes decrease. [2] Figures not available. [3] Exclusive of internal revenue.

The statistics for 1899, as given in the table, do not include establishments engaged primarily in the manufacture of sulphuric, nitric, and mixed acids, and in wood distillation, which were included under the general classification "chemicals" at that census, and appear in the statistics for the chemical industry in some of the tables of this report, but statistics for calcium lights have been added to chemicals for each census year from 1899 to 1914, inclusive. In value of products there was an increase of $40,312,499, from 1909 to 1914, or 34.2 per cent. The decrease in proprietors and firm members for 1914 as compared with 1909 reflects the tendency to incorporate the business of firms and individuals, more particularly the former, the proprietors and firm members becoming officers and managers of the incorporated companies.

Table 5 presents combined statistics for the chemical industry, the sulphuric, nitric, and mixed acid industry, and the wood-distillation industry, these constituting the chemical industry as it was presented prior to 1904. The number of establishments in 1914 was practically the same as in 1909, but in value of products there was an increase of 33.3 per cent.

Table 5 — THE CHEMICAL, SULPHURIC, NITRIC, AND MIXED ACID, AND WOOD-DISTILLATION INDUSTRIES, COMBINED.[1]							
CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
			Expressed in thousands.				
1914	522	38,157	$277,143	$25,844	$102,681	$183,152	$80,471
1909	521	28,702	186,942	17,054	75,407	137,362	61,955
1904	470	24,566	120,034	13,386	51,919	92,224	40,305
1899	452	19,075	89,164	9,418	34,581	62,756	28,175
1889	578	15,118	55,106	7,343	33,730	59,463	25,733
1879	599	9,744	29,003	4,234	24,691	38,692	14,001
1869	410	5,130	13,197	2,260	12,015	20,108	8,093
1859	299	2,014	3,556	637	3,087	5,420	2,333
1849	170	1,389	2,336	423	3,235	4,980	1,745

[1] Includes calcium lights (1869 to 1914). First presented as a separate industry in 1869; consolidated with the chemical industry in 1914.

Summary, by states.—Table 6 summarizes the more important statistics for the chemical industry, by states, the states being arranged according to the value of products reported for 1914.

Table 6

STATE.	CENSUS OF 1914. Number of establishments.	Wage earners. Average number.	Wage earners. Per cent distribution.	Wage earners. Rank. 1914	Wage earners. Rank. 1909	Value of products. Amount.	Value of products. Per cent distribution.	Value of products. Rank. 1914	Value of products. Rank. 1909	Value added by manufacture. Amount.	Value added by manufacture. Per cent distribution.	Value added by manufacture. Rank. 1914	Value added by manufacture. Rank. 1909	PER CENT OF INCREASE.[1] Wage earners (average number). 1909–1914	Wage earners. 1904–1909	Wage earners. 1899–1904	Value of products. 1909–1914	Value of products. 1904–1909	Value of products. 1899–1904	Value added by manufacture. 1909–1914	Value added by manufacture. 1904–1909	Value added by manufacture. 1899–1904
United States	395	32,311	100.0	....	....	$158,053,602	100.0	....	....	$68,602,908	100.0	....	....	36.2	19.6	30.9	34.2	56.2	56.5	28.1	61.1	57.9
New York	70	7,780	24.1	1	1	42,876,880	27.1	1	1	16,624,801	24.2	1	1	35.4	15.2	9.3	21.3	53.2	43.8	6.3	55.4	37.4
New Jersey	64	6,276	19.4	2	2	31,686,865	20.0	2	2	14,632,579	21.3	2	2	24.4	40.3	18.0	38.8	75.2	6.7	38.5	65.3	22.7
Pennsylvania	39	4,748	14.7	3	3	22,387,835	14.2	3	3	9,772,454	14.2	3	4	49.1	−5.6	−21.2	40.1	35.5	−9.7	69.0	27.8	−27.6
Michigan	36	4,509	14.0	4	4	13,891,415	8.8	4	4	7,517,930	11.0	4	3	42.1	−4.8	16.4	7.8	42.6	69.7	−3.8	68.7	75.8
Ohio	29	2,017	6.2	5	6	11,388,140	7.2	5	5	4,662,147	6.8	5	5	78.2	10.4	68.3	47.1	68.7	28.4	55.7	88.6	6.4
Illinois	26	1,682	5.2	6	8	8,618,118	5.5	6	7	3,257,699	4.7	7	7	99.5	15.8	24.2	84.0	103.1	8.8	85.0	87.0	1.2
Missouri	22	842	2.6	8	9	6,936,122	4.4	7	8	2,772,252	4.0	8	8	36.0	−3.3	88.2	90.5	11.0	81.8	95.8	27.9	136.5
Massachusetts	24	1,395	4.3	7	5	6,684,918	4.2	8	6	3,330,297	4.9	6	6	2.7	57.2	38.9	13.0	67.8	75.3	16.1	43.0	115.7
California	20	257	0.8	12	12	1,524,411	1.0	11	12	590,962	0.9	12	12	5.3	−5.8	−33.6	16.7	16.2	−45.5	8.5	28.3	−35.3
West Virginia	3	52	0.2	21	16	482,949	0.3	17	15	282,226	0.4	15	15	.....	.....	.....	.....	.....	.....	.....	.....	.....
Wisconsin	7	60	0.2	19	15	436,222	0.3	18	13	206,388	0.3	16	14	.....	.....	.....	−15.0	93.6	4.3	−24.0	111.7	4.0
Washington	4	32	0.1	22	21	373,553	0.2	20	23	114,888	0.2	22	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	51	2,661	8.2	....	....	10,766,174	6.8	....	....	4,838,285	7.1	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 29; a minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture, or where comparable figures can not be given.

Some of the states (Indiana, Tennessee, Virginia, Alabama, Maryland, Colorado, Rhode Island, and Minnesota), for which data can not be shown separately without disclosing the operations of individual establishments, ranked higher in value of products than some of those named in the table.

There were five states with products exceeding $11,000,000 in value—New York, New Jersey, Pennsylvania, Michigan, and Ohio—in the order named. These states contributed 77.3 per cent of the total value of products and gave employment to 78.4 per cent of the average number of wage earners.

Persons engaged in the industry.—Table 7 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 8 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914, and the per cent distribution at the two censuses.

Table 7

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	37,881	35,349	2,532	93.3	6.7
	1909	27,817	26,239	1,578	94.3	5.7
Proprietors and officials	1914	1,280	1,256	24	98.1	1.9
	1909	1,095	1,081	14	98.7	1.3
Proprietors and firm members	1914	99	89	10	89.9	10.1
	1909	161	153	8	95.0	5.0
Salaried officers of corporations	1914	473	462	11	97.7	2.3
	1909	367	361	6	98.4	1.6
Superintendents and managers	1914	708	705	3	99.6	0.4
	1909	567	567	.....	100.0	.....
Clerks and other subordinate salaried employees.	1914	4,290	3,496	794	81.5	18.5
	1909	2,993	2,492	501	83.3	16.7
Wage earners (average number)	1914	32,311	30,597	1,714	94.7	5.3
	1909	23,729	22,666	1,063	95.5	4.5
16 years of age and over	1914	32,023	30,411	1,612	95.0	5.0
	1909	23,562	22,569	993	95.8	4.2
Under 16 years of age	1914	288	186	102	64.6	35.4
	1909	167	97	70	58.1	41.9

Table 8

CLASS.	PERSONS ENGAGED IN THE INDUSTRY. Per cent of increase,[1] 1909–1914. Total.	Male.	Female.	Per cent distribution. Total. 1914	Total. 1909	Male. 1914	Male. 1909	Female. 1914	Female. 1909
All classes	36.2	34.7	60.5	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	16.9	16.2	.....	3.4	3.9	3.6	4.1	0.9	0.9
Proprietors and firm members	−38.5	−41.8	.....	0.3	0.6	0.3	0.6	0.4	0.5
Salaried officers of corporations	28.9	28.0	.....	1.2	1.3	1.3	1.4	0.4	0.4
Superintendents and managers	24.9	24.3	.....	1.9	2.0	2.0	2.2	0.1	.....
Clerks and other subordinate salaried employees	43.3	40.3	58.5	11.3	10.8	9.9	9.5	31.4	31.7
Wage earners (average number)	36.2	35.0	61.2	85.3	85.3	86.6	86.4	67.7	67.4
16 years of age and over	35.9	34.7	62.3	84.5	84.7	86.0	86.0	63.7	62.9
Under 16 years of age	73.5	.....	.....	0.8	0.6	0.5	0.4	4.0	4.4

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

Wage earners formed 85.3 per cent of the total number of persons employed in both 1914 and 1909. There was an increase of 60.5 per cent in the number of females employed in the industry from 1909 to 1914, while the increase in the number of males employed was only 34.7 per cent.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

The industry as a whole shows very little fluctuation in the employment of wage earners. The number employed in 1914 in the month of minimum employment, June, was but 937, or 2.9 per cent, less than the number employed in the maximum month, September. In 1909 and 1904, the fluctuation was somewhat greater reaching 9.8 per cent in 1909 and 4.1 per cent in 1904. The figures for 1909 show that the year was one of substantial and progressive growth from January to December, while those for 1914 and 1904 do not indicate advances throughout the respective years.

Table 9

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	32,634	22,624	19,638	99.5	90.2	96.9
February	32,172	22,787	19,987	98.0	90.8	98.6
March	32,681	22,983	20,103	99.6	91.6	99.2
April	32,442	23,256	20,074	98.9	92.7	99.0
May	31,959	23,676	20,076	97.4	94.4	99.0
June	31,876	23,797	20,275	97.1	94.8	100.0
July	31,914	23,760	19,594	97.3	94.7	96.6
August	32,280	23,553	19,440	98.4	93.9	95.9
September	32,813	23,957	19,689	100.0	95.5	97.1
October	32,451	24,370	19,592	98.9	97.1	96.6
November	32,294	24,888	19,843	98.4	99.2	97.9
December	32,216	25,090	19,853	98.2	100.0	97.9

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Table 10 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more in 1914.

Table 10

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	32,311	32,634	32,172	32,681	32,442	31,959	*31,876*	31,914	32,280	**32,813**	32,451	32,294	32,216	97.1
Illinois	1,682	1,633	1,635	**1,765**	1,738	1,675	*1,622*	1,697	1,662	1,672	1,723	1,686	1,676	91.9
Indiana	693	709	700	716	663	657	**756**	695	724	687	*590*	685	734	78.0
Massachusetts	1,395	1,382	1,389	**1,464**	1,415	1,454	1,427	1,375	*1,312*	1,390	1,383	1,423	1,326	89.6
Michigan	4,509	**4,619**	4,563	4,538	4,501	4,530	4,492	*4,403*	4,407	4,517	4,570	4,517	4,451	95.3
Missouri	842	787	*782*	804	819	806	883	901	908	**929**	870	815	800	84.2
New Jersey	6,276	6,284	6,226	6,377	6,372	**6,421**	6,286	*5,991*	6,105	6,301	6,327	6,350	6,272	93.3
New York	7,780	7,808	7,747	7,804	7,674	7,411	*7,399*	7,956	**8,262**	8,232	7,776	7,537	7,754	89.6
Ohio	2,017	**2,158**	2,063	2,130	2,106	1,978	1,960	1,980	*1,896*	1,974	1,959	2,005	1,995	87.9
Pennsylvania	4,748	**4,905**	4,798	4,703	4,730	4,680	4,718	*4,605*	4,641	4,754	4,825	4,814	4,803	93.9
Virginia	644	637	*627*	630	648	639	642	657	651	638	651	662	646	94.7

There was but slight variation from month to month in the number of wage earners employed. The largest number reported for any month in 1914 for the industry was 32,813 in September, and the smallest, 31,876, in June. Indiana shows the greatest proportionate variation, the minimum number in October being 78 per cent of the maximum number in June. In New York the greatest number of wage earners were employed in August, and in New Jersey in May.

Prevailing hours of labor.—In Table 11 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

More than half of the wage earners in 1914, 51.3 per cent, were in establishments where the prevailing hours of labor were 60 or more per week. The largest single group is shown for the establishments where the prevailing hours for the wage earners were between 54 and 60 per week, such wage earners constituting 40 per cent of the total number.

The figures indicate the tendency toward a shortening of the hours of employment. The average number of hours of labor per wage earner per week, obtained by computing the total number of hours of labor for all wage earners and dividing this total by the number of wage earners, was 60.9 in 1914 and 61.3 in 1909, indicating an average decrease of four-tenths of one hour per week for the five-year period. In making this computation the number of wage earners in each group is multiplied by the number of hours of labor per week for the group and the resultants of the several groups

added. The lowest group "48 and under" has been figured at 48; the "between 48 and 54" group at 51; "between 54 and 60" at 57; "between 60 and 72" at 66; and the "over 72" group at 72.

Table 11

STATE.	Census year.	Average number of wage earners. Total.	In establishments where the prevailing hours of labor per week were— 48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
United States	1914	32,311	947	303	1,586	12,912	5,553	6,598	2,101	2,311
	1909	23,729	86	703	389	9,213	6,581	2,050	514	4,193
Illinois	1914	1,682	23	10	62	15	351	1,221	.....	.....
	1909	843	12	....	19	38	180	487	48	59
Indiana	1914	693	27	39	.....	.....	29	.....	.....	598
	1909	509	4	....	1	.....	504	.....	.....	.....
Massachusetts	1914	1,395	17	10	535	811	11	11	.....	.....
	1909	1,358	8	8	16	1,033	241	.....	13	39
Michigan	1914	4,509	29	18	20	2,040	1,741	611	.....	50
	1909	3,174	.....	....	2	1,426	35	174	96	1,441
Missouri	1914	842	106	75	386	44	172	.....	57	2
	1909	619	.....	374	7	.....	210	.....	28	.....
New Jersey	1914	6,276	25	91	65	3,457	1,115	435	168	920
	1909	5,046	6	20	90	2,804	992	198	74	862
New York	1914	7,780	200	39	346	3,641	325	2,823	209	197
	1909	5,746	38	190	61	3,599	1,324	37	122	375
Ohio	1914	2,017	380	....	.....	859	266	1	508	3
	1909	1,132	2	....	3	164	586	13	34	330
Pennsylvania	1914	4,748	48	14	.....	1,359	873	869	1,110	475
	1909	3,186	6	98	.....	68	2,130	177	13	694
Virginia	1914	644	.....	....	.....	27	7	610	.....	.....
	1909	895	.....	....	50	.....	11	806	28	.....

Character of ownership.—Table 12 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry, for 1914 and 1909, and for 1914 for such states, except Indiana and Virginia, as reported an average of 500 wage earners or more.

Table 12

STATE.	Census year.	Number of establishments owned by— Individuals.	Corporations.	All others.	Average number of wage earners. Total.	In establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.	Value of products. Total.	Of establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.
United States	1914	44	325	26	32,311	147	31,974	190	0.5	99.0	0.6	$158,053,602	$892,905	$155,272,720	$1,887,977	0.6	98.2	1.2
	1909	63	270	2	23,729	240	23,283	206	1.0	98.1	0.9	117,741,103	1,197,630	115,321,196	1,222,277	1.0	97.9	1.0
Illinois	1914	3	23	.....	1,682	5	1,677	.....	0.3	99.7	.....	8,618,118	18,775	8,599,343	.....	0.2	99.8	.....
Massachusetts	1914	2	17	5	1,395	.....	1,374	[1] 21	.....	98.5	1.5	6,684,918	.....	6,524,735	[1] 160,183	.....	97.6	2.4
Michigan	1914	11	21	4	4,509	12	4,493	4	0.3	99.6	0.1	13,891,415	26,300	13,858,241	6,874	0.2	99.8	([2])
Missouri	1914	3	16	3	842	3	811	28	0.4	96.3	3.3	6,936,122	17,440	6,686,778	231,904	0.3	96.4	3.3
New Jersey	1914	4	58	2	6,276	[3] 21	6,255	.....	0.3	99.7	.....	31,686,865	[3] 125,248	31,561,617	.....	0.4	99.6	.....
New York	1914	10	57	3	7,780	82	7,613	85	1.1	97.9	1.1	42,876,880	583,446	41,435,938	857,496	1.4	96.6	2.0
Ohio	1914	2	26	1	2,017	[3] 5	2,012	.....	0.2	99.8	.....	11,388,140	[3] 24,280	11,363,860	.....	0.2	99.8	.....
Pennsylvania	1914	2	34	3	4,748	.....	4,732	[1] 16	.....	99.7	0.3	22,387,835	.....	22,072,933	[1] 314,902	.....	98.6	1.4

[1] Includes the group "individuals." [2] Less than one-tenth of 1 per cent. [3] Includes the group "all others."

The number of establishments under corporate ownership in 1914 formed 82.3 per cent of the total number, as compared with 75.2 per cent in 1909 and 70.7 per cent in 1904. The value of products of these establishments represented 98.2 per cent of the total value for the industry in 1914, 97.9 per cent in 1909, and 87.3 per cent in 1904. The wage earners employed in establishments under corporate ownership represented 99 per cent in 1914 and 98.1 per cent in 1909 of the total number.

In New York, the leading state in the industry, corporations controlled 81.4 per cent of the establishments and gave employment to 97.9 per cent of the wage earners, and in New Jersey, 90.6 per cent of the establishments and 99.7 per cent of the wage earners.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 13.

There were 44 establishments in 1914 reporting products valued at $1,000,000 or more. Although establishments in this group represented a comparatively small proportion of the total number for both 1914 and 1909, they reported 64.6 per cent of the total value of products in 1914 and 60.1 per cent in 1909. The average value of products per establishment increased from $327,970 in 1909 to $400,136 in 1914, and the average number of wage earners per establishment from 66 in 1909 to 82 in 1914.

Table 13

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	395	32,311	$158,053,602	$68,602,908
	1909	359	23,729	117,741,103	53,595,674
Less than $5,000	1914	53	60	137,979	84,675
	1909	56	64	124,959	57,806
$5,000 to $20,000	1914	51	171	612,861	299,293
	1909	55	237	596,910	208,837
$20,000 to $100,000	1914	103	1,066	5,719,359	3,162,556
	1909	97	1,310	4,985,195	2,746,341
$100,000 to $1,000,000	1914	144	7,900	49,505,947	19,017,266
	1909	120	6,882	41,227,479	16,870,064
$1,000,000 and over	1914	44	23,105	102,077,456	46,039,118
	1909	31	15,236	70,806,560	33,652,536
Per cent distribution:					
Less than $5,000	1914	13.4	0.2	0.1	0.1
	1909	15.6	0.3	0.1	0.1
$5,000 to $20,000	1914	12.9	0.5	0.4	0.4
	1909	15.3	1.0	0.5	0.5
$20,000 to $100,000	1914	26.1	3.3	3.6	4.6
	1909	27.0	5.5	4.2	5.1
$100,000 to $1,000,000	1914	36.5	24.4	31.3	27.7
	1909	33.4	29.0	35.0	31.5
$1,000,000 and over	1914	11.1	71.5	64.6	67.1
	1909	8.6	64.2	60.1	62.8

Table 14 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole and for the 10 leading states.

Table 14

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING— No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	395	32,311	11	120	302	100	1,257	52	1,742	44	3,064	28	4,407	14	4,095	9	6,197	8	10,647
	1909	359	23,729	14	121	320	80	1,127	62	2,138	26	1,866	23	3,816	13	4,810	7	4,838	4	4,814
Illinois	1914	26	1,082	1	7	17	9	117	3	94	4	226	1	196	.....	.....	.....	.....	1	1,032
	1909	22	843	.....	5	16	11	138	3	102	2	114	.....	.....	1	473	.....	.....	.....	.....
Indiana	1914	6	693	.....	2	5	.....	.....	3	90	.....	.....	.....	.....	.....	.....	1	598	.....	.....
	1909	6	509	.....	3	8	.....	.....	2	58	.....	.....	.....	.....	1	443	.....	.....	.....	.....
Massachusetts	1914	24	1,395	1	11	25	6	50	1	30	.....	.....	2	270	3	1,020	.....	.....	.....	.....
	1909	24	1,358	.....	14	33	4	52	2	89	.....	.....	2	355	2	829	.....	.....	.....	.....
Michigan	1914	36	4,509	3	16	29	7	86	4	138	.....	.....	1	148	3	1,053	.....	.....	2	3,055
	1909	37	3,174	8	18	26	3	38	1	24	1	96	3	495	1	328	.....	.....	2	2,167
Missouri	1914	22	842	2	7	15	5	74	4	138	3	231	.....	.....	1	384	.....	.....	.....	.....
	1909	11	619	2	.....	.....	3	25	4	143	1	85	.....	.....	1	366	.....	.....	.....	.....
New Jersey	1914	64	6,276	.....	11	30	18	181	11	384	12	847	7	1,095	2	514	1	757	2	2,468
	1909	50	5,046	1	11	38	9	138	13	445	8	645	2	333	3	977	2	1,296	1	1,174
New York	1914	70	7,780	1	12	34	10	219	11	383	11	747	11	1,834	1	318	3	2,409	1	1,836
	1909	74	5,746	.....	22	74	17	222	15	546	8	537	8	1,490	2	690	1	714	1	1,473
Ohio	1914	29	2,017	.....	10	19	9	114	3	101	3	182	1	194	2	843	1	504	.....	.....
	1909	33	1,132	2	13	27	12	100	2	57	1	58	1	126	2	704	.....	.....	.....	.....
Pennsylvania	1914	39	4,748	.....	11	30	10	146	5	158	7	495	1	125	1	279	2	1,259	2	2,256
	1909	38	3,186	.....	10	20	10	137	10	374	2	128	3	496	.....	.....	3	2,022	.....	.....
Virginia	1914	3	644	.....	.....	.....	1	7	1	27	.....	.....	.....	.....	.....	.....	1	610	.....	.....
	1909	4	895	.....	.....	.....	1	11	2	78	.....	.....	.....	.....	.....	.....	1	806	.....	.....

Of the 395 establishments reported in 1914, 2.8 per cent employed no wage earners and 30.4 per cent, from 1 to 5 only. Those with no wage earners are small establishments in which the work is done by the proprietors or firm members. In some cases they may employ a few wage earners for short periods, but the number is so small and the term of employment so short that in computing the average number of wage earners none could be shown for the establishments. Of the total number of wage earners reported, 4.8 per cent in 1914 and 6.1 per cent in 1909 were reported by establishments employing from 1 to 20; 14.9 per cent in 1914 and 16.9 per cent in 1909, by establishments employing 21 to 100; 47.3 per cent in 1914 and 56.7 per cent in 1909, by establishments employing 101 to 1,000; and 33 per cent in 1914 and 20.3 per cent in 1909, by establishments employing more than 1,000.

Engines and power.—Table 15 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 15

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	3,379	2,210	1,406	282,385	208,657	132,394	100.0	100.0	100.0
Owned	1,129	1,309	1,143	133,426	115,744	78,245	47.2	55.5	59.1
Steam engines and turbines [1]	1,061	1,231	1,083	124,329	103,488	71,239	44.0	49.6	53.9
Internal-combustion engines	47	39	32	5,962	1,190	477	2.1	0.6	0.4
Water wheels, turbines, and motors	21	39	28	3,135	11,066	6,469	1.1	5.3	4.9
Rented	2,250	901	[2] 263	148,959	92,913	54,149	52.8	44.5	40.9
Electric	2,250	901	[2] 263	134,481	92,067	10,130	47.6	44.1	7.7
Other	.....	.....	.....	14,478	846	44,019	5.1	0.4	33.2
Electric	4,871	2,182	672	172,510	156,709	18,240	100.0	100.0	100.0
Rented	2,250	901	[2] 263	134,481	92,067	10,130	78.0	58.8	55.5
Generated by establishments reporting	2,621	1,281	409	38,029	64,642	8,110	22.0	41.2	44.5

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power.
[2] Does not include the number of motors for calcium lights.

The total primary power used in the chemical industry has more than doubled since 1904. The most important form of power used in 1914 was electric power of which 78 per cent was rented or purchased and 22 per cent was generated by establishments reporting.

A large amount of electrical energy is consumed in electrochemical and electrometallurgical processes and to a considerable extent this is purchased from electric power companies. The total expense for fuel and rent of power in 1914 was $11,203,672, composed of fuel $7,844,931 and rent of power $3,358,741. The latter item was chiefly for electrical energy, including that used for motors and that used in electrolytic or electrothermic operations. Of the total expense for rent of power, $2,548,440, or three-fourths (75.9 per cent), was in New York and mainly in the Niagara Falls district.

Fuel.—Table 16 shows, for 1914, the quantity of each kind of fuel used for which data were obtained, for the industry as a whole and for 8 separate states.

Table 16

STATE.	COAL.		Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).			
United States	491,603	2,667,248	275,440	500,668	2,744,939
Illinois	.....	251,457	7,072	322	70
Massachusetts	3,292	46,570	9,782	50	860
Michigan	16,321	854,567	80,534	36	464,646
Missouri	30	41,964	1,879	1,555	2,949
New Jersey	287,166	125,990	9,799	10,892	8,900
New York	125,066	363,440	75,062	7,344	31,440
Ohio	.....	381,767	56,168	502	1,525,141
Pennsylvania	51,836	338,040	5,247	12,731	335,137
All other states	7,892	260,453	29,897	467,236	375,796

Bituminous coal was the principal kind of fuel used in the industry in 1914, Michigan reporting nearly one-third of the total. New Jersey and New York together reported more than four-fifths of the anthracite used. More than one-half of the gas used in the industry was reported for Ohio, which state also ranked next to Michigan in the use of bituminous coal.

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

The manufacture of sulphuric and nitric acids, and what is known as mixed acid—sulphuric and nitric—is in the main a specialized industry and the general statistics for establishments engaged primarily in their manufacture are presented under the specific classification "sulphuric, nitric, and mixed acids." There is, however, a considerable production of these acids by establishments that manufacture other chemicals, and a large quantity of sulphuric acid is made in conjunction with the fertilizer industry. In the following tables the statistics for the production of sulphuric, nitric, and mixed acids and for materials consumed in their manufacture are included along with those for other acids and materials used in chemical manufactures in general.

The schedule used in taking the census of 1914 designated under the various groups the chemicals which at prior censuses had been reported by three or more establishments, and it provided for details under each group of such other specific chemicals as were manufactured. In some cases, however, manufacturers did not report in detail all products; consequently, there results a large amount of unclassified chemicals, which may include a considerable production of some of those for which detail figures are given and undoubtedly includes others which could have been shown if they had been reported separately. The production is shown for all chemicals that can be given separately without the disclosure of individual operations, and those returned separately, but which can not be given individually, are named and reported as a whole under the several groups.

MATERIALS.

Summary for the United States.—Table 17 presents statistics for materials used in the chemical industry, inclusive of sulphuric, nitric, and mixed acids, for 1914, 1909, 1904, and 1899, only such specific materials being shown as were reported separately in 1914. Establishments manufacturing chemicals as subsidiary products did not furnish data for the materials consumed in their manufacture and hence these are not included.

Table 17

MATERIAL. (Tons of 2,000 pounds.)	CHEMICALS, INCLUDING SULPHURIC, NITRIC, AND MIXED ACIDS. 1914	1909	1904	1899
Total cost	$96,185,122	$69,531,257	$47,070,795	$31,125,829
The chemical industry	$89,450,694	$64,145,429	$42,097,957	$27,092,591
Sulphuric, nitric, and mixed-acid industry	$6,734,428	$5,385,828	$4,972,838	$4,033,238
Sulphur or brimstone:				
Tons	56,296	77,450	51,526	55,296
Cost	$1,162,632	$1,433,743	$1,071,229	$1,080,716
Pyrites:				
Tons	889,695	597,691	334,207	324,461
Cost	$3,769,467	$3,170,188	$1,745,416	$1,512,490
Nitrate of soda:				
Tons	58,191	52,976	45,021	37,892
Cost	$2,696,172	$2,373,220	$1,895,248	$1,250,520
Sulphuric acid:				
Tons	264,774	58,552	104,489	37,832
Cost	$1,515,982	$564,390	$945,486	$429,903
Nitric acid:				
Tons	7,819	1,525	3,068	1,220
Cost	$641,405	$139,591	$320,818	$127,811
Mixed acid:				
Tons	6,015	4,546	1,734	275
Cost	$698,664	$335,072	$156,605	$21,047
Ammonium sulphate:				
Tons	9,586	1,675	5,676	4,373
Cost	$567,249	$88,013	$356,199	$471,117
Alcohol:				
Grain—				
Gallons	206,886	479,428	187,389	120,474
Cost	$145,066	$287,416	$449,604	$263,472
Wood—				
Gallons	1,464,273	949,212	601,077	(1)
Cost	$577,122	$370,017	$367,223	
Fuel and rent of power	$11,854,901	$8,566,924	$4,913,267	$25,968,753
All other materials	$72,556,462	$52,202,083	$34,849,700	

[1] Figures not available.

The cost of all materials for 1914 as compared with 1909 shows an increase of 38.3 per cent, the per cent ratio of increase for 1904–1909 being 47.7 and for 1899–1904, 51.2. The materials for which specific information is given represent in cost about one-eighth of the total cost in 1914.

Summary, by states.—Table 18 gives, by states, statistics for the quantity and cost of certain materials consumed in the chemical and allied industries in 1914. The quantities here reported cover the purchased materials for all industries that reported the materials listed in the table, including petroleum refining as well as explosives, fertilizers, and the chemical and acid industries.

The difference between the totals as given in Tables 17 and 18 represents consumption in establishments manufacturing explosives and fertilizers, and in the petroleum refining industry.

Table 18

MATERIAL AND STATE.	MATERIALS PURCHASED AND USED IN THE CHEMICAL AND ALLIED INDUSTRIES: 1914.[1] Quantity.	Cost.
SULPHUR.	*Tons (2,000 lbs.).*	
Total	82,248	$1,730,047
By industries.		
Chemicals	52,670	1,085,877
Sulphuric, nitric, and mixed acids	3,017	76,755
Explosives	15,832	372,703
Fertilizers	2,041	42,716
Petroleum, refining	2,035	42,423
Other industries	6,044	110,113
By states.		
California	8,567	243,647
Connecticut	1,975	40,488
Florida	822	15,716
Illinois	1,880	44,847
Indiana	1,785	42,532
Iowa	1,044	23,998
Kansas	924	21,034
Maryland	2,425	63,033
Massachusetts	791	20,547
Michigan	1,807	43,404
New Jersey	15,086	310,040
New York	17,059	344,710
Ohio	3,316	75,862
Pennsylvania	18,034	302,800
Texas	1,578	30,713
Washington	516	13,947
West Virginia	553	13,204
All other states	3,186	78,556

MATERIAL AND STATE.	MATERIALS PURCHASED AND USED IN THE CHEMICAL AND ALLIED INDUSTRIES: 1914.[1] Quantity.	Cost.
PYRITES.	*Tons (2,000 lbs.).*	
Total	1,581,607	$7,822,030
By industries.		
Chemicals	357,385	1,522,105
Sulphuric, nitric, and mixed acids	532,310	2,247,302
Explosives	25,885	130,406
Fertilizers	613,842	3,590,235
Petroleum, refining	23,669	163,630
Other industries	28,516	159,202
By states.		
Alabama	56,756	360,170
California	68,498	382,087
Delaware	35,109	138,446
Georgia	130,222	836,589
Illinois	34,869	170,335
Indiana	55,769	134,764
Maryland	136,536	670,541
Massachusetts	50,990	268,433
New Jersey	259,670	1,196,722
New York	45,389	254,280
North Carolina	65,017	386,810
Ohio	137,487	458,543
Pennsylvania	197,184	1,057,305
South Carolina	80,370	474,763
Tennessee	36,249	206,332
Virginia	108,501	204,774
All other states	88,022	531,076

MATERIAL AND STATE.	MATERIALS PURCHASED AND USED IN THE CHEMICAL AND ALLIED INDUSTRIES: 1914.[1] Quantity.	Cost.
NITRATE OF SODA.	*Tons (2,000 lbs.).*	
Total	412,748	$10,264,181
By industries.		
Chemicals	25,715	1,176,733
Sulphuric, nitric, and mixed acids	32,386	1,519,439
Explosives	190,060	8,979,877
Fertilizers	162,184	7,511,809
For acid manufacture	15,134	704,581
For mixed fertilizers	147,050	6,807,228
Other industries	1,503	76,323
By states.		
Alabama	13,619	670,329
California	25,864	1,116,725
Colorado	7,121	361,718
Florida	10,829	510,021
Georgia	34,346	1,644,486
Illinois	14,977	751,031
Indiana	8,027	410,983
Iowa	5,877	283,205
Kansas	5,544	281,272
Maryland	17,871	655,666
Massachusetts	11,805	537,573
Missouri	13,110	647,095
New Jersey	78,402	3,509,358
New York	5,875	290,950
North Carolina	14,252	686,074
Ohio	14,002	751,508
Pennsylvania	45,118	2,111,871

[1] Industries included.—Chemicals, sulphuric, nitric, and mixed acids, explosives, fertilizers, petroleum refining, and (for alcohol) paint and varnish.

Table 18—Continued.

MATERIAL AND STATE.	MATERIALS PURCHASED AND USED IN THE CHEMICAL AND ALLIED INDUSTRIES: 1914.[1] Quantity.	Cost.
NITRATE OF SODA—continued.		
By states—Continued.	*Tons (2,000 lbs.).*	
South Carolina	21,938	$1,079,301
Tennessee	8,601	406,882
Virginia	11,611	546,069
Washington	10,164	431,302
Wisconsin	11,052	522,189
All other states	21,693	1,056,983
SULPHURIC ACID.		
Total	1,359,519	10,278,643
By industries.		
Chemicals	146,415	1,287,129
Sulphuric, nitric, and mixed acids	118,359	228,853
Explosives	52,398	723,795
Fertilizers	728,889	4,387,317
Petroleum, refining	290,455	3,519,552
Other industries	23,003	131,997
By states.		
Alabama	85,241	525,515
Arkansas	2,638	44,318
California	67,625	891,224
Florida	1,109	6,654
Georgia	107,475	647,569
Illinois	99,421	769,175
Indiana	22,326	206,757
Kansas	4,996	73,776
Louisiana	46,353	335,836
Maryland	201,811	1,180,741
Massachusetts	23,545	174,830
Michigan	8,666	95,573
Mississippi	9,170	58,326
Missouri	17,987	203,295
New Jersey	273,305	1,770,060
New York	59,408	593,021
North Carolina	30,836	186,146
Ohio	52,693	458,823
Oklahoma	6,155	91,712
Pennsylvania	136,073	1,067,242
Rhode Island	2,243	36,120
South Carolina	30,408	193,389
Tennessee	19,025	121,242
Texas	25,250	377,465
Virginia	23,612	132,886
All other states	2,148	36,948
NITRIC ACID.		
Total	12,612	1,148,850
By industries.		
Chemicals	5,363	448,808
Sulphuric, nitric, and mixed acids	2,456	192,597
Explosives	4,347	476,404
Other industries	446	31,041
By states.		
California	2,623	198,731
Massachusetts	1,614	97,555

MATERIAL AND STATE.	MATERIALS PURCHASED AND USED IN THE CHEMICAL AND ALLIED INDUSTRIES: 1914.[1] Quantity.	Cost.
NITRIC ACID—continued.		
By states—Continued.	*Tons (2,000 lbs.).*	
Missouri	852	$104,575
New Jersey	4,788	511,521
New York	1,223	107,142
Ohio	348	23,403
Pennsylvania	1,156	104,879
All other states	8	1,044
MIXED ACIDS.		
Total	25,273	1,746,141
By industries.		
Chemicals [2]	6,018	698,764
Explosives	19,255	1,047,377
By states.		
California	6,600	326,611
Illinois	1,879	100,299
Kansas	303	16,019
Massachusetts	3,106	203,832
New Jersey	2,966	443,737
New York	981	85,292
Ohio	1,179	69,009
Oklahoma	1,835	109,629
Pennsylvania	5,526	336,505
Washington	185	11,793
West Virginia	678	41,473
All other states	35	1,942
AMMONIUM SULPHATE.		
Total	159,534	9,584,062
By industries.		
Chemicals [2]	9,610	568,899
Fertilizers [2]	149,924	9,015,163
By states.		
Alabama	8,964	424,034
California	1,735	112,099
Connecticut	488	29,020
Florida	8,752	546,746
Georgia	22,003	1,312,452
Illinois	943	50,468
Indiana	497	25,860
Kansas	311	17,206
Kentucky	288	17,413
Louisiana	3,228	192,810
Maine	510	31,161
Maryland	16,698	999,085
Massachusetts	7,426	423,927
Michigan	1,272	62,651
Mississippi	2,482	151,102
Missouri	6,936	434,178
New Hampshire	2,014	113,222
New Jersey	12,444	848,267
New York	877	41,926
North Carolina	13,791	838,112
Oregon	4,185	236,317
Pennsylvania	5,029	295,183

MATERIAL AND STATE.	MATERIALS PURCHASED AND USED IN THE CHEMICAL AND ALLIED INDUSTRIES: 1914.[1] Quantity.	Cost.
AMMONIUM SULPHATE—contd.		
By states—Continued.	*Tons (2,000 lbs.).*	
South Carolina	17,989	$1,126,243
Tennessee	2,041	116,486
Virginia	18,414	1,125,171
All other states	217	12,923
ALCOHOL—GRAIN (ETHYL ALCOHOL).		
Total	*Gallons.* 1,440,443	647,321
By industries.		
Chemicals [2]	379,119	210,812
Paint and varnish [2]	1,061,324	436,509
By states.		
California	67,034	24,950
Connecticut	171,532	53,791
Illinois	169,863	55,064
Indiana	27,152	8,955
Kentucky	7,820	2,735
Massachusetts	84,388	29,116
Michigan	25,414	7,721
Minnesota	12,966	10,094
Missouri	14,390	11,163
New Jersey	188,055	91,033
New York	361,201	239,865
Ohio	59,037	24,611
Oregon	4,266	1,920
Pennsylvania	240,443	87,862
Rhode Island	6,445	7,245
All other states	437	196
ALCOHOL—WOOD (METHYL ALCOHOL).		
Total	2,454,224	1,000,119
By industries.		
Chemicals [2]	1,466,773	577,997
Paint and varnish	987,451	422,122
By states.		
California	3,750	1,418
Connecticut	21,544	12,814
Illinois	160,485	63,692
Kentucky	1,445	529
Maryland	1,697	788
Massachusetts	244,243	104,349
Michigan	445,817	187,563
Minnesota	3,457	1,555
Missouri	36,075	13,398
New Jersey	1,345,602	527,266
New York	90,052	40,282
Ohio	26,789	11,971
Pennsylvania	30,437	15,441
Rhode Island	14,317	6,794
Virginia	4,750	1,638
Washington	3,361	1,344
Wisconsin	18,700	8,414
All other states	1,703	863

[1] Industries included.—Chemicals, sulphuric, nitric, and mixed acids, explosives, fertilizers, petroleum refining, and (for alcohol) paint and varnish.
[2] Includes subsidiary products of other industries.

PRODUCTS.

Summary for the United States.—Table 19, on the following page, presents for 1914, 1909, 1904, and 1899, statistics for the quantity and the value of the various products reported by establishments in the chemical industry and the sulphuric, nitric, and mixed acid industry, and of like products made by establishments engaged primarily in other lines of manufacture. The statistics for specific products give the total production, unless otherwise stated, irrespective of the industry classification of the establishments.

The table shows the number of establishments assigned to the chemical industry and to the sulphuric, nitric, and mixed acid industry for each year and the number reporting chemicals as subsidiary products in 1914 and 1909. It also gives the number of establishments reporting the production of many of the specific products and in some cases the quantity made and consumed in the same establishment as well as the quantity manufactured for the market.

Table 19

	CHEMICAL PRODUCTS. (Tons of 2,000 pounds.)			
	1914	1909	1904	1899
Number of establishments	754	850	.....	.....
The chemical industry	395	359	297	316
Sulphuric, nitric, and mixed acid industry	32	42	32	34
Manufacturing chemicals as subsidiary products	327	449	(1)	(1)
PRODUCTS.				
Total value	$200,195,835	$150,580,149	$89,219,883	.....
The chemical industry, all products	$158,053,602	$117,741,103	$75,357,495	$48,158,261
Sulphuric, nitric, and mixed acid industry, all products	$15,215,474	$9,884,057	$9,052,646	$8,596,390
Chemicals, subsidiary products of other industries	$26,926,759	$22,954,989	$4,809,742	(1)
I.—Acids.				
Total value	$30,516,569	$23,722,874	$17,008,656	$9,935,202
Sulphuric acid:				
Number of establishments	194	183	(1)	(1)
Production reduced to 50° Baumé acid—				
Total, tons	a 4,071,566	[2] 2,764,455	1,869,436	1,548,123
For sale: tons	2,338,284	1,479,200	900,991	452,942
For sale: value	$15,395,133	$10,103,425	$7,942,211	$4,071,848
Made and consumed, tons	a 1,733,282	1,285,255	968,445	1,095,181
Production according to strength—				
50° Baumé—				
Total, tons	a 1,701,233	1,643,281	1,169,141	953,439
For sale: tons	451,121	528,263	(1)	60,387
For sale: value	$2,709,350	$3,176,430	(1)	$627,882
Made and consumed, tons	a 1,250,112	1,115,018	(1)	893,052
60° Baumé—				
Total, tons	795,489	189,384	48,688	17,012
For sale: tons	545,562	177,414	(1)	13,650
For sale: value	$3,754,866	$1,038,358	(1)	$199,380
Made and consumed, tons	249,927	11,970	(1)	3,362
66° Baumé—				
Total, tons	828,466	552,619	411,165	382,279
For sale: tons	732,186	453,370	(1)	250,328
For sale: value	$8,042,422	$5,454,002	(1)	$3,244,586
Made and consumed, tons	96,280	99,249	(1)	131,951
Oleum or fuming, and sulphur trioxide—				
Total, tons	77,758	32,337	.....	.....
For sale: tons	[3] 62,354	[3] 28,594	13,268	(1)
For sale: value	$888,495	$434,635	$361,018	(1)
Made and consumed, tons	15,404	3,743	(1)	(1)
Reclaimed acid:				
Tons	136,360	7,069	(1)	(1)
Value	$518,890	$62,935		
Nitric acid:				
Number of establishments	52	25	(1)	(1)
Total production, tons	78,589	[2] 68,717	54,190	31,542
For sale: tons	14,685	13,663	23,132	15,481
For sale: value	$1,591,625	$1,357,098	$2,250,944	$1,454,909
Made and consumed, tons	63,904	55,054	31,058	16,061
Mixed acid (sulphuric-nitric):				
Number of establishments	37	14	(1)	(1)
Total production, tons	112,124	.....	.....	.....
For sale: tons	42,725	[2] 28,591	32,665	21,151
For sale: value	$2,204,480	$1,860,787	$1,957,356	$1,109,758
Made and consumed, tons	69,399	(1)	(1)	(1)
Acetic acid:				
Number of establishments	13	13	12	14
Total production, pounds	75,303,375	[2] 58,000,602	29,506,021	27,875,222
For sale: pounds	70,617,637	56,923,773	27,074,289	26,660,555
For sale: value	$1,272,294	$1,336,874	$568,609	$426,892
Made and consumed, pounds	4,685,738	1,076,829	2,431,741	1,214,667
Boric acid:				
Number of establishments	5	5	7	3
Total production, pounds	8,590,311	.....	.....	.....
For sale: pounds	8,584,311	5,554,914	6,956,896	2,684,935
For sale: value	$588,981	$295,776	$527,190	$198,212
Made and consumed, pounds	6,000	(1)	(1)	(1)
Citric acid:				
Number of establishments	3	5	4	3
Total production, pounds	2,729,943	.....	.....	.....
For sale: pounds	2,657,840	2,102,256	2,265,631	[4] 3,886,382
For sale: value	$1,516,336	$777,235	$508,718	$335,297
Made and consumed, pounds	72,103	(1)	(1)	(1)
Hydrofluoric acid:				
Number of establishments	9	10	6	4
Total production, pounds	7,209,248	8,027,290	.....	.....
For sale: pounds	5,373,657	6,842,914	4,149,936	698,000
For sale: value	$325,540	$294,379	$222,886	$34,890
Made and consumed, pounds	1,835,591	1,184,376	(1)	(1)
Muriatic acid:				
Number of establishments	31	38	36	31
Total production, pounds	337,167,882	[2] 244,734,217	188,538,396	134,229,012
For sale: pounds	170,876,878	203,214,879	174,520,762	116,675,109
For sale: value	$1,348,805	$1,758,335	$1,612,848	$1,015,915
Made and consumed, pounds	166,291,004	41,519,338	14,017,634	17,553,903

	CHEMICAL PRODUCTS. (Tons of 2,000 pounds.)			
	1914	1909	1904	1899
PRODUCTS—continued.				
I.—Acids—Continued.				
Oleic acid:				
Number of establishments	7	8		
Total production, pounds	23,187,579	.....		
For sale: pounds	21,932,736	16,377,063	(1)	(1)
For sale: value	$1,301,353	$845,106		
Made and consumed, pounds	1,254,843	(1)		
Phosphoric acid:				
Number of establishments	7	9	9	.....
Production for sale—				
Pounds	12,420,191	(1)	991,050	(1)
Value	$680,239	$667,505	$68,541	
Stearic acid:				
Number of establishments	10	11		
Total production, pounds	14,960,109	.....		
For sale: pounds	14,351,404	(1)	(1)	(1)
For sale: value	$1,242,492	$1,143,213		
Made and consumed, pounds	608,705	(1)		
Tannic acid:				
Number of establishments	5			
Production for sale—				
Pounds	853,830			
Value	$287,142	[5] $3,220,206	$1,259,362	$1,287,481
Fatty acids	$206,576			
Miscellaneous acids [6]	$1,977,131			
Unclassified acids	$59,552			
II.—Sodas and sodium compounds.				
Sodas:				
Number of establishments [7]	69	70	63	50
Value	$23,632,704	$23,368,509	$17,162,580	$12,044,512
Bircarbonate of soda—				
Tons	90,169	82,800	68,867	68,856
Value	$1,439,014	$1,515,045	$1,135,610	$1,332,765
Caustic soda—				
Tons	212,539	131,612	86,840	166,783
Value	$6,657,514	$5,264,887	$3,185,959	$3,170,280
Sal soda, including monohydrate crystals—				
Tons	106,591	86,644	59,548	63,249
Value	$1,510,449	$1,156,882	$831,869	$875,243
Soda ash—				
Tons	935,305	646,057	518,954	390,653
Value	$10,937,945	$10,362,656	$8,204,545	$4,859,656
Borax—				
Tons	26,501	20,154	20,882	5,637
Value	$2,071,774	$1,756,922	$2,122,808	$502,480
Soda products, not classified	$1,016,008	$3,312,117	$1,681,789	$1,304,088
Sodium:				
Phosphate—				
Tons	15,397	12,290	4,830	2,340
Value	$853,528	$540,282	$244,373	$155,989
Silicate—				
Tons	169,049	34,170	(1)	32,651
Value	$1,648,854	$366,621		$416,005
Sulphides—				
Tons	20,263	7,673	(1)	(1)
Value	$516,644	$206,450		
Sulphate—				
Glauber salts—				
Tons	34,537	46,471	(1)	(1)
Value	$427,808	$512,464		
Salt cake—				
Tons	90,442	(1)	(1)	(1)
Value	$841,887			
Bichromate—				
Tons	11,824	(1)	(1)	(1)
Value	$1,125,398			
Benzoate	$61,490	(1)	(1)	(1)
Sulphite	$66,649	(1)	(1)	(1)
Other sodium compounds	[8] $768,157	(1)	(1)	(1)
Lye	$2,447,406	(1)	(1)	(1)
Soda washing compounds, not including soap:				
Tons	12,441	(1)	(1)	(1)
Value	$204,230			
III.—Potash and potassium salts.				
Number of establishments	42	31	39	67
Products, value	$4,094,927	.....	.....	.....
Crude potash	$30,644	$88,940	$104,655	$178,180
Potassium carbonate (unrefined and refined)	$19,007			
Potassium nitrate (saltpeter):				
Tons	14,740	(1)	(1)	(1)
Value	$1,244,051			
Caustic potash and potassium salts—Bicarbonate, chlorate, iodide, citrate, acetate, silicate, etc.	$2,801,225	(1)	(1)	(1)

a The final figures here given differ from and should be substituted for the figures published on page 172 of the Abstract of the census of manufactures: 1914.

(See footnotes at end of table.)

Table 19—Continued.

	CHEMICAL PRODUCTS. (Tons of 2,000 pounds.)			
	1914	1909	1904	1899
PRODUCTS—continued.				
IV.—Alums.				
Number of establishments	19	19	17	13
Pounds	313,712,000	276,294,000	225,543,000	179,467,000
Value	$3,467,969	$3,022,355	$2,956,844	$2,446,576
Aluminum sulphate:				
Pounds	142,438,000	100,595,000	(1)	(1)
Value	$1,277,836	$843,956		
Alum cake:				
Pounds	23,338,000	27,001,000	19,496,000	4,049,000
Value	$251,186	$274,307	$161,906	$34,047
Concentrated alum:				
Pounds	42,562,000	54,879,000	80,919,000	103,017,000
Value	$450,730	$468,795	$972,892	$1,062,547
Burnt alum:				
Pounds	22,629,000	11,746,000	15,858,000	6,629,000
Value	$364,656	$209,904	$364,328	$174,600
Potash alum:				
Pounds	12,765,000	10,254,000	10,307,000	14,200,000
Value	$219,968	$155,319	$156,448	$215,004
Soda alum:				
Pounds	[9]13,995,000	[9] 8,062,000	82,000	9,399,000
Value	$254,477	$133,941	$4,923	$228,500
Other alums—Porous, excelsior, pearl, ammonium, chloride of alumina, etc.:				
Pounds	55,985,000	[10]63,757,000	98,881,000	42,173,000
Value	$649,116	$936,133	$1,296,347	$731,878
V.—Coal-tar products.				
Number of establishments	40	42	39	22
Coal-tar distillery products, value	[11]$8,065,156	$4,057,591	$3,984,821	$1,421,720
Chemicals or medicinal preparations from coal tar, value	$774,350	$228,528		
VI.—Cyanides.				
Number of establishments	6	7	11	18
Pounds	[12]16,450,225	13,291,080	11,196,318	8,460,989
Value	$2,398,674	$1,941,893	$1,710,823	$1,595,505
Yellow prussiate of potash:				
Pounds	3,204,684	3,510,208	(1)	(1)
Value	$451,092	$463,983		
All other—Sodium cyanide, metallocyanides, yellow prussiate of soda, trisalytes, and potassium cyanide:				
Pounds	13,245,541	9,780,872	(1)	(1)
Value	$1,947,582	$1,477,910		
VII.—Bleaching materials.				
Number of establishments	56	48	33	26
Value of products	$5,302,359	$3,215,728	$1,158,064	$592,658
Hypochlorites—Chiefly chloride of lime and bleaching powder:				
Number of establishments	14	9	(1)	(1)
Pounds	310,380,000	116,802,000	39,176,000	21,958,000
Value	$2,916,225	$1,786,846	$535,835	$462,949
Hydrogen peroxide:				
Number of establishments	20	17	(1)	(1)
Pounds	[13]32,595,000	[13] 9,926,000	4,371,000	588,000
Value	$1,303,596	$870,541	$413,221	$63,754
Bisulphite of soda, lime, etc.:				
Number of establishments	14	15	(1)	(1)
Pounds	26,346,000	31,718,000	12,446,000	2,922,000
Value	$243,559	$226,154	$110,155	$34,486
Chlorine:				
Number of establishments	7			
Pounds	12,217,000			
Value	$472,836	$332,187	$98,853	$31,469
All other—Sodium peroxide, sulphur dioxide, lime sulphur solutions, etc	$366,143			
VIII.—Chemical substances produced by the aid of electricity.[14]				
Number of establishments	36	[15] 34	21	14
Value of products	$29,661,949	$18,451,461	$7,068,246	$2,045,535
Chlorates:				
Number of establishments	5	5	(1)	(1)
Tons	8,304	5,785		
Value	$1,131,316	$904,550		
Hypochlorites:				
Number of establishments	4	5	(1)	(1)
Tons	73,197	45,976		
Value	$1,714,837	$1,506,831		
Caustic soda, caustic potash, and lye:				
Number of establishments	6			
Tons	48,663			
Value	$2,309,811			
Ferro and other alloys:[16]				
Number of establishments	7	$16,040,080	(1)	(1)
Value	$2,859,482			
Oxygen and hydrogen:				
Number of establishments	5			
Value	$68,441			

	CHEMICAL PRODUCTS. (Tons of 2,000 pounds.)			
	1914	1909	1904	1899
PRODUCTS—continued.				
VIII.—Chemical substances produced by the aid of electricity[14]—Continued.				
All other, named in order of value—Aluminum, calcium carbide, abrasives, electrodes, sodium and sodium peroxide, phosphorus, silicon, chlorine, carbon bisulphide, and muriatic acid	$21,578,062			
IX.—Plastics.				
Number of establishments	24	24	14	13
Value of products	$13,895,784	$7,472,732	$3,949,124	$3,191,336
Pyroxylin, including goods sold under trade names—Celluloid, fiberloid, viscoloid, xylonite, etc	$8,876,509	$5,682,379	$2,136,976	$1,526,572
In partially manufactured form—Rods, sheets, blocks, etc	$3,778,374	(1)	(1)	(1)
Finished goods, manufactured in the producing establishments	$5,098,135	(1)	(1)	(1)
Rubber substitutes, including finished goods	$428,605	$1,790,353	$1,812,148	$1,604,758
Other plastics, including artificial silk	$4,590,670			
X.—Compressed or liquefied gases.[17]				
Total value	$7,624,884	$5,165,795	$2,791,359	$1,230,797
Anhydrous ammonia (NH_3)[18]:				
Number of establishments	14	15	(1)	(1)
Pounds	16,659,789	11,969,846	5,752,233	2,443,729
Value	$3,140,848	$2,544,238	$1,176,854	$438,157
Carbonic acid gas, or carbon dioxide (CO_2):				
Number of establishments	38	35	(1)	(1)
Pounds	50,445,779	47,953,291	35,991,627	12,084,281
Value	$2,320,685	$2,345,743	$1,343,966	$719,364
Laughing gas, or nitrous oxide (N_2O):				
Number of establishments	7	5	(1)	(1)
Gallons	[19]17,838,000	[20] 97,175	[20] 41,020	
Value	$213,099	$38,589	$28,311	
Oxygen:				
Number of establishments	51	20	(1)	(1)
Cubic feet[21]	104,714,000	3,814,000		
Value	$1,829,446	$177,469	$69,246	$38,170
Hydrogen:				
Number of establishments	6			
Cubic feet[21]	1,669,000			
Value	$16,671	$59,756	$172,982	$35,106
Other gases—Cyanogen, nitrogen, and liquid air:				
Number of establishments	10			
Value	$104,135			
XI.—Fine chemicals.				
Total value	$10,983,017	$10,267,252	$9,478,753	.....
Alkaloids:				
Ounces	5,805,212	3,482,617	5,797,925	4,054,478
Value	[22]$4,738,335	$3,188,914	$3,229,527	$1,750,503
Amylacetate:				
Pounds	1,300,052	1,470,568	(1)	(1)
Value	$465,664	$442,771		
Chloroform:				
Pounds	1,333,954	1,869,685	616,670	(1)
Value	$295,317	$477,538	$165,604	
Ether:[23]				
Pounds	2,120,082	1,168,631	854,411	263,238
Value	$278,816	$190,164	$427,401	$129,876
Gold salts:				
Ounces	28,817	42,544	47,641	12,347
Value	$291,658	$430,944	$453,202	$120,696
Silver salts:				
Ounces	2,563,238	2,030,399	1,899,081	1,606,108
Value	$846,059	$727,428	$778,439	$627,252
Platinum salts:				
Ounces	365	1,561	19,068	8,112
Value	$6,998	$19,123	$175,682	$61,400
Thorium compounds, radium, uranium, and vanadium	$1,388,477			
Vanillin:				
Pounds	120,619			
Value	$525,219			
Chemically pure (C. P.) preparations, including C. P. acids, alcohol, etc	$530,476			
Chemicals used in the manufacture of photographic materials, not otherwise specified	$121,690	$4,790,370	$4,248,898	(1)
Other specified fine chemicals—Refined camphor, synthetic oils and perfumery bases, refined fusel oil, hypophosphites, ethyl chloride, sulphon-methane, and sulphon-ethyl-methane, nicotine, and butric ether (named in order of value)	$581,528			
All other fine chemicals, not reported separately	$912,780			

(See footnotes at end of table.)

Table 19—Continued.

	CHEMICAL PRODUCTS. (Tons of 2,000 pounds.)			
	1914	1909	1904	1899
PRODUCTS—continued.				
XII.—Chemicals, not otherwise specified				
Total value	$47,597,084	$42,403,414	.....	.....
Acetone:				
Number of establishments	8	8	(1)	(1)
Pounds	10,425,817	7,761,696	1,300,395	1,638,715
Value	$1,099,585	$812,978	$161,320	$178,666
Acetate of lime:				
Number of establishments	78	91	(1)	(1)
Pounds	163,522,000	141,478,000	110,384,000	86,826,000
Value	$2,138,909	$2,118,443	$1,527,733	$981,286
Ammonium salts:				
Chloride—				
Pounds	11,511,934	(1)	(1)	(1)
Value	$641,040			
Sulphate—				
Pounds	8,846,616	(1)	(1)	(1)
Value	$211,314			
Other—Acetate, bifluoride, carbonate, phosphate, picrate, etc	$260,801	(1)	(1)	(1)
Aqua ammonia:[24]				
Pounds	35,544,246	20,983,476	(1)	(1)
Value	$1,412,236	$839,820		
Barium salts:				
Sulphate (blanc fixé)—				
Pounds	18,278,000	8,152,000	(1)	(1)
Value	$257,415	$86,986		
Other—Carbonate, chloride, etc.	$103,204	(1)	(1)	(1)
Copper salts:				
Sulphate (blue vitriol)—				
Pounds	37,152,351	36,546,553	(1)	(1)
Value	$1,598,944	$1,531,574		
Other	$14,383	(1)	(1)	(1)
Cream of tartar:				
Number of establishments	8	5	(1)	(1)
Pounds	12,646,120	15,592,937	15,650,000	10,981,680
Value	$3,124,958	$2,925,883	$2,892,563	$2,117,704
Epsom salts (magnesium sulphate):				
Number of establishments	12	10	(1)	(1)
Pounds	29,265,115	21,621,297	20,566,443	9,239,809
Value	$296,999	$189,791	$215,088	$75,066
Formaldehyde:				
Number of establishments	3	3	(1)	(1)
Pounds	8,426,247	3,794,486		
Value	$655,174	$363,717		
Glycerin:[25]				
Crude, for sale—				
Pounds	16,568,920	79,677,490	46,972,658	26,512,454
Value	$2,278,976	$11,752,580	$5,355,320	$3,096,601
Refined, pounds	60,944,799			
For sale—pounds	59,810,405			
For sale—value	$10,779,204			
Made and consumed, pounds	1,134,394	(1)	(1)	(1)

	CHEMICAL PRODUCTS. (Tons of 2,000 pounds.)			
	1914	1909	1904	1899
PRODUCTS—continued.				
XII.—Chemicals, not otherwise specified—Continued.				
Iron salts:				
Sulphate (copperas)—				
Pounds	[26]92,478,823	[27]25,637,092	9,700,104	27,595,909
Value	$352,772	$78,467	$28,096	$199,869
Other salts and compounds—Iron liquor (ferrous acetate), chloride, nitrate, oxide, ferro-tungsten, vanadate of iron, etc.	$838,993	(1)	(1)	(1)
Lead salts:				
Arsenate—				
Number of establishments	11	(1)	(1)	(1)
Pounds	8,641,856			
Value	$511,688			
Other—				
Pounds	7,290,936	(1)	(1)	(1)
Value	$474,430			
Mercurial salts:				
Pounds	605,701	(1)	(1)	(1)
Value	$518,023			
Nickel salts:				
Pounds	409,548	(1)	(1)	(1)
Value	$157,149			
Niter cake:				
Number of establishments	31	24	(1)	(1)
Total production, tons	46,143	.....		
For sale—tons	24,129	27,546		
For sale—value	$31,580	$53,693		
Made and consumed, tons	22,014	(1)		
Sulphur, refined:				
Tons	[28]31,166	25,269	(1)	(1)
Value	$1,141,000	$891,501		
Tin salts:				
Pounds	8,291,239	10,293,377	11,621,378	6,259,794
Value	$2,028,511	$1,535,350	$1,361,299	$603,937
Zinc salts:				
Pounds	40,786,886	25,054,213	11,579,546	9,511,909
Value	$1,130,959	$472,302	$201,771	$353,900
Other specified chemicals[29]	$3,055,314	$18,750,329		
Unclassified chemicals	$12,483,523			
XIII.—All other products.				
Chemical by-products and residues:			$9,858,395	$11,619,891
Pyrite cinder	$399,458	$325,632		
All other	$4,010,162	$5,558,976		
By-products, not chemical	$3,702,017	$2,209,078		
Amount received for custom work	$188,734			

[1] Figures not available.
[2] See Note 5.
[3] Includes oleum, in 1914, 60,963 tons; and in 1909, 27,602 tons, converted, above, to 50° acid at 1.71; and sulphur trioxide, in 1914, 1,391 tons; and in 1909, 992 tons, converted, above, to 50°acid at 1.93.
[4] Includes citric and lactic acids in 1899.
[5] Includes considerable quantities of the acids for which statistics are given, notably sulphuric, nitric, mixed, acetic, and muriatic acids, which a few establishments reported in lump without classification according to kind.
[6] Includes the following acids, in order named as to value: Tartaric, carbolic, picric, salicylic, lactic, oxalic, hydrofluosilicic, pyrogallic, gallic, pyroligneous, hypophosphorus, benzoic, and arsenic.
[7] Number manufacturing bicarbonate, caustic, sal soda, soda ash or borax in 1914 and 1909; and same not including borax in 1904 and 1899.
[8] Includes the following sodium compounds in order named as to value: Hyposulphite, sesquicarbonate, acetate, nitrate, perborate, bromide, iodide, fluoride, bisulphate, citrate, diamide, and oxalate.
[9] Includes sodium aluminum sulphate.
[10] Includes 38,342,000 pounds of unclassified alums.
[11] Not including value of 109,901,315 gallons of tar, $2,867,274, produced by by-product coke ovens; of 125,938,607 gallons of tar, $3,252,765, produced by gas plants; and of coal-tar dyes and intermediates, $4,652,947, made largely from stock of foreign origin.
[12] In addition, 1,239,382 pounds of cyanide blues, reported as Prussian blue, valued at $387,077, were manufactured by 15 establishments engaged primarily in the manufacture of paints and pigments.
[13] Quantities not comparable because of lack of uniformity in strength of solutions.
[14] The statistics for products reported under other groups cover total production, inclusive of that made with the aid of electricity, and here included to the value of $5,082,013 in 1914, and $2,546,426 in 1909.
[15] Includes number and output of one establishment engaged in the preparation of alumina.
[16] In addition, there were made in electric furnaces in 1914 by 14 establishments in the iron and steel industry, 21,548 tons of foundry iron and steel, the latter used chiefly for direct steel castings.
[17] For chlorine see, "bleaching materials."
[18] Not including anhydrous ammonia produced at by-product recovery coke ovens (mainly ammoniacal liquor sold on a pound basis of NH_3 content), as follows: In 1914, 25,370,509 pounds, valued at $2,300,137; in 1909, 4,871,014 pounds, valued at $448,455.
[19] Equivalent to 2,378,400 cubic feet at atmospheric pressure.
[20] Quantity reported in pounds.
[21] At atmospheric pressure.
[22] In addition, alkaloids and derivatives valued at $11,493,168 were reported by manufacturers of druggists' preparations and patent medicines.
[23] Not including other made and consumed in the explosive industry.
[24] Anhydrous ammonia reported under "compressed or liquefied gases."
[25] Figures not available for total production of crude glycerin, 1914, as that made and consumed in the manufacture of a large portion of the refined glycerin was not reported.
[26] Produced by chemical plants, 19,206,084 pounds; by rolling mills, 13,158,859 pounds; by wire mills, 60,113,880 pounds.
[27] In addition, 11,690,006 pounds of copperas were made and consumed in the same establishments.
[28] Domestic production of sulphur, United States Geological Survey, 327,634 tons (2,240 pounds); imports for consumption, 26,135 tons.
[29] Comprises: Acetanilid, acetone oil, acid calcium phosphate and calcium salts, aluminum chloride, antimony salts, arsenic (total production, as reported by the Geological Survey, 4,670 tons, valued at $313,147), bismuth salts, cadmium salts, carbon bisulphide, cerium salts and alloys, chrome salts, crown filler, ethers (not ethyl oxide), glyco-phosphates, hexamethylene-titramine, iodine resublimed and salts of iodine, iodoform, ketones, lithia and lithium salts, salts of magnesium and manganese, molybdenum, Paris green, sesquisulphite of phosphorus, strontium salts, sulphur chloride, titanium salts, trioxy-methylene, and tungsten.

During the semidecade 1909 to 1914, the value of all products increased from $150,580,149 to $200,195,835, or 32.9 per cent, the rate of increase for the period 1904–1909 being 68.8 per cent. Each of the major groups of products shows an increase during the period 1909–1914. The group showing the largest increase in value for the period is "chemical substances produced by the aid of electricity" (Group VIII), which increased $11,210,488, or 60.8 per cent. The group ranking second in growth was "acids" (Group I), with an increase of $6,793,695, or 28.6 per cent. "Plastics" (Group IX) ranked third for the same period, increasing in value $6,423,052, or 85.9 per cent.

Of the total value of products the value of the acids formed 15.2 per cent in 1914, 15.8 per cent in 1909, and 19.1 per cent in 1904, the percentages for sodas and sodium compounds being 11.8 in 1914, 15.5 in 1909, and 19.2 in 1904. Chemical substances produced by the aid of electricity constituted 14.8 per cent of the value of products in 1914, 12.3 per cent in 1909, and 7.9 per cent in 1904. This group includes some products which are duplicated in other groups. The proportions of the total for some of the other distinctive groups are, for the three years, plastics, 6.9, 5, and 4.4 per cent; compressed or liquefied gases, 3.8, 3.4, and 3.1; bleaching materials, 2.6, 2.1, and 1.3; alums, 1.7, 2, and 3.3; and cyanides, 1.2, 1.3, and 1.9, respectively.

Group I. Acids.—Referring to the statistics for acids, an increase is shown in production for all acids in 1914 as compared with 1909, with the exception of hydrofluoric acid.

Sulphuric acid.—Sulphuric acid is produced in several different grades: (1) 50° Baumé, or chamber acid, containing on an average 51.4 per cent of SO_3; (2) 60° Baumé, containing 63.7 per cent of SO_3; (3) 66° Baumé, known as oil of vitriol, containing on an average 76.4 per cent of SO_3; and (4) oleum, which consists of SO_3 dissolved in a sulphuric acid containing 97 to 98 per cent H_2SO_4. Since the census of 1890 the separate grades have been reported, so that it is possible to show somewhat definitely the condition of the industry at each succeeding census. Oleum was first reported for 1904. To reduce the different grades to the basis of 50° Baumé, the factor 1.25 has been used for 60° acid, 1.50 for 66° acid, 1.71 for oleum, and 1.93 for sulphur trioxide, the quantities being multiplied by these respective factors.

Reduced to 50° Baumé, the production in 1914 was an increase of 47.3 per cent over that of 1909, the ratio of increase for the period 1904–1909 being 47.9 per cent, and for 1899–1904, 20.8 per cent. The sulphuric acid produced for sale in 1914 constituted in value one-half of that for all acids.

The distribution, by states, of the number of establishments in 1914 manufacturing sulphuric acid, as well as other acids listed in Table 19, is given in Table 3 (p. 8).

Table 20 shows the distribution of the sulphuric acid produced for sale in 1914 on the basis of 50° Baumé acid, and it covers the product of all establishments.

Table 20

INDUSTRY AND STATE.	SULPHURIC ACID, BASIS 50° BAUMÉ: 1914.	
	Tons (2,000 pounds).	Value.
Production for sale	2,338,284	$15,395,133
By industries:		
Chemicals	500,488	3,773,318
Sulphuric, nitric, and mixed acids	1,359,183	9,044,538
Explosives	133	1,713
Fertilizers	129,053	768,873
Other industries	349,427	1,805,691
By states:		
Alabama	38,317	293,525
California	114,058	945,276
Georgia	20,151	115,220
Illinois	349,252	1,848,031
Maryland	187,937	1,194,801
Massachusetts	59,393	641,324
Michigan	13,504	86,981
New Jersey	399,667	3,085,236
New York	63,970	532,938
North Carolina	13,333	68,069
Ohio	142,800	983,583
Pennsylvania	362,270	2,498,117
South Carolina	30,679	176,510
Tennessee	264,532	1,061,406
Virginia	73,446	411,163
All other states	204,975	1,452,953

The manufacture of sulphuric acid by the contact process was reported by 13 establishments. Their production reduced to the basis of 50° acid was 698,413 tons, and the platinum in use in contact mass was 20,735 Troy ounces. The manufacture of sulphuric acid by both chamber and contact processes, including Mannheim contact, was reported by 9 establishments, with a production on a 50° acid basis of 411,338 tons. The balance of the production—2,961,815 tons—was by the straight chamber process.

It is probable that a few of the establishments did not report the weight of platinum in use, particularly in stills or concentration pans. As reported, the aggregate weight of platinum in use was 29,835 Troy ounces, of which 21,006 ounces was contact mass and 8,829 ounces in stills or concentration pans.

Nitric acid.—The returns do not afford any basis for segregating the production according to strength. As found in the market it ranges from single aqua fortis of specific gravity 1.22 to the strongest nitric of 1.50 specific gravity and red fuming of 1.60, so that the output must be regarded as of average strength and value. The bulk of the production was consumed in the producing establishments, less than one-fifth being reported as made for sale.

Table 21 gives the statistics, by states, for the production marketed as such in 1914.

Table 21

INDUSTRY AND STATE.	NITRIC ACID: 1914.	
	Tons (2,000 pounds).	Value.
Production for sale	14,685	$1,591,625
By industries:		
Chemicals	4,256	385,259
Sulphuric, nitric, and mixed acids	9,794	1,141,183
Explosives	403	53,760
Other industries	172	11,423
By states:		
Illinois	552	68,545
New Jersey	8,823	1,043,597
New York	1,259	107,201
Pennsylvania	500	44,000
All other states	3,551	328,222

Nitric acid is usually manufactured by heating sodium nitrate with sulphuric acid in iron retorts, with niter cake as a residuum. This residuum is of low value, and the production as returned by the manufacturers presumably does not include a large amount for which there was no market. The total production of niter cake as returned was 24,129 tons, valued at $31,580, or $1.31 per ton, and 22,014 tons consumed in the works where produced, a total of 46,143 tons. The quantity of niter cake resulting from the manufacture of all the nitric acid from sodium nitrate would be nearly three times this quantity.

Mixed acid.—By mixed acid is meant a mixture of nitric and sulphuric acids, employed in nitrating organic substances such as glycerin, cellulose, and carbolic acid. It has been used on a considerable commercial scale since the guncotton and nitroglycerin industries were established, and its use has extended to other chemical industries.

In considering the magnitude of this branch of the industry, there is to be noted, in addition to the mixed acid sold as such—42,725 tons—that which was produced and consumed in the producing establishments—69,399 tons—making a total of 112,124 tons. There is also to be taken into account the repeated reuse of the acid.

As a basis for estimating the consumption of sulphuric and nitric acids in mixed acid manufacture, the former can be figured at 62 per cent of H_2SO_4, and the latter at 30 per cent, the remainder consisting of water, nitrogen oxides, and impurities. On this basis, it is estimated that there was used in the making of mixed acid in 1914, 104,275 tons of 50° Baumé sulphuric acid and 33,637 tons of nitric acid. Figures for 1909 are not deducible, as a large portion of the mixed acid made and consumed was not reported. In 1904 the estimated consumption of 50° sulphuric acid in the manufacture of mixed acid was 65,411 tons and in 1899, 63,059 tons, and the consumption of nitric acid in mixed acid manufacture was 21,100 tons in 1904 and 20,342 tons in 1899.

Table 22 shows the distribution, by states, of the mixed acid made for sale, and covers the product of all industries.

Table 22

INDUSTRY AND STATE.	MIXED ACID: 1914.	
	Tons (2,000 pounds.)	Value.
Production for sale	42,725	$2,204,480
By industries:		
Chemicals	11,264	723,386
Sulphuric, nitric, and mixed acids	23,616	1,294,381
Explosives	7,845	186,713
By states:		
Illinois	1,297	97,710
Missouri	1,133	59,614
New Jersey	18,541	879,373
Pennsylvania	2,034	111,952
All other states	19,720	1,055,831

Acetic acid.—The acetic acid reported does not include the dilute acetic acid which is produced by fermentation. Calcium acetate is obtained in the destructive distillation of wood, and from this acetic acid by treatment with hydrochloric acid and distillation. The commercial grades of acetic acid range from 28 to 90 per cent acid. Difference in strength is the probable explanation of the material increase in the quantity reported for 1914 as compared with 1909, with a slight decrease in value.

Muriatic acid.—Muriatic or hydrochloric acid includes all grades and the returns do not afford any basis for reduction to standard strength. The production in 1914 as compared with 1909 shows a decrease of 23.3 per cent in the value of that made for sale, but a large increase in the quantity of that made and consumed in further manufacture in the same establishments. Table 23 gives the statistics of the production of muriatic acid for sale, by states, for 1914.

Table 23

INDUSTRY AND STATE.	MURIATIC ACID: 1914.	
	Pounds.	Value.
Production for sale	170,876,878	$1,348,805
By industries:		
Chemicals	102,731,686	845,203
Sulphuric, nitric, and mixed acids	67,309,088	495,930
Other industries	836,104	7,672
By states:		
New Jersey	51,441,794	406,986
New York	10,706,273	78,334
Pennsylvania	27,358,356	217,440
All other states	81,370,455	646,045

The ordinary muriatic acid of commerce contains 40 per cent by weight of dry hydrogen chloride. On this basis there would have been required for the production of the 168,584 tons of acid manufactured in 1914, including that made and consumed, approximately 105,000 tons of salt and 138,000 tons of 50° Baumé sulphuric acid, while there would have been produced in the neighborhood of 135,000 tons of salt cake. This is on the assumption that the production was entirely by the action of sulphuric acid on common salt. No data are at hand as to the extent to which niter cake is used in this industry, the use of which would materially modify the figures.

Table 19 gives the production of other important acids, but as a rule the manufacture is not so distributed as to permit of the presentation of state statistics. The table gives the data with as much detail as the returns permit, and Table 3 shows the distribution of the producing establishments among the states.

Group II. Sodas and sodium compounds.—Under the head of "sodas" there are included soda ash (white or refined alkali); sal soda, including natural soda and washing soda; sal soda crystals, including crystallized sodium carbonate; bicarbonate of soda, including baking soda and saleratus; caustic soda; and borax, including borax glass, and lime and sodium borates and biborates.

The most important of the soda products both in quantity and value is soda ash, constituting 46.3 per cent of the total value of all products of the group, caustic soda being the next largest. Under the sodium products are included a number of products that in 1909 were classified under "general chemicals."

In 1914, 50 establishments reported the manufacture of sal soda, 14 the manufacture of caustic soda, 10 soda ash, 5 bicarbonate of soda, and 7 borax. The distribution of these, by states, is given in Table 3 (p. 8).

The production of sal soda—106,591 tons, valued at $1,510,449—was chiefly from the states of New York, Indiana, Michigan, Ohio, and New Jersey, in the order named, these states reporting 83.9 per cent of the total quantity and 84 per cent of the total value.

The states of New York and Michigan produced the greater portion of the caustic soda manufactured in 1914, these states furnishing 81 per cent of the total. A considerable portion of the caustic soda now manufactured is produced by the aid of electricity, nearly 20 per cent of the output reported in 1914 being so manufactured.

Soda ash is reported as 48 per cent or 58 per cent, the percentages referring to the Na_2O contents. Of the total production, only 8,860 tons, or a little less than 1 per cent, was returned as 48 per cent. Over nine-tenths of the production was from Michigan, Ohio, and New York, in the order named.

The bicarbonate of soda reported was chiefly from New York, Michigan, and Virginia; and the borax from New Jersey, Pennsylvania, Illinois, New York, and California.

Sodium phosphate was reported by 6 establishments; sodium silicate, or water glass, by 13; sodium sulphide, used as a depilatory in tanning, by 5; Glauber salts, or crystallized sodium sulphate, by 20; salt cake, or crude sulphate, by 29; sodium bichromate by 4; sodium benzoate by 3; and sodium sulphite by 5 establishments. It is possible that there was some production of these commodities not specifically reported and the figures as given may not be complete. Sodium sulphite is used in making paper pulp. There was consumed by the paper mills of the country in 1914, 1,180,000 tons of sulphite fiber of domestic manufacture; this included that purchased and that made and consumed by establishments manufacturing the fiber and converting it into paper. As a rule these establishments manufacture their own sodium sulphite and the quantity thus made and consumed was not reported. The production of sodium silicate was chiefly from Indiana, New Jersey, and Pennsylvania, in the order named. It is used in soap manufacture; as a fixing agent in dyeing and calico printing; for rendering wood, paper, etc., uninflammable; for impregnating stone; and as a binding material for artificial stone.

The output of Glauber salts was chiefly from New Jersey, Indiana, Massachusetts, Pennsylvania, and Ohio, and of salt cake from New Jersey, Indiana, Ohio, and Pennsylvania. Salt cake is made by decomposing common salt with sulphuric acid with the production of muriatic acid. It is used largely in glass manufacture. In addition to the 90,442 tons marketed, 19,821 tons were reported as made and consumed in the same establishments. This may not represent all that was made and used.

Group III. Potash and potassium salts.—The term "potash," properly speaking, includes only potassium carbonate in its various forms, but has long been applied to potassium hydroxide or caustic potash. The commercial products covered by potashes are: (1) Stone ash, known as crude potash or lump potash; (2) potassium carbonate, produced by calcining stone ash, argols, or wine lees; and (3) potassium hydroxide or caustic potash. Crude potash and potassium carbonate are the only products of this group for which a comparison with previous censuses can be made. These products, as given in Table 19, show a decrease in value for the period 1909–1914 of 44.2 per cent. There were 42 establishments reporting products of this group in 1914, and the distribution of these, by states, is given in Table 3. Seventeen made potash from wood ashes.

The manufacturers of fertilizers consume large quantities of potash salts, and since the supply from Germany has been cut off, active efforts are being made to develop the domestic sources of supply. Potassium sulphate from alunite was placed upon the market in October, 1915. An important production is announced from saline lakes in Nebraska; the alkaline waters and residual bitterns from many western sources are under investigation, and the kelp beds of the Pacific coast are being utilized with a production of potash either as a chief product or a by-product. But the development of most interest at the present writing is that of by-product potash in the cement industry. To abate the nuisance due to the deposition of dust from the cement works at Riverside, Cal., on the fruit groves of the district, the Cottrell electric precipitation system was installed to treat fumes and gases from the furnaces. The raw mixture used contains a feldspar having a small content of potash. In burning this mixture the potash is volatilized and caught in the precipitation of the dust, and on March 1 of the present year (1917) the works went into full blast for the purpose of making potash, with cement as a by-product. It is understood that appliances for recovering by-product potash in connection with cement manufacture are being installed at other plants.

Group IV. Alums.—The production of the several kinds of alums is shown in Table 19. Table 24 gives the distribution, by states, of the value of all alums in 1914, 1909, 1904, and 1899.

Table 24 STATE.	ALUMS.			
	1914	1909	1904	1899
United States	$3,467,969	$3,022,355	$2,956,844	$2,446,576
Illinois	858,469	440,976	481,754	(1)
Massachusetts	488,647	(1)	270,614	306,754
New York	435,618	646,437	(1)	(1)
Pennsylvania	1,362,357	1,390,589	1,479,340	1,411,652
All other states [2]	322,878	544,353	725,136	728,170

[1] Included with "all other states."
[2] All other states embrace for 1914, California, Connecticut, Michigan, and New Jersey; for 1909, Massachusetts, Michigan, Nebraska, and New Jersey; for 1904, California, Michigan, New York, and Ohio; for 1899, Illinois, New York, and Michigan.

There were 19 establishments that reported the manufacture of alums in 1914, and Table 3 shows the number manufacturing the different kinds and the distribution of the same, by states.

Group V. Coal-tar products.—Coal tar, a by-product of the coal-gas industry and of the coke industry when by-product ovens are used, is produced by the destructive distillation of bituminous coal.

The products are the direct products of the distillation of coal tar, which include pitch, creosote oil, dead oil, and other tar oils, benzol (benzene), toluol, xylol, naphthalene, anthracene, and other coal-tar hydrocarbons, phenol (carbolic acid), cresol, naphthol, resorcin or resorcinol, and other coal-tar tertiary alcohols, and aniline, toluidine, xylidine, and other coal-tar amines; and chemicals made from coal-tar distillery products which include the aldehydes, acids, ketones, salts, and various other so-called benzene derivatives. The latter include the coal-tar dyes, which are also produced by establishments classified as "dyestuffs and extracts" and many nitrosubstitution compounds and synthetic preparations, which occur also among the fine chemicals (Group XI). Many establishments distilling coal tar consume the products in the manufacture of roofing felt, roofing paper, and roofing preparations or paints and are classified as manufacturers of roofing materials. Hence the production here reported does not cover the coal-tar industry in its entirety. There is a great diversity existing in the kind and value of the products and, therefore, only the total value is given.

Table 25 shows, by states, for 1914, 1909, 1904, and 1899, the total value of the coal-tar products reported as such by all establishments, whether in the chemical industry or in other industries.

Table 25 STATE.	COAL-TAR PRODUCTS.			
	1914	1909	1904	1899
United States	$8,839,506	$4,286,119	$3,984,821	$1,421,720
Illinois	1,544,325	(1)	(1)	.....
Massachusetts	918,476	526,025	175,978	(1)
Missouri	368,470	183,473	284,637	415,600
New Jersey	1,563,937	(1)	(1)	(1)
New York	521,713	262,299	926,329	44,016
Ohio	798,938	607,514	463,001	(1)
Pennsylvania	1,442,481	783,382	375,757	396,759
All other states [2]	1,681,166	1,923,426	1,759,119	565,345

[1] Included with "all other states."
[2] All other states embrace for 1914: Alabama, District of Columbia, Georgia, Kentucky, Louisiana, Michigan, Minnesota, Tennessee, Washington, and Wisconsin; for 1909: Alabama, Illinois, Kentucky, Louisiana, Michigan, Minnesota, Nebraska, New Jersey, Tennessee, and Wisconsin; for 1904: California, Illinois, Maine, Michigan, New Jersey, Rhode Island, and Tennessee; for 1899: California, Louisiana, Massachusetts, Minnesota, New York, Ohio, and Tennessee.

The total value of coal-tar products increased $4,553,387, or 106.2 per cent, during the census period 1909 to 1914. New Jersey was the leading state in value of products in 1914, with Illinois second and Pennsylvania third. The combined value of these three states represented 51.5 per cent of the total value.

There were 40 establishments reporting products in this group in 1914. The distribution of these, by states, is given in Table 3.

Group VI. Cyanides.—The cyanides reported in 1914 comprise sodium cyanide, potassium cyanide, yellow prussiate of potash and other cyanides. The production of yellow prussiate of potash is the only one for which statistics can be given separately. Although there was a decrease from 1909 to 1914 in the output of prussiate of potash, there was a heavy increase in the production of sodium cyanide and an increase of nearly a fourth in all cyanides in both quantity and value. There were 6 establishments in 1914 manufacturing cyanides of which 2 were located in New Jersey, and 1 each in Massachusetts, New York, Ohio, and Pennsylvania.

Group VII. Bleaching materials.—This class of products comprises chloride of lime (chlorinated lime, bleaching powder, and other hypochlorites); hydrogen peroxide (dioxide); sodium, magnesium, calcium, barium and other peroxides (dioxides), sulphur dioxide or sulphurous acid, chlorine, and sodium, potassium, calcium, and other bisulphites. Many of these are manufactured by the aid of electricity, and to that extent are included under Group VIII (chemicals produced by the aid of electricity). The most important class is hypochlorites, which contributed 55 per cent of the total value of this class of products for 1914, hydrogen peroxide being next in importance. There has been a marked increase since 1899 in the production of each kind of bleaching material, although for the half decade, 1909 to 1914, a slight decrease is shown in the quantity of bisulphite of soda, lime, etc., manufactured.

Table 26 shows the distribution of the value of all bleaching materials, by states, in 1914, 1909, 1904, and 1899. New York ranked first at each census in value of products and reported 55 per cent of the total value in 1914. A large part of this product is electrolytic.

Table 26 STATE.	BLEACHING MATERIALS.			
	1914	1909	1904	1899
United States	$5,302,359	$3,215,728	[1] $1,112,538	[2] $587,991
Massachusetts	121,215	217,492	41,746	.....
Michigan	1,328,340	576,408	(3)	(3)
New Jersey	317,373	75,941	46,595	39,171
New York	2,913,839	2,055,267	799,521	407,327
All other states [4]	621,592	290,620	224,676	141,493

[1] In addition, sulphur dioxide valued at $45,526 was consumed in the establishment where produced.
[2] In addition, sulphur dioxide valued at $4,667 was consumed in the establishment where produced.
[3] Included with "all other states."
[4] All other states embrace for 1914: California, Colorado, Connecticut, Delaware, Georgia, Illinois, Minnesota, Missouri, Ohio, Pennsylvania, West Virginia, and Wisconsin, and for 1909, California, Georgia, Illinois, Indiana, Maryland, Missouri, Ohio, and Pennsylvania; 1904 and 1899 not available.

There were 56 establishments in this group in 1914. Hypochlorites were reported by 14, hydrogen peroxide by 20, bisulphites by 14, and chlorine by 7. The distribution of these, by states, is given in Table 3.

Group VIII. Chemical substances produced by the aid of electricity.—This classification was first made in 1899. The group includes commodities which are also made by other chemical processes, but only those produced by the aid of electricity are here included. Detail statistics for a number of important commodities included in the "all other" item can not be given without disclosing the operations of individual establishments.

Table 27 shows the total production of chemicals produced by the aid of electricity for 1914 and 1909 according to geographic divisions. During the five-year period 1909–1914 the value of all products so produced increased $11,210,488, or 60.8 per cent.

Table 27

DIVISION.	CHEMICALS PRODUCED BY THE AID OF ELECTRICITY.	
	1914	1909
United States	$29,661,949	$18,451,461
Middle Atlantic	[1] 24,153,616	14,338,293
East North Central	2,737,873	3,125,388
All other divisions	2,770,460	987,780
Per cent distribution:		
Middle Atlantic	81.4	77.7
East North Central	9.2	16.9
All other divisions	9.3	5.4

[1] Of this production, $15,906,960 was in Niagara County, N. Y.

The Middle Atlantic states reported 77.7 per cent of the total value in 1909 and 81.4 per cent in 1914. The center of the electrochemical industry is at Niagara Falls, N. Y. These establishments reported 53.6 per cent of the total value of all electrochemical and electrometallurgical products. There were 36 establishments in this group in 1914, 5 reporting the manufacture of chlorates; 4 hypochlorites; 6 caustic soda, caustic potash, and lye; 7 ferro and other alloys; and 5 oxygen and hydrogen. The distribution of these, by states, is given in Table 3.

Group IX. Plastics.—This group embraces pyroxylin plastics, sold under such trade names as celluloid, fiberloid, viscoloid, pyrolin, pegamoid, xylonite, etc., and products made from them; 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 sulphide, kaolin, and other fillers are held in solid aggregations which may be molded or shaped. The total value includes the value of finished goods manufactured in the producing establishments, as well as the value of stock sold in the form of rods, sheets, blocks, etc., for further manufacture. The production of artificial silk is included in the "all other" item. The distribution, by states, of the 24 establishments manufacturing plastics in 1914 is given in Table 3.

Group X. Compressed or liquefied gases.—This group embraces all gases that are compressed or liquefied for sale, with the exception of acetylene and pintsch gas, which are to a large extent used for illuminating purposes, and blau gas. The statistics for these will be found under the gas industry. The gases commercially used in considerable quantities and here included are anhydrous ammonia, carbon dioxide (carbonic acid gas, CO_2), chlorine, oxygen, laughing gas (nitrous oxide, N_2O), and hydrogen. Other gases of minor importance are cyanogen, nitrogen, and liquid air. Sulphur dioxide, manufactured to a small extent as an article of commerce, has been included under "bleaching materials." This group shows considerable growth since 1909, the value of all products increasing $2,459,089, or nearly 47.6 per cent. The bulk of the increase is due to oxygen, though there is a large increase in anhydrous ammonia due to the growth in the ice industry. The returns for the industry "manufactured ice" for 1914 show there were 4,696,699 pounds of anhydrous ammonia used in the compressor system, costing $1,235,047 and 709,218 pounds costing $186,149 used in the absorption system. The value of the anhydrous ammonia product in 1914 represented 41.2 per cent of the value of all products of this group. The oxygen reported includes some medicated oxygen and also that manufactured for use in the production of calcium lights. The distribution of the number of establishments, by states, is given in Table 3.

Group XI. Fine chemicals.—This group of products includes chemicals sold as chemically or absolutely pure, such as C. P. acids; alcohol, absolute, and all other alcohols, excepting grain and wood alcohol; the chemicals which are especially made use of in analytical operations, in scientific research, and in pharmacy, and those chemicals whose unit value is exceptionally high, such as salts of gold, silver, and platinum; aldehydes, such as vanillin; alkaloids; elementary substances other than low-priced ones; enzymes, ferments or diastases, such as pancreatin, pepsin, rennet, lactose, etc.; rare earth compounds, such as salts of cerium, thorium, radium, and uranium; terpenes (except turpentine); toxins and antitoxins.

The most important products of this group are the alkaloids, but in addition to the production here reported alkaloids and derivatives valued at $11,493,168 were reported by manufacturers of druggists' preparations and patent medicines, making a total of over $16,000,000.

The distribution of the establishments manufacturing fine chemicals in 1914, by states, is given in Table 3.

Group XII. Chemicals, not otherwise specified.—This group includes all chemicals within the classified industry not covered by the previous groups. Glycerin is the most important commodity of this group.

Other important products named in the order of their value are cream of tartar, acetate of lime, tin salts, sulphate of copper (blue vitriol), aqua ammonia, refined sulphur, zinc salts, and acetone.

Table 28 presents statistics for glycerin, 1914, by states, showing the number of establishments and the quantity and value of crude and refined glycerin produced for sale. These returns include the output from establishments manufacturing chemicals either as a chief or subsidiary product.

Table 28

STATE.	GLYCERIN PRODUCED FOR SALE: 1914.						
	Number of establishments.	Total.		Crude.		Refined.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
United States	119	76,379,325	$13,058,180	16,568,920	$2,278,976	[1] 59,810,405	$10,779,204
California	9	1,067,965	150,158	1,067,965	150,158	.....	.....
Illinois	12	12,219,029	2,172,749	1,787,847	254,105	10,431,182	1,918,644
Kansas	4	5,557,022	1,056,768	99,000	9,750	5,458,022	1,047,018
Massachusetts	9	1,270,030	196,298	1,042,055	152,063	227,975	44,235
Missouri	3	1,170,547	204,470	646,614	91,777	523,933	112,693
New York	19	28,397,071	5,224,899	3,479,972	450,375	24,917,099	4,774,524
Ohio	19	14,852,484	2,747,217	1,542,806	233,473	13,309,678	2,513,744
All other states	44	11,845,177	1,305,621	6,902,661	937,275	4,942,516	368,346

[1] Does not include 1,134,394 pounds consumed in establishments where produced.

The soap industry produced a large quantity of glycerin as a subsidiary product, part of which was given no value. This, together with the crude glycerin consumed in establishments where produced, has not been shown in the table because that made and consumed in the manufacture of a large portion of the refined glycerin was not reported.

In 1909 there were reported 5,633,197 pounds of no value and 5,879,279 pounds produced and consumed in establishments where manufactured.

In 1914, New York, the leading state in the production of glycerin, reported 41.7 per cent of the quantity of refined glycerin produced for sale; Ohio 22.3 per cent; and Illinois 17.4 per cent. These three states produced more than four-fifths of the refined product.

DETAIL STATE TABLES.

The principal data secured concerning chemical establishments are presented, by states, in Tables 29 and 30. Table 29 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the chemical industry. Table 30 presents, for 1914, by states, the more detailed statistics for the industry.

TABLE 29.—CHEMICALS—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	395	32,311	282,385	$22,066	$89,451	$158,054
	1909	359	23,729	208,657	14,096	64,146	117,741
	1904	297	19,847	132,394	10,814	42,098	75,357
California	1914	20	257	1,521	184	933	1,524
	1909	13	244	1,308	168	762	1,306
	1904	[1] 15	259	1,060	189	700	1,124
Illinois	1914	26	1,682	8,590	1,164	5,360	8,618
	1909	22	843	5,917	536	2,915	4,683
	1904	17	728	2,883	397	1,361	2,306
Massachusetts	1914	24	1,395	5,405	955	3,355	6,685
	1909	24	1,358	3,731	811	3,048	5,916
	1904	17	864	3,302	506	1,520	3,526
Michigan	1914	36	4,509	45,944	3,405	6,373	13,891
	1909	[1] 36	3,174	26,594	2,012	5,072	12,890
	1904	[1] 14	3,333	22,860	1,848	4,403	9,037
Missouri	1914	22	842	1,764	498	4,164	6,936
	1909	[2] 9	619	886	333	2,224	3,640
	1904	[2] 11	640	1,330	310	2,172	3,279
New Jersey	1914	64	6,276	18,563	$4,124	$17,054	$31,687
	1909	50	5,046	13,880	2,895	12,257	22,824
	1904	47	3,597	9,082	1,853	6,630	13,024
New York	1914	70	7,780	131,928	5,380	26,252	42,877
	1909	74	5,746	116,197	3,376	19,709	35,346
	1904	68	4,989	66,694	2,691	12,971	23,077
Ohio	1914	29	2,017	18,751	1,460	6,726	11,388
	1909	33	1,132	11,715	749	4,748	7,742
	1904	[1] 18	1,025	6,169	652	3,003	4,590
Pennsylvania	1914	39	4,748	16,570	2,928	12,615	22,388
	1909	[1] 37	3,185	9,771	1,892	10,200	15,978
	1904	44	3,376	10,683	1,893	7,270	11,790
Wisconsin	1914	7	60	362	36	230	436
	1909	5	76	495	41	242	513
	1904	5	65	243	29	137	265
All other states	1914	58	2,745	32,987	1,932	6,389	11,624
	1909	56	2,306	18,103	1,283	2,969	6,903
	1904	41	971	8,088	446	1,931	3,339

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

TABLE 30.—CHEMICALS—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male	Under 16. Female	Capital.	EXPENSES. Salaries and wages. Officials.	EXPENSES. Salaries and wages. Clerks, etc.
United States	395	37,881	99	1,181	3,496	794	32,311	Se 32,813	Je 31,876	32,496	30,585	1,621	187	103	$224,345,921	$4,234,843	$4,785,860
California	20	330	6	24	29	14	257	No 392	Fe 157	384	380	2	2	.....	2,922,284	44,131	36,855
Illinois	26	1,906	3	59	118	44	1,682	Mh 1,765	Je 1,622	1,682	1,660	20	2	.....	8,842,612	167,353	185,533
Massachusetts	24	1,681	13	57	156	60	1,395	Mh 1,464	Au 1,312	1,385	1,284	93	5	3	9,167,388	209,849	205,034
Michigan	36	4,932	19	83	291	30	4,509	Ja 4,619	Jy 4,403	4,447	4,416	28	1	2	26,452,791	351,534	345,420
Missouri	22	1,257	7	66	291	51	842	Se 929	Fe 782	836	724	99	5	8	6,318,836	219,017	366,695
New Jersey	64	7,476	8	281	688	223	6,276	My 6,421	Jy 5,991	6,452	5,838	607	5	2	37,580,512	993,640	1,055,956
New York	70	9,226	17	277	994	158	7,780	Au 8,262	Je 7,399	7,724	7,549	171	2	2	67,515,367	1,125,593	1,362,590
Ohio	29	2,387	7	102	203	58	2,017	Ja 2,158	Au 1,896	1,996	1,962	34	.....	.....	13,847,986	319,797	259,975
Pennsylvania	39	5,276	8	100	335	85	4,748	Ja 4,905	Jy 4,605	4,809	4,147	548	28	86	29,527,205	460,482	424,008
Washington	4	45	.....	4	7	2	32	Oc 36	Fe 27	34	34	.....	.....	.....	467,646	10,048	7,922
West Virginia	3	62	.....	5	5	.....	52	Ap[1] 57	Oc[1] 49	56	56	.....	.....	.....	1,276,703	13,694	8,400
Wisconsin	7	103	3	14	23	3	60	Mh 65	Jy 56	61	54	7	.....	.....	373,962	15,614	27,913
All other states [2]	51	3,200	8	109	356	66	2,661	.....	.....	2,630	2,481	12	137	.....	20,052,629	304,091	441,559

STATE.	EXPENSES—continued. Salaries and wages—Con. Wage earners.	For contract work.	Rent and taxes. Rent of factory.	Rent and taxes. Taxes, including internal revenue and corporation income.	For materials. Principal materials.	For materials. Fuel and rent of power.	Value of products.	Value added by manufacture.	POWER. Primary horsepower. Total.	Primary horsepower. Steam engines.[3]	Primary horsepower. Internal-combustion engines.[4]	Primary horsepower. Water wheels and motors.[3]	Primary horsepower. Electric (rented).	Electric horsepower generated in establishments reporting.
United States	$22,066,212	$375,435	$307,720	$1,425,531	$78,247,022	$11,203,672	$158,053,602	$68,602,908	282,385	124,329	20,440	3,135	134,481	38,029
California	184,488	.....	6,048	14,550	853,290	80,159	1,524,411	590,962	1,521	1,185	67	.....	269	.....
Illinois	1,164,006	360	13,129	42,323	4,983,029	377,390	8,618,118	3,257,699	8,590	6,941	320	.....	1,329	5,117
Massachusetts	954,033	2,474	9,784	110,814	3,111,761	242,860	6,684,918	3,330,297	5,405	4,600	5	15	785	1,295
Michigan	3,404,598	259,853	4,168	234,816	4,175,229	2,198,256	13,891,415	7,517,930	45,944	38,163	3,505	60	4,216	7,466
Missouri	497,837	.....	20,761	42,881	4,079,515	84,355	6,936,122	2,772,252	1,764	1,235	.....	.....	529	670
New Jersey	4,124,226	49,030	30,342	223,601	16,099,844	954,442	31,686,865	14,632,579	18,563	15,630	1,615	.....	1,318	9,277
New York	5,379,654	15,744	89,287	420,552	22,078,589	4,173,490	42,876,880	16,624,801	131,928	17,640	13,759	1,360	99,169	2,032
Ohio	1,460,439	.....	12,300	109,303	5,640,856	1,085,137	11,388,140	4,602,147	18,751	17,717	487	.....	547	3,232
Pennsylvania	2,927,562	21,300	15,054	97,362	11,713,607	901,774	22,387,835	9,772,454	16,570	10,051	484	.....	6,035	6,318
Washington	25,324	.....	2,200	1,991	248,356	10,309	373,553	114,888	89	22	.....	.....	67	.....
West Virginia	33,208	.....	45	8,015	188,533	12,190	482,949	282,226	150	100	.....	.....	50	.....
Wisconsin	36,090	.....	10,620	2,715	220,531	9,303	436,222	206,388	362	106	65	.....	191	3
All other states [2]	1,874,147	26,674	93,982	116,608	4,853,882	1,074,007	10,766,174	4,838,285	32,748	10,939	133	1,700	19,976	2,619

[1] Same number reported for one or more other months.
[2] All other states embrace: Alabama, 2 establishments; Colorado, 3; Connecticut, 2; District of Columbia, 1; Georgia, 3; Indiana, 6; Iowa, 2; Kansas, 1; Kentucky, 2; Louisiana, 2; Maine, 2; Maryland, 3; Minnesota, 2; Montana, 1; Nebraska, 1; Nevada, 1; Rhode Island, 3; South Dakota, 1; Tennessee, 6; Texas, 3; Virginia, 3; Wyoming, 1.
[3] Owned power only.
[4] Includes rented power, other than electric.

SULPHURIC, NITRIC, AND MIXED ACIDS.

GENERAL STATISTICS.

Scope of the industry.—The statistics for establishments engaged primarily in the manufacture of sulphuric, nitric, and mixed acids were first presented separately at the census of 1904. Prior thereto they were included under the classification, "chemicals." The returns for 1899, however, were so recorded that it has been possible to segregate them from establishments manufacturing other chemicals, so that the totals for that census could be placed in comparison with those for 1904 and subsequent census years.

Comparison with earlier censuses.—Table 31 summarizes the statistics of establishments engaged in the manufacture of sulphuric, nitric, and mixed acids for each census from 1899 to 1914, and gives percentages of increase.

Table 31	SULPHURIC, NITRIC, AND MIXED ACIDS.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909-1914	1904-1909	1899-1904
Number of establishments	32	42	32	34	−23.8	31.2	−5.9
Persons engaged	3,604	2,582	2,757	2,654	39.6	−6.3	3.9
Proprietors and firm members			2	(2)			
Salaried employees	540	330	308	298	63.6	7.1	3.4
Wage earners (average number)	3,064	2,252	2,447	2,356	36.1	−8.0	3.9
Primary horsepower	24,927	6,494	5,416	(2)	283.8	19.9	
Capital	$35,233,806	$18,726,195	$12,761,920	$13,981,506	88.2	46.7	−8.7
Salaries and wages	3,082,747	2,045,894	2,061,512	1,715,895	50.7	−0.8	20.1
Salaries	870,200	551,000	556,106	388,346	57.9	−0.9	43.2
Wages	2,212,547	1,494,894	1,505,406	1,327,549	48.0	−0.7	13.4
Paid for contract work	6,315	212	7,839	(2)			
Rent and taxes (including internal revenue)	217,278	90,145	[3] 102,023	(2)	141.0		
Cost of materials	6,734,428	5,385,828	4,972,838	4,033,238	25.0	8.3	23.3
Value of products	15,215,474	9,884,057	9,052,646	8,596,390	53.9	9.2	5.3
Value added by manufacture (value of products less cost of materials)	8,481,046	4,498,229	4,079,808	4,563,152	88.5	10.3	−10.6

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Exclusive of internal revenue.

Comparability in the data from census to census may be affected by changes in manufacturing conditions. Large quantities of these acids are used in the arts. Sulphuric acid is used in considerable quantities in the manufacture of fertilizers and sulphuric, nitric, and mixed acids in the manufacture of explosives, and variations in the extent to which establishments engaged in other industries manufacture these acids for their own consumption influence the figures for the industry.

The table shows that, although there was a decrease of 23.8 per cent in the number of establishments from 1909 to 1914, the average number of wage earners increased 36.1 per cent, the value of products, 53.9 per cent, and the value added by manufacture, 88.5 per cent.

Summary, by states.—Table 32 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states for which data can not be shown separately without disclosing the operations of individual establishments ranked higher than some of those named in the table.

Table 32	CENSUS OF 1914.													PER CENT OF INCREASE.[1]					
STATE.	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.				Wage earners (average number).		Value of products.		Value added by manufacture.	
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909-1914	1904-1909	1909-1914	1904-1909	1909-1914	1904-1909
United States	32	3,064	100.0	....	....	$15,215,474	100.0	....	....	$8,481,046	100.0	....	....	36.1	−8.0	53.9	9.2	88.5	10.3
New Jersey	6	909	29.7	1	1	5,071,299	33.3	1	1	2,911,650	34.3	1	1	109.4	.....	138.3	.....	173.4	.....
Pennsylvania	6	274	8.9	3	7	1,158,479	7.6	5	6	658,098	7.8	3	5	107.6	−14.8	85.6	11.2	122.3	0.3
Ohio	4	222	7.2	5	8	862,284	5.7	7	10	459,849	5.4	8	10	72.1	.....	106.2	.....	172.2	.....
All other states	16	1,659	54.1	....	....	8,123,412	53.4	....	....	4,451,449	52.5	....	....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 39; a minus sign (−) denotes decrease. Percentages are omitted where comparable figures can not be given.

New Jersey was the leading state in 1914 in average number of wage earners, value of products, and value added by manufacture. The states of California, Colorado, Delaware, Illinois, Maryland, New York, Tennessee, and Virginia, included under "all other states," were also large producers of sulphuric, nitric, and mixed acids.

Persons engaged in the industry.—Table 33 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 33

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	3,604	3,528	76	97.9	2.1
	1909	2,582	2,547	35	98.6	1.4
Proprietors and officials [1]	1914	135	135	.....	100.0	.....
	1909	106	106	.....	100.0	.....
Salaried officers of corporations	1914	35	35	.....	100.0	.....
	1909	27	27	.....	100.0	.....
Superintendents and managers	1914	100	100	.....	100.0	.....
	1909	79	79	.....	100.0	.....
Clerks and other subordinate salaried employees.	1914	405	330	75	81.5	81.5
	1909	224	190	34	84.8	15.2
Wage earners (average number)	1914	3,064	3,063	1	100.0	(2)
	1909	2,252	2,251	1	100.0	(2)
16 years of age and over	1914	3,064	3,063	1	100.0	(2)
	1909	2,249	2,248	1	100.0	(2)
Under 16 years of age	1914	.....	.....	.....	.....	.....
	1909	3	3	.....	100.0	.....

[1] No proprietors; officials only. [2] Less than one-tenth of 1 per cent.

In 1914 there was a total number of 3,604 persons employed in the industry, of which 97.9 per cent were males, the proportion being slightly less than in 1909.

Wage earners formed 85 per cent of the total number of persons employed. The few women who were employed were principally in the clerical class. No wage earners under 16 years of age were reported in 1914.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

In 1914 the variation between minimum and maximum months was greater than in 1909 or in 1904, but there was for the most part a steady increase in the number of wage earners employed from a minimum for the year in January to a maximum in December. In 1909 the variation in number was comparatively small, the minimum number in April being 91.5 per cent of the maximum in October, and in 1904 the minimum and maximum months of employment were both in the first quarter.

Table 34

MONTH.	WAGE EARNERS IN THE INDUSTRY. Number.[1] 1914	1909	1904	Per cent of maximum. 1914	1909	1904
January	2,858	2,227	2,298	81.0	95.7	87.0
February	2,903	2,191	2,393	82.3	94.2	90.6
March	2,900	2,212	2,640	82.2	95.1	100.0
April	2,893	2,129	2,516	82.2	91.5	95.3
May	2,926	2,279	2,433	83.0	97.9	92.2
June	3,007	2,246	2,429	85.3	96.5	92.0
July	2,952	2,300	2,448	83.7	98.8	92.7
August	3,090	2,213	2,410	87.6	95.1	91.3
September	3,049	2,291	2,457	86.4	98.5	93.1
October	3,312	2,327	2,507	93.9	100.0	95.0
November	3,346	2,288	2,521	94.9	98.3	95.5
December	3,527	2,315	2,512	100.0	99.5	95.2

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Prevailing hours of labor.—In Table 35 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishment in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

Table 35

PREVAILING HOURS OF LABOR PER WEEK.	WAGE EARNERS IN ESTABLISHMENTS WITH SPECIFIED NUMBER OF HOURS. Average number. 1914	1909	Per cent of total. 1914	1909
Total	3,064	2,252	100.0	100.0
48 and under	11	.....	0.4	.....
Between 48 and 54	.....	.....	.....	.....
54	229	203	7.5	9.0
Between 54 and 60	379	51	12.4	2.3
60	490	555	16.0	24.6
Between 60 and 72	937	446	30.6	19.8
72	254	130	8.3	5.8
Over 72	764	867	24.9	38.5

The figures in the preceding table emphasize the tendency toward the shortening of the hours of employment. In 1914, 79.8 per cent of the total number of wage earners were in establishments where the prevailing hours of labor per week were 60 or more, while in 1909 the corresponding figure was 88.7 per cent. The largest single group is shown in 1914 for establishments where the prevailing hours were between 60 and 72 per week, wage earners in such establishments constituting 30.6 per cent of the total number.

Character of ownership.—The 32 establishments in the industry in 1914 and the 42 in 1909 were all under corporate ownership. In 1904, 31 of the 32 establishments were operated by incorporated companies, and one by a firm.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 36.

Table 36

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	32	3,064	$15,215,474	$8,481,046
	1909	42	2,252	9,884,057	4,498,229
Less than $100,000	1914	[1] 6	104	291,993	131,082
	1909	[2] 21	303	1,239,949	536,393
$100,000 to $1,000,000	1914	21	2,017	7,843,765	4,054,349
	1909	[3] 21	1,949	8,644,108	3,961,836
$1,000,000 and over	1914	5	943	7,079,716	4,295,615
Per cent distribution:					
Less than $100,000	1914	18.8	3.4	1.9	1.6
	1909	50.0	13.5	12.5	11.9
$100,000 to $1,000,000	1914	65.6	65.8	51.6	47.8
	1909	50.0	86.5	87.5	88.1
$1,000,000 and over	1914	15.6	30.8	46.5	50.6

[1] Includes the group "less than $5,000."
[2] Includes the groups "less than $5,000" and $5,000 to $20,000."
[3] Includes the group "$1,000,000 and over."

Of the 32 establishments reporting in 1914, 26 reported products valued at $100,000 or more, as compared with 21 in 1909. The average value of products per establishment increased from $235,335 in 1909 to $475,484 in 1914, and the average number of wage earners per establishment increased from 54 in 1909 to 96 in 1914. In 1904 there were no establishments with products of $1,000,000 and over, but in 1909 there were 2, and in 1914, 5, the products of these 5 representing 46.5 per cent of the total value of products.

Table 37 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed in the industry.

Table 37

WAGE EARNERS PER ESTABLISHMENT.	Census year.	Number of establishments.	WAGE EARNERS. Average number.	WAGE EARNERS. Per cent of total.
All classes	1914	32	3,064	100.0
	1909	42	2,252	100.0
1 to 20	1914	[1] 5	64	2.1
	1909	[2] 18	211	9.4
21 to 50	1914	10	381	12.4
	1909	10	328	14.6
51 to 100	1914	5	405	13.2
	1909	7	540	24.0
101 to 250	1914	10	1,571	51.3
	1909	5	651	28.9
251 to 500	1914	2	643	21.0
	1909	2	522	23.2

[1] All employing "6 to 20" wage earners.
[2] Includes 4 employing "1 to 5" and 14, "6 to 20 wage earners."

Engines and power.—Table 38 shows for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 38

POWER.	NUMBER OF ENGINES OR MOTORS. 1914	1909	1904	HORSEPOWER. Amount. 1914	1909	1904	Per cent distribution. 1914	1909	1904
Primary power, total	312	254	174	24,927	6,494	5,416	100.0	100.0	100.0
Owned	155	184	142	18,621	5,454	5,001	74.7	84.0	92.3
Steam engines and turbines [1]	137	176	135	17,096	5,083	4,840	68.6	78.3	89.4
Internal-combustion engines	18	8	7	1,525	371	161	6.1	5.7	3.0
Water wheels, turbines, and motors	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rented	157	70	32	6,306	1,040	415	25.3	16.0	7.7
Electric	157	70	32	2,381	878	415	9.6	13.5	7.7
Other	.....	.....	.....	3,925	162	.....	15.7	2.5	.....
Electric	726	195	45	12,994	2,230	540	100.0	100.0	100.0
Rented	157	70	32	2,381	878	415	18.3	39.4	76.9
Generated by establishments reporting	569	125	13	10,613	1,352	125	81.7	60.6	23.1

[1] Figures for horsepower include for 1904 the amounts reported under the head of "other" owned power.

The total primary power used in the industry increased from 6,494 in 1909 to 24,927 in 1914, or 283.8 per cent. Steam was the principal kind of power used, forming 68.6 per cent of the total in 1914, 78.3 per cent in 1909, and 89.4 per cent in 1904. The capacity of the electric motors in 1914 was equal to 52.1 per cent of the primary power as compared with 34.3 per cent in 1909 and 10 per cent in 1904.

Fuel.—The fuel consumed in the industry in 1914 for all purposes, including that used in generating power, comprised 69,645 tons (of 2,240 pounds) of anthracite, 184,393 tons (2,000 pounds) of bituminous coal, 1,547 tons (2,000 pounds) of coke, 32,769 barrels of oil, and 283,952,000 cubic feet of gas.

SPECIAL STATISTICS.

Location of establishments.—The distribution of all establishments reporting the manufacture of sulphuric, nitric, and mixed acids, by states, is given in Table 3 of the introductory section of this report.

There were 194 establishments that manufactured sulphuric acid in 1914, of which the greater number (128) were fertilizer plants that made it for their own consumption. They were distributed among 28 states, with 34 in Georgia, 18 in New Jersey, 16 in Pennsylvania, 13 in South Carolina, 12 in North Carolina, 11 each in Alabama and Ohio, and 10 in California. Of the total number, 120, or 61.9 per cent, were in the South Atlantic and Middle Atlantic states.

The manufacture of nitric acid was reported by 52 establishments in 17 states, of which 11 were located in Pennsylvania, 10 in New Jersey, and 5 in New York, the three Middle Atlantic states, and constituted one-half of the establishments reporting.

The manufacture of mixed acid, reported by 37 establishments, was also largely centralized in the Middle Atlantic states, 8 establishments being located in New Jersey, 8 in Pennsylvania, and 2 in New York.

Materials.—The chief materials consumed in the manufacture of these acids were sulphur, pyrites, and nitrate of soda. The total consumption of these materials by establishments in all industries in 1914 was 82,248 tons of sulphur, costing $1,730,647; 1,581,607 tons of pyrites, costing $7,822,030; and 412,748 tons of nitrate of soda, costing $19,264,181.

Table 18 of the section on chemicals shows the distribution of these materials by classified industries and for the leading states. The figures include those used for purposes other than acid manufacture. It is not possible to show the quantities specifically consumed in the manufacture of these acids.

Products.—The total production of sulphuric acid in 1914, expressed in terms of 50° Baumé acid, was 4,071,566 tons, of which 2,338,284 tons, valued at $15,395,133, were for sale and 1,733,282 tons were made and consumed in the same works. The total production was an increase of 47.3 per cent over that of 1909.

The production of nitric acid in 1914 amounted to 78,589 tons, of which 14,685 tons, valued at $1,591,625, were for sale, and 63,904 tons were made and consumed. The total production was an increase of 14.4 per cent over that of 1909.

The production of mixed acid in 1914 was 112,124 tons, of which 42,725 tons, valued at $2,204,480, were for sale, and 69,399 tons were made and consumed—that made for sale showing an increase in quantity of 49.4 per cent over that of 1909.

Detail statistics of products, as well as of materials, will be found in the section on chemicals.

DETAIL STATE TABLES.

Table 39 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, for the sulphuric, nitric, and mixed acid industry.

Table 40 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 39.—SULPHURIC, NITRIC, AND MIXED ACIDS—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	32	3,064	24,927	$2,213	$6,734	$15,215
	1909	42	2,252	6,494	1,495	5,386	9,884
	1904	32	2,447	5,416	1,505	4,973	9,053
New Jersey	1914	6	909	3,409	697	2,160	5,071
	1909	6	434	1,575	282	1,062	2,128
Ohio	1914	4	222	2,042	161	402	862
	1909	4	129	213	82	249	418
Pennsylvania	1914	6	274	6,993	$236	$500	$1,158
	1909	6	132	286	87	328	624
	1904	5	155	216	85	266	561
All other states	1914	16	1,659	12,483	1,119	3,672	8,124
	1909	26	1,557	4,420	1,044	3,747	6,714
	1904	27	2,292	5,200	1,420	4,707	8,492

TABLE 40.—SULPHURIC, NITRIC, AND MIXED ACIDS—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.							WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.			Capital.	EXPENSES.		
		Total.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.			Salaries and wages.		
				Male.	Female	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female		Officials.	Clerks, etc.	Wage earners.
United States	32	3,604	135	330	75	3,064	De 3,527	Ja 2,858	3,533	3,532	1	$35,233,806	$462,839	$407,361	$2,212,547
New Jersey	6	1,048	25	96	18	909	Oc 975	Se 804	943	943	.....	7,766,517	112,382	108,068	697,042
Ohio	4	259	11	24	2	222	De 339	Fe 172	339	338	1	2,214,623	31,556	31,301	161,340
Pennsylvania	6	347	12	49	12	274	De 433	Ja 191	429	429	.....	5,689,927	31,779	54,923	235,857
All other states [1]	16	1,950	87	161	43	1,659	.....	.....	1,822	1,822	.....	19,562,739	287,122	213,069	1,118,308

STATE.	EXPENSES—continued.					Value of products.	Value added by manufacture.	POWER.				Electric horsepower generated in establishments reporting.
		Rent and taxes.		For materials.				Primary horsepower.				
	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[2]	Internal-combustion engines.[3]	Electric (rented).	
United States	$6,315	$30,700	$186,578	$6,083,199	$651,229	$15,215,474	$8,481,046	24,927	17,096	5,450	2,381	10,613
New Jersey	.....	.....	55,236	1,955,041	204,608	5,071,299	2,911,650	3,409	3,384	.....	25	2,008
Ohio	.....	.....	10,841	352,543	49,892	862,284	459,849	2,042	1,020	240	782	120
Pennsylvania	.....	.....	12,424	428,082	72,299	1,158,479	658,098	6,993	5,942	898	153	2,881
All other states [1]	6,315	30,700	108,077	3,347,533	324,430	8,123,412	4,451,449	12,483	6,750	4,312	1,421	5,604

[1] All other states embrace: Alabama, 1 establishment; California, 2; Colorado, 1; Connecticut, 2; Delaware, 1; Illinois, 2; Kansas, 1; Maryland, 1; New York, 2; South Carolina, 1; Tennessee, 1; Virginia, 1.
[2] Owned power only.
[3] Includes rented power, other than electric.

FERTILIZERS.

GENERAL STATISTICS.

Scope of the industry.—This report covers the manufacture of commercial fertilizers, but does not include materials used for fertilizing without special manufacture, such as raw phosphate rock, the grinding of which is treated as a mining industry, nor the natural manures of a farm. Neither does it include crude cotton seed, the products of cottonseed-oil mills, nor tankage from slaughtering and meat-packing establishments, when used directly on farms. Large quantities of these products, however, are used by fertilizer factories as raw materials and as such are included in the present report.

Comparison with earlier censuses.—Table 41 summarizes the statistics of establishments engaged in the manufacture of fertilizers for each census from 1869 to 1914 and gives percentages of increase from census to census.

Table 41

	FERTILIZERS.							PER CENT OF INCREASE.[1]					
	1914	1909	1904	1899	1889	1879	1869	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889	1869–1879
Number of establishments	784	550	399	422	390	364	126	42.5	37.8	−5.5	8.2	7.1	188.9
Persons engaged	28,301	21,950	16,091	13,654	(2)	(2)	(2)	28.9	36.4	17.8	.....	.....	.....
Proprietors and firm members	373	323	294	301	(2)	(2)	(2)	15.5	9.9	−18.6	.....	.....	.....
Salaried employees	5,113	3,317	1,613	1,712	(2)	(2)	(2)	54.1	105.6	−5.8	.....	.....	.....
Wage earners (average number)	22,815	18,310	14,184	11,581	9,026	8,598	2,501	24.6	29.1	22.5	(3)	(3)	(3)
Primary horsepower	114,281	64,711	47,980	38,680	28,210	(2)	2,951	76.6	34.8	24.1	37.0	.....	.....
Capital	$217,064,890	$121,537,451	$68,017,264	$60,085,753	$40,594,168	$17,913,660	$4,395,048	78.6	76.4	13.6	49.5	126.6	307.5
Salaries and wages	17,774,447	11,882,815	7,061,139	6,310,261	4,671,831	2,648,422	760,712	49.6	68.3	11.9	35.1	76.4	245.4
Salaries	7,242,442	4,405,636	1,033,992	2,124,972	(2)	(2)	(2)	64.4	127.8	−0.0	.....	.....	.....
Wages	10,532,005	7,477,179	5,127,147	4,185,289	(2)	(2)	(2)	40.9	45.8	22.5	.....	.....	.....
Paid for contract work	102,859	36,935	43,632	23,403	(2)	(2)	(2)	422.2	−15.3	85.7	.....	.....	.....
Rent and taxes (including internal revenue)	1,271,417	816,242	[4] 320,177	[4] 384,611	(2)	(2)	(2)	55.8	.....	.....	.....	.....	.....
Cost of materials	107,954,644	69,521,920	39,287,914	28,058,473	25,113,874	15,595,078	3,808,025	55.3	76.9	35.7	15.3	61.0	309.5
Value of products	153,196,152	103,960,213	56,541,253	44,657,385	39,180,844	23,650,705	5,815,118	47.4	83.9	26.6	14.0	65.7	306.7
Value added by manufacture (value of products less cost of materials)	45,241,508	34,438,293	17,253,339	15,598,912	14,066,970	8,055,717	2,007,093	31.4	99.6	9.9	11.6	74.6	301.4

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Figures not strictly comparable. [4] Exclusive of internal revenue.

In 1859, statistics for which are not included in the table, 47 establishments were reported as making fertilizers, with 308 wage earners, and products valued at $891,344.

The growth of the industry has been rapid and continuous during the last 45 years, and substantial increases appear at each successive census in the most important items shown in Table 41. The value of products reported at the census of 1914 was more than twenty-six times as great as that for 1869. The actual gains during the last decade have been greater than those for any previous decade, although, owing to the larger bases upon which they are computed, the percentages of increase in some cases may be smaller. Many of the establishments are small dry-mixing concerns, which do only a local business.

Summary, by states.—Table 42 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states (Massachusetts, Michigan, Kansas, and Arkansas) for which data can not be shown separately without disclosing the operations of individual establishments, ranked higher than some of those named in the table.

The seven leading states, each with a product over $10,000,000 in 1914, show little change in relative rank as measured by value of product. The most noticeable changes in rank in this respect occurred in Pennsylvania, which held sixth place in 1909, but dropped to tenth in 1914; in Louisiana, which advanced from seventeenth to fourteenth place; and in New York and Delaware, which dropped from tenth to fifteenth and from nineteenth to twenty-fifth, respectively. With the exception of Georgia, which remained first in the three items presented, there was more variation in the rank of states according to wage earners and value added by manufacture.

Although reported from 38 states, the industry is largely confined to the Southern states, the South Atlantic states reporting more than one-half of the total value of products in 1914. Farmers in these states consumed the larger part of the commercial fertilizers produced, the total consumption of which, according to the American Fertilizer Handbook,[1] is estimated to have increased nearly 56 per cent from 1909 to 1914.

[1] Federal Trade Commission "Report on Fertilizer Industry," page 171.

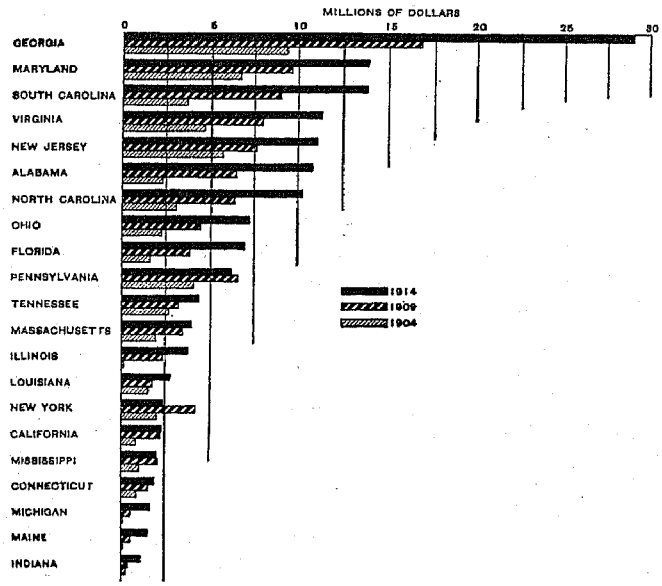
Table 42

STATE.	CENSUS OF 1914. Number of establishments.	Wage earners. Average number.	Wage earners. Per cent distribution.	Wage earners. Rank. 1914	Wage earners. Rank. 1909	Value of products. Amount.	Value of products. Per cent distribution.	Value of products. Rank. 1914	Value of products. Rank. 1909	Value added by manufacture. Amount.	Value added by manufacture. Per cent distribution.	Value added by manufacture. Rank. 1914	Value added by manufacture. Rank. 1909	PER CENT OF INCREASE.[1] Wage earners (average number). 1909–1914	Wage earners. 1904–1909	Wage earners. 1899–1904	Value of products. 1909–1914	Value of products. 1904–1909	Value of products. 1899–1904	Value added by manufacture. 1909–1914	Value added by manufacture. 1904–1909	Value added by manufacture. 1899–1904
United States	784	22,815	100.0	....	....	$153,196,152	100.0	....	....	$45,241,508	100.0	....	....	24.6	29.1	22.5	47.4	83.9	26.6	31.4	99.6	9.9
Georgia	230	3,833	16.8	1	1	29,045,903	19.0	1	1	7,825,983	17.3	1	1	38.4	26.4	94.7	72.9	77.6	181.0	33.6	99.6	188.5
Maryland	48	1,991	8.7	4	3	13,986,704	9.1	2	2	4,019,102	8.9	2	3	38.4	14.6	23.6	44.6	45.9	21.0	48.3	65.2	−10.8
South Carolina	55	2,050	9.0	3	4	13,824,659	9.0	3	3	3,508,920	7.8	4	2	10.8	72.8	−39.6	53.2	148.1	−25.5	3.3	259.0	−46.7
Virginia	57	2,470	10.8	2	2	11,350,120	7.4	4	4	3,354,199	7.4	5	4	26.3	8.6	53.8	41.3	72.5	36.4	26.8	86.6	13.0
New Jersey	23	1,530	6.7	6	7	11,197,690	7.3	5	5	3,610,606	8.0	3	7	26.7	6.1	18.4	46.0	35.7	31.7	81.7	15.3	50.6
Alabama	80	1,416	6.2	7	5	10,869,679	7.1	6	7	2,793,098	6.2	6	5	14.8	123.8	25.5	69.2	174.4	13.2	29.4	193.7	7.9
North Carolina	41	1,690	7.4	5	8	10,307,856	6.7	7	8	2,603,639	5.8	8	6	81.1	2.8	112.6	63.2	103.8	106.9	22.0	142.1	94.1
Ohio	24	1,005	4.4	9	10	7,245,998	4.7	8	9	2,619,304	5.8	7	9	19.5	71.6	22.5	63.4	93.8	38.1	37.9	110.4	41.1
Florida	22	781	3.4	10	11	6,995,051	4.6	9	11	2,339,010	5.2	9	13	32.6	143.4	106.8	80.4	143.9	218.0	133.0	278.5	56.8
Pennsylvania	47	1,110	4.9	8	6	6,177,610	4.0	10	6	2,007,431	4.4	10	8	−9.3	27.8	25.2	−5.6	59.8	12.4	4.0	60.3	13.6
Tennessee	15	706	3.1	11	12	4,372,427	2.9	11	13	1,780,688	3.9	11	12	26.3	−28.4	76.3	34.6	20.3	84.2	57.9	14.0	46.3
Illinois	12	696	3.1	12	15	3,775,287	2.5	13	14	1,425,560	3.1	12	14	56.8	.....	−85.8	58.2	1,721.4	−92.9	48.3	.....	−95.3
Louisiana	6	408	1.8	15	16	2,818,455	1.8	14	17	886,945	2.0	14	18	38.3	−14.2	23.7	60.4	12.9	71.0	105.0	−20.1	83.1
New York	9	466	2.0	14	9	2,476,881	1.6	15	10	807,843	1.8	15	10	−48.7	52.3	−42.3	−41.7	104.2	−33.9	−49.4	113.4	−39.6
California	16	196	0.9	19	18	2,330,761	1.5	16	15	471,201	1.0	18	16	−13.3	83.7	.....	0.8	158.7	33.2	−8.8	37.9	99.5
Mississippi	11	379	1.7	16	13	2,059,786	1.4	17	16	454,801	1.0	19	15	−15.6	29.0	.....	−3.1	96.4	119.5	−38.5	228.9	49.0
Connecticut	10	329	1.4	17	17	1,971,991	1.3	18	18	494,779	1.1	17	17	11.5	−4.8	133.1	25.4	66.8	141.2	2.8	15.3	156.4
Maine	8	155	0.7	21	22	1,583,481	1.0	20	21	387,994	0.9	21	23	63.2	.....	.....	165.4	.....	.....	134.0	.....	.....
Indiana	14	193	0.8	20	20	1,135,794	0.8	21	23	388,296	0.9	20	22	56.9	.....	.....	148.9	52.5	17.3	91.6	41.3	.....
Kentucky	6	132	0.6	22	24	793,032	0.5	22	20	293,955	0.6	22	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas	8	101	0.4	23	27	638,277	0.4	23	26	271,828	0.6	23	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware	9	64	0.3	25	19	510,036	0.3	25	19	128,299	0.3	27	19	.....	.....	.....	−40.7	13.2	−49.8	−68.5	.....	−75.2
Missouri	5	60	0.3	26	21	345,427	0.2	27	24	148,338	0.3	26	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	28	1,054	4.6	....	....	7,383,247	4.8	....	....	2,619,689	5.8	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 57; a minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture, or where comparable figures cannot be given.

The following diagram shows graphically the value of products for the most important states in the industry in 1914, 1909, and 1904.

FERTILIZERS—VALUE OF PRODUCTS: 1914, 1909, AND 1904.



Georgia is by far the most important state in the manufacture of fertilizers, which industry was third in importance in that state, the value of products being exceeded only by that of the cotton goods industry and of cottonseed products—"oil, cotton seed, and cake." The fertilizer industry in Georgia in 1914 represented, in value, nearly one-fifth of the total for the United States, an increase of 72.9 per cent over that of 1909. According to the American Fertilizer Handbook, Georgia leads in consumption of fertilizers, its consumption being estimated at 1,282,088 net tons, representing 16.8 per cent of the total for the country in 1914 and an increase of nearly 59 per cent over 1909.

Maine, while comparatively an unimportant state in the production of fertilizers, shows the greatest rate of increase in value of products between 1909 and 1914—165.4 per cent.

Persons engaged in the industry.—Table 43 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 43

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	28,301	27,713	588	97.9	2.1
	1909	21,950	21,547	403	98.2	1.8
Proprietors and officials	1914	1,930	1,906	24	98.8	1.2
	1909	1,323	1,313	10	99.2	0.8
Proprietors and firm members	1914	373	357	16	95.7	4.3
	1909	323	316	7	97.8	2.2
Salaried officers of corporations	1914	642	635	7	98.9	1.1
	1909	406	404	2	99.5	0.5
Superintendents and managers	1914	915	914	1	99.9	0.1
	1909	594	593	1	99.8	0.2
Clerks and other subordinate salaried employees.	1914	3,556	3,090	466	86.9	13.1
	1909	2,317	2,042	275	88.1	11.9
Wage earners (average number)	1914	22,815	22,717	98	99.6	0.4
	1909	18,310	18,192	118	99.4	0.6
16 years of age and over	1914	22,785	22,687	98	99.6	0.4
	1909	18,243	18,125	118	99.4	0.6
Under 16 years of age	1914	30	30	.....	100.0	.....
	1909	67	67	.....	100.0	.....

The average number of persons engaged in the industry during 1914 was 28,301, of whom 97.9 per cent were males. Of the total number of persons employed, 22,815, or 80.6 per cent, were wage earners, and of these wage earners 99.6 per cent were males. Although the small proportion of women employed as wage earners in the fertilizer industry diminished to four-tenths of 1 per cent during the period 1909–1914, there was a marked increase in the number and proportion of female clerks, proprietors and firm members, and salaried officers of corporations. The proportion of females of all classes increased from 1.8 per cent of the total number of persons engaged in the industry in 1909 to 2.1 per cent in 1914. There were no female wage earners under 16 years of age employed in the industry.

Table 44 gives for the several classes of persons engaged in the industry the percentages of increase from 1909 to 1914, and the per cent distribution at the two censuses.

Table 44

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
				Total.		Male.		Female.	
	Total.	Male.	Female.	1914	1909	1914	1909	1914	1909
All classes	28.9	28.6	45.9	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	45.9	45.2	.....	6.8	6.0	6.9	6.1	4.1	2.5
Proprietors and firm members	15.5	13.0	.....	1.3	1.5	1.3	1.5	2.7	1.7
Salaried officers of corporations	58.1	57.2	.....	2.3	1.8	2.3	1.9	1.2	0.5
Superintendents and managers	54.0	54.1	.....	3.2	2.7	3.3	2.7	0.2	0.2
Clerks and other subordinate salaried employees	53.5	51.3	69.5	12.6	10.6	11.1	9.5	79.2	68.2
Wage earners (average number)	24.6	24.9	—16.9	80.6	83.4	82.0	84.4	16.7	29.3
16 years of age and over	24.9	25.2	—16.9	80.5	83.1	81.9	84.1	16.7	29.3
Under 16 years of age	.....	.....	.....	0.1	0.3	0.1	0.3	.....	.....

[1] A minus sign (—) denotes decrease; percentages are omitted where base is less than 100.

With the exception of female wage earners and of wage earners under 16 years of age, there was an increase in the number of each class of persons engaged in the industry from 1909 to 1914. The largest ratio of increase is shown for salaried officers of corporations, which class also forms an increased proportion of the total, considered as a whole or separately, by sex. The percentages of increase in the classes of proprietors and officials and clerks were noticeably greater than that in number of wage earners, which formed 80.6 per cent of the total number engaged in 1914, as compared with 83.4 per cent in 1909. This is probably due to the large increase in the number of plants and competition in the industry, which resulted in the operation of many large plants at less than their full capacity in 1914.[1]

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Early spring was the period of greatest activity, March being the month of maximum employment at each census. In 1914 the largest number of wage earners employed was 38,332 in March, and the smallest 16,854 in December. Table 45 indicates greater variation in the number employed from month to month at each succeeding census, the percentages which the minimum formed of the maximum number employed being 53.4, 48.7, and 44, at the censuses of 1904, 1909, and 1914, respectively.

Table 45

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	22,571	17,076	15,252	58.9	58.3	73.2
February	30,647	24,196	18,803	80.0	82.6	90.3
March	38,332	29,310	20,834	100.0	100.0	100.0
April	32,977	23,198	17,067	86.0	79.1	81.9
May	21,793	16,737	13,231	56.9	57.1	63.5
June	18,286	14,506	11,122	47.7	49.5	53.4
July	17,603	14,264	11,194	45.9	48.7	53.7
August	18,041	15,514	12,353	47.1	52.9	59.3
September	20,863	18,163	14,170	54.4	62.0	68.0
October	18,249	16,232	12,613	47.6	55.4	60.5
November	17,564	15,095	11,682	45.8	51.5	56.1
December	16,854	15,425	12,091	44.0	52.6	58.0

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Table 46 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more.

The greatest variation in employment was shown for the most important state—Georgia—the number reported for the month of minimum employment being only 19.2 per cent of the maximum. Greater regularity of employment is shown in Illinois, New Jersey, and Pennsylvania than in other states, although more than seven-tenths of the wage earners in the industry were reported from the southern states.

[1] "The Fertilizer Industry"—Federal Trade Commission—Section 17, p. 243.

Table 46

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of mimimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	22,815	22,571	30,647	**38,332**	32,977	21,793	18,286	17,603	18,041	20,863	18,249	17,564	*16,854*	44.0
Alabama	1,416	1,741	2,391	3,219	2,437	1,235	900	801	*710*	814	856	921	967	22.1
Florida	781	1,084	1,219	1,115	719	731	693	592	*553*	710	588	626	742	45.4
Georgia	3,833	3,729	7,459	9,997	6,577	3,142	2,113	*1,920*	1,935	2,061	2,302	2,301	2,460	19.2
Illinois	696	642	658	829	755	693	755	729	754	**837**	*550*	583	567	65.7
Maryland	1,991	1,930	2,033	2,367	2,647	2,031	1,666	1,735	2,109	**2,648**	1,638	1,584	*1,504*	56.8
Massachusetts	578	627	678	876	909	773	495	469	*377*	416	427	397	492	41.5
New Jersey	1,530	1,697	1,852	**1,997**	1,911	1,529	1,297	1,374	*1,271*	1,336	1,339	1,346	1,411	63.6
North Carolina	1,690	1,536	1,822	3,062	3,081	1,929	1,236	*1,030*	1,150	1,243	1,451	1,378	1,362	33.4
Ohio	1,005	901	877	1,166	1,225	968	900	885	1,133	**1,647**	*771*	791	796	46.8
Pennsylvania	1,110	1,065	1,340	1,391	1,383	1,110	1,047	1,008	1,053	1,133	916	*902*	972	64.8
South Carolina	2,050	2,309	3,998	4,859	2,815	1,578	1,291	1,233	*982*	1,206	1,385	1,418	1,526	20.2
Tennessee	706	592	816	1,110	1,291	731	*446*	466	550	860	588	511	511	34.5
Virginia	2,470	1,620	1,971	2,259	3,246	2,498	2,874	2,913	2,877	2,954	2,772	2,429	*1,227*	37.8

Prevailing hours of labor.—In Table 47 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

Table 47

AVERAGE NUMBER OF WAGE EARNERS.

STATE.	Census year.	Total.	In establishments where the prevailing hours of labor per week were—						
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States	1914	22,815	281	500	2,656	3,061	14,282	1,312	723
	1909	18,310	51	22	332	806	14,502	1,408	1,189
Alabama	1914	1,416	3	10	31	102	1,020	84	166
	1909	1,233	4	.....	16	.....	997	175	41
Florida	1914	781	4	.....	271	100	399	.....	7
	1909	589	.....	.....	.....	12	562	15	.....
Georgia	1914	3,833	41	121	542	837	2,163	67	62
	1909	2,770	4	7	7	159	2,146	87	360
Illinois	1914	696	10	.....	422	67	167	.....	30
	1909	444	2	.....	.....	.....	428	.....	14
Maryland	1914	1,991	73	40	109	121	1,633	.....	15
	1909	1,439	.....	3	30	.....	1,030	376	.....
Massachusetts	1914	578	.....	.....	214	364	.....	.....	.....
	1909	447	.....	.....	4	10	433	.....	.....
New Jersey	1914	1,530	13	26	66	46	1,236	143	.....
	1909	1,208	9	.....	11	51	1,137	.....	.....
North Carolina	1914	1,690	5	9	66	501	983	101	25
	1909	933	.....	.....	2	70	686	36	139
Ohio	1914	1,005	49	66	66	114	536	174	.....
	1909	841	.....	.....	60	26	755	.....	.....
Pennsylvania	1914	1,110	3	18	38	12	1,024	15	.....
	1909	1,224	6	8	.....	197	425	169	419
South Carolina	1914	2,050	20	76	.....	365	1,507	8	74
	1909	1,851	.....	.....	4	.....	1,798	6	43
Tennessee	1914	706	.....	.....	160	.....	383	160	3
	1909	559	1	.....	.....	46	512	.....	.....
Virginia	1914	2,470	33	2	88	124	1,527	359	337
	1909	1,956	4	3	14	108	1,465	255	107

The figures in this table emphasize the tendency toward a shortening of the hours of employment of wage earners. In 1909, 17,099, or 93.4 per cent of the total average number of wage earners, were employed in establishments where the prevailing hours of labor were 60 or more per week, whereas 16,317, or only 71.5 per cent, were so employed in 1914. On the other hand, the number of wage earners whose working hours were less than 60 per week increased from1,211, or 6.6 per cent, in 1909, to 6,498, or 28.5 per cent of the total average number, in 1914. During the five-year period there was a marked increase in the proportion of each of the four classes working less than 60 hours per week.

The prevailing hours of labor for wage earners in the industry for the United States as a whole and for practically all states shown in the table were 60 hours per week at each census. Massachusetts reported the greatest number of wage earners in establishments where the prevailing hours were between 54 and 60 per week, and Illinois in those whose prevailing hours were 54 per week, but these states were relatively less important in the industry than the southern states, where most of the wage earners worked longer hours.

The average number of hours of labor per wage earner per week was 59.3 in 1914 and 61 in 1909, indicating an average decrease of 1.7 hours per week for the five-year period. In making this computation, the lowest group "48 and under," has been figured at 48; the "between 48 and 54" group at 51; the "between 54 and 60" group at 57; the "between 60 and 72" group at 66; and the "over 72" group at 72.

Character of ownership.—Table 48 presents statistics concerning the character of ownership, or legal organization, of establishments in the fertilizer industry for 1914 and 1909, and for 1914 only for such states, except Massachusetts, as reported an average of 500 wage earners or more.

The trend toward corporate ownership is clearly indicated by the fact that establishments owned by corporations show not only actual increases in each item in the table but also increases in the proportions which these formed of the totals for the industry.

Table 48

STATE.	Census year.	Number of establishments owned by— Individuals.	Corporations.	All others.	Average number of wage earners. Total.	In establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.	Value of products. Total.	Of establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.
United States	1914	94	582	108	22,815	447	21,537	831	2.0	94.4	3.6	$153,196,152	$2,477,012	$144,012,161	$5,806,979	1.6	94.0	3.8
	1909	95	369	86	18,310	354	17,166	790	1.9	93.8	4.3	103,960,213	1,907,199	98,006,672	4,046,342	1.8	94.3	3.9
Alabama	1914	5	68	7	1,416	15	1,366	35	1.1	96.5	2.5	10,869,679	119,650	10,231,495	518,534	1.1	94.1	4.8
Florida	1914	2	19	1	781	[1] 18	763	.....	2.3	97.7	.....	6,995,051	[1] 63,095	6,931,956	.....	0.9	99.1	....
Georgia	1914	22	108	40	3,833	50	3,502	281	1.3	91.4	7.3	29,045,903	461,040	26,225,456	2,359,398	1.6	90.3	8.1
Illinois	1914	1	9	2	696	.....	678	[2] 18	.....	97.4	2.6	3,775,287	.....	3,742,619	[2] 32,668	.....	99.1	0.9
Maryland	1914	9	29	10	1,991	83	1,847	61	4.2	92.8	3.1	13,986,704	409,025	13,162,182	415,497	2.9	94.1	3.0
New Jersey	1914	4	14	5	1,530	78	1,415	37	5.1	92.5	2.4	11,197,690	171,174	10,792,490	234,026	1.5	96.4	2.1
North Carolina	1914	4	33	4	1,690	52	1,611	27	3.1	95.3	1.6	10,307,856	384,074	9,882,332	41,450	3.7	95.9	0.4
Ohio	1914	3	20	1	1,005	[1] 6	999	.....	0.6	99.4	.....	7,245,998	[1] 34,674	7,211,324	.....	0.5	99.5	....
Pennsylvania	1914	15	16	16	1,110	44	1,001	65	4.0	90.2	5.9	6,177,610	226,342	5,658,021	293,247	3.7	91.6	4.7
South Carolina	1914	2	52	1	2,050	[1] 6	2,044	.....	0.3	99.7	.....	13,824,659	[1] 81,586	13,743,073	.....	0.6	99.4	....
Tennessee	1914	1	12	2	706	.....	595	[2] 111	.....	84.3	15.7	4,372,427	.....	4,121,727	[2] 250,700	.....	94.3	5.7
Virginia	1914	4	51	2	2,470	[1] 103	2,367	.....	4.2	95.8	.....	11,350,120	[1] 776,373	10,573,747	.....	6.8	93.2	....

[1] Includes the group "all others."

[2] Includes the group "individuals."

In 1914, 21,537 wage earners, or 94.4 per cent of the total average number, were employed in establishments owned by corporations; 447, or 2 per cent, in those under individual ownership; and 831, or 3.6 per cent, in those under other forms of ownership, chiefly firms. There is some variation from these proportions in the different states, though not marked.

The smallest proportion of products reported by corporations in any state is shown for Georgia, where they formed 90.3 per cent of the total, establishments under individual and other forms of ownership constituting 9.7 per cent.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 49.

Two classes—those representing establishments with products of $20,000 to $100,000 and $1,000,000 and over—increased as to actual numbers and amounts, and also in the proportions which they formed of the total for the industry.

Table 50 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed for the industry as a whole and for the 13 leading states.

There were 7 establishments which reported no wage earners in 1914, as compared with 11 in 1909. These were small establishments in which the work was done by the proprietors or firm members. In some cases they employed a few wage earners for short periods, but the number was so small and the period so short that in computing the average number, as described in the "Explanation of terms," no wage earners could be shown for the establishment. During the five-year period the proportion of wage earners in establishments employing from 1 to 50 increased from 24.9 per cent to 28.4 per cent of the total average number, while only 71.6 per cent were in establishments employing more than 50 in 1914, as compared with 75.1 per cent in 1909. There were no fertilizer establishments employing more than 500 wage earners.

In Georgia 1,208, or 31.5 per cent of the total number of wage earners, were in establishments employing from 51 to 100 wage earners; more than one-half (58.7 per cent) of the establishments in that state employed less than 6 wage earners.

Table 49

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	784	22,815	$153,196,152	$45,241,508
	1909	550	18,310	103,960,213	34,438,293
Less than $5,000	1914	50	73	130,999	63,587
	1909	54	67	134,901	65,902
$5,000 to $20,000	1914	130	430	1,499,136	497,622
	1909	95	295	1,103,092	402,193
$20,000 to $100,000	1914	296	2,497	15,329,941	3,799,132
	1909	180	1,828	8,668,288	2,762,302
$100,000 to $1,000,000	1914	284	14,308	99,463,869	28,697,899
	1909	211	13,330	76,746,170	25,800,348
$1,000,000 and over	1914	24	5,507	36,763,207	12,183,268
	1909	10	2,790	17,307,762	5,407,488
Per cent distribution:					
Less than $5,000	1914	6.4	0.3	0.1	0.1
	1909	9.8	0.4	0.1	0.2
$5,000 to $20,000	1914	16.6	1.9	1.0	1.1
	1909	17.3	1.6	1.1	1.2
$20,000 to $100,000	1914	37.8	10.9	10.0	8.4
	1909	32.7	10.0	8.3	8.0
$100,000 to $1,000,000	1914	36.2	62.7	64.9	63.4
	1909	38.4	72.8	73.8	74.9
$1,000,000 and over	1914	3.1	24.1	24.0	26.9
	1909	1.8	15.2	16.6	15.7

Table 50

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—													
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	784	22,815	7	330	928	200	2,172	101	3,385	89	6,448	50	7,206	7	2,676
	1909	559	18,310	11	210	583	133	1,411	73	2,565	76	5,539	39	5,697	8	2,515
Alabama	1914	80	1,416	.....	42	142	20	190	9	348	7	454	2	282	.....	.....
	1909	42	1,233	.....	16	58	11	88	5	163	7	532	3	392	.....	.....
Florida	1914	22	781	.....	8	30	3	32	5	137	4	258	2	324	.....	.....
	1909	12	589	.....	2	8	3	39	2	59	4	303	1	180	.....	.....
Georgia	1914	230	3,833	2	133	397	49	526	22	730	17	1,208	7	972	.....	.....
	1909	110	2,770	1	49	149	27	262	14	507	14	1,093	5	759	.....	.....
Illinois	1914	12	696	.....	1	2	5	48	1	30	4	258	.....	.....	1	358
	1909	11	444	.....	4	17	3	36	2	76	1	55	.....	.....	1	260
Maryland	1914	48	1,991	.....	21	46	11	140	5	182	5	373	5	774	1	476
	1909	41	1,439	.....	21	52	7	87	4	150	5	354	3	447	1	349
Massachusetts	1914	4	578	.....	.....	.....	2	17	.....	.....	.....	.....	1	197	1	364
	1909	6	447	1	1	4	1	10	1	24	.....	.....	1	149	1	260
New Jersey	1914	23	1,530	.....	7	16	7	71	3	122	2	172	2	385	2	764
	1909	22	1,208	.....	9	19	6	65	2	66	.....	.....	3	452	2	606
North Carolina	1914	41	1,690	.....	4	17	16	181	7	220	10	714	4	558	.....	.....
	1909	34	933	.....	11	30	11	127	4	144	7	494	1	138	.....	.....
Ohio	1914	24	1,005	.....	6	11	5	56	5	183	4	251	4	504	.....	.....
	1909	27	841	2	9	30	7	66	2	83	4	288	3	374	.....	.....
Pennsylvania	1914	47	1,110	2	26	59	13	128	2	56	.....	.....	3	414	1	453
	1909	48	1,224	1	28	66	11	110	2	75	3	254	2	300	1	419
South Carolina	1914	55	2,050	.....	16	45	15	169	11	323	5	339	8	1,174	.....	.....
	1909	26	1,851	.....	6	23	3	35	2	63	8	599	7	1,131	.....	.....
Tennessee	1914	15	706	.....	4	13	3	31	2	80	4	319	2	263	.....	.....
	1909	12	559	.....	4	11	1	13	2	96	3	192	2	247	.....	.....
Virginia	1914	57	2,470	.....	7	15	22	271	9	275	13	1,110	6	799	.....	.....
	1909	45	1,956	.....	10	20	11	135	9	332	10	676	4	541	1	252

Engines and power.—Table 51 shows for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 51

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	3,022	1,338	830	114,281	64,711	47,989	100.0	100.0	100.0
Owned	1,117	900	752	66,476	51,967	45,456	58.2	80.3	94.7
Steam engines and turbines [1]	843	804	720	60,353	49,777	44,857	52.8	76.9	93.5
Internal-combustion engines	258	83	17	5,786	1,825	246	5.1	2.8	0.5
Water wheels, turbines, and motors	16	13	15	337	365	353	0.3	0.6	0.7
Rented	1,905	438	78	47,805	12,744	2,533	41.8	19.7	5.3
Electric	1,905	438	78	47,450	12,579	2,358	41.5	19.4	4.9
Other	.....	.....	.....	355	165	175	0.3	0.3	0.4
Electric	2,795	761	204	65,266	19,238	5,275	100.0	100.0	100.0
Rented	1,905	438	78	47,450	12,579	2,358	72.7	65.4	44.7
Generated by establishments reporting	890	323	126	17,816	6,659	2,917	27.3	34.6	55.3

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power.

The total primary power increased from 47,989 in 1904 to 64,711 in 1909, and to 114,281 in 1914, or 138.1 per cent during the decade. Although owned power formed the greater part of the total horsepower reported at the census of 1914, its relative importance diminished steadily during the decade, while rented power (almost wholly electric) increased from 5.3 per cent of the total primary power in 1904 to 19.7 per cent in 1909 and 41.8 per cent in 1914.

Steam furnished the bulk of the power used, although the capacity of steam engines and turbines in use in 1914 was only 52.8 per cent of the total as compared with 76.9 per cent in 1909 and 93.5 per cent in 1904. The use of internal-combustion engines

increased rapidly during the decade, but the horsepower of such engines represented only 5.1 per cent of the total primary power in 1914.

In addition to the 47,450 horsepower reported as the rated capacity of electric motors run by purchased current, there were motors of 17,816 horsepower operated by current generated in the same establishment in 1914. The percentage of increase in the rated capacity of all electric motors during the five-year period was 239.3 per cent.

It should be kept in mind that the figures given relate to the capacity of the engines, motors, etc., and not to the amount of power in use at any one time.

Fuel.—Table 52 shows, for 1914, the quantity of each kind of fuel used for which data were obtained for the industry as a whole and for 13 leading states.

The total expenditure for fuel in 1914 was $1,264,818. Bituminous coal was the fuel most generally used, although oil was the principal fuel used in California, and gas in Louisiana.

Table 52

STATE.	COAL.		Coke (tons, 2,000 pounds).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).			
United States	13,451	433,359	2,633	27,851	49,631
Alabama	15	31,893	30	674	.....
Florida	.....	7,250	.....	2,216	.....
Georgia	.....	22,807	20	1,564	334
Illinois	.....	18,458	.....	3,973	.....
Maryland	80	25,314	.....	170	21
Massachusetts	.....	9,710	.....	54	.....
New Jersey	8,279	39,290	.....	103	.....
North Carolina	.....	26,466	.....	1,217	.....
Ohio	.....	34,519	.....	46	11,153
Pennsylvania	2,391	50,267	1,983	107	19,050
South Carolina	.....	25,017	.....	154	.....
Tennessee	.....	27,333	.....	2	.....
Virginia	954	56,284	.....	305	.....
All other states	1,732	58,751	.....	17,266	19,073

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

The foregoing tables give the general statistics for establishments engaged primarily in the manufacture of fertilizers. There is, however, a large quantity of fertilizers produced in establishments engaged in other lines of manufacture for which the general statistics are included with those for cottonseed-oil mills, grease and tallow, slaughtering and meat packing establishments, and some 15 other industries, such as the manufacture of soap, glue, canned fish, bone products, fur goods, and leather goods, which produce wastes of fertilizing value. The following tables pertaining to materials and products cover the total production of fertilizers by all establishments whether made as a primary or subsidiary product.

Materials.—The chemical elements essential to plant life most readily exhausted from the soil are nitrogen, phosphorous, and potassium, and commercial fertilizers contain at least one of these substances in such form that the plant can assimilate it. The majority of artificial fertilizers afford only one or two of these elements, and are usually sold for certain crops or for use on particular kinds of soil.

With the exception of nitrate of soda, largely imported from Chile, and acid phosphate, obtained by treating phosphate rock with sulphuric acid, most of the nitrogenous and phosphatic materials used in the manufacture of fertilizers are by-products of other industries, while the most important source of potassium prior to the European war was the potash salts imported from Germany. Table 53 shows the statistics for materials used in the fertilizer industry for 1914, 1909, 1904, and 1899.

Table 53

	FERTILIZERS (TONS OF 2,000 POUNDS).			
	1914	1909	1904	1899
Number of establishments	1,238	843	552	475
Fertilizer industry	784	550	399	422
Manufacturing fertilizers as subsidiary products	[1] 454	293	153	53
MATERIALS.				
Total cost	$119,222,003	$73,165,544	.....	.....
The fertilizer industry	$107,954,644	$69,521,920	$39,287,914	$28,958,473
Other industries producing fertilizers as subsidiary products	$11,267,359	$3,643,624	(2)	(2)
Cottonseed meal:				
Tons	325,234	842,557	(2)	(2)
Cost	$8,419,383	$17,200,611	$2,376,448	$167,410
Tankage and ammoniates, not elsewhere specified:				
Tons	887,934		(2)	(2)
Cost	$20,131,141		$7,539,200	$9,766,735
Ammonium sulphate:				
Tons	149,924	65,592	10,540	4,120
Cost	$9,015,163	$3,732,112	$600,856	$186,609
Cyanamid or lime nitrogen:				
Tons	25,911	(2)	(2)	(2)
Cost	$1,176,119	(2)	(2)	(2)
Nitrate of soda:				
Tons	162,184	89,846	42,213	19,518
Cost	$7,511,809	$3,916,320	$1,760,432	$709,841

	FERTILIZERS (TONS OF 2,000 POUNDS).			
	1914	1909	1904	1899
MATERIALS—continued.				
Nitrate of soda—Continued.				
For mixed fertilizers—				
Tons	147,050	(2)	(2)	(2)
Cost	$6,807,228	(2)	(2)	(2)
For acid manufacture—				
Tons	15,134	(2)	(2)	(2)
Cost	$704,581	(2)	(2)	(2)
Phosphate rock:				
Tons	2,080,961	1,549,497	888,571	787,927
Cost	$11,222,992	$8,828,834	$4,244,554	$3,554,174
Fish:				
Tons	250,110	242,045	(2)	(2)
Cost	$3,111,991	$3,066,613	$847,142	$183,542
Raw bones:				
Tons	64,590	(2)	(2)	(2)
Cost	$1,603,353	(2)	(2)	(2)
Steamed bone:				
Tons	55,067	(2)	(2)	(2)
Cost	$1,178,959	(2)	(2)	(2)
Ground bone:				
Tons	25,139	(2)	(2)	(2)
Cost	$593,226	(2)	(2)	(2)
Bone discard:				
Tons	3,395	(2)	(2)	(2)
Cost	$35,007	(2)	(2)	(2)
Pyrites:				
Tons	613,842	456,574	342,962	288,778
Cost	$3,590,235	$2,831,994	$2,020,759	$1,466,285

[1] Includes 179 cottonseed-oil mills, 64 grease and tallow establishments, 45 slaughtering and meat packing, and 166 distributed among some 15 other industries that produce wastes of fertilizing value.
[2] Figures not available.

Table 53—Continued.

	FERTILIZERS (TONS OF 2,000 POUNDS).			
	1914	1909	1904	1899
MATERIALS—continued.				
Sulphur or brimstone:				
Tons	2,041	4,236	4,210	12,728
Cost	$42,716	$68,924	$92,234	$268,670
Sulphuric acid:				
Purchased—				
Tons	728,889	620,708	197,865	231,527
Cost	$4,387,317	$3,460,132	$1,084,304	$1,355,382
Made and consumed, tons	1,276,715	841,935	692,904	(1)
Superphosphate:				
Purchased—				
Tons	1,096,178	532,886	320,559	286,898
Cost	$9,301,501	$5,175,957	$2,912,010	$2,176,245
Made and consumed (acid phosphate), tons	2,723,317	1,838,865	884,211	(1)
Basic slag or Thomas phosphate powder:				
Tons	16,190	(1)	(1)	(1)
Cost	$144,213	(1)	(1)	(1)
Guano:				
Tons	120,128	(1)	(1)	(1)
Cost	$445,416	(1)	(1)	(1)
Kainit:				
Tons	448,885	347,104	190,493	54,700
Cost	$3,939,263	$3,008,183	$1,891,073	$520,833
MATERIALS—continued.				
Potash salts:				
Tons	529,973	270,459	122,107	(1)
Cost	$12,774,113	$7,714,367	$3,606,701	$3,098,400
Muriate of potash—				
Tons	177,372	(1)	(1)	(1)
Cost	$6,497,364	(1)	(1)	(1)
Sulphate of potash—				
Tons	39,232	(1)	(1)	(1)
Cost	$1,684,998	(1)	(1)	(1)
Double manure salts—				
Tons	108,580	(1)	(1)	(1)
Cost	$1,740,241	(1)	(1)	(1)
Nitrate of potash or saltpeter—				
Tons	507	(1)	(1)	(1)
Cost	$28,287	(1)	(1)	(1)
Other potash salts—				
Tons	[2] 204,282	(1)	(1)	(1)
Cost	$2,823,223	(1)	(1)	(1)
Hardwood ashes:				
Tons	4,437	(1)	(1)	(1)
Cost	$54,171	(1)	$2,050	(1)
All other materials	$20,543,915	$14,161,497	$10,310,151	$5,504,347

[1] Figures not available.

[2] Includes 17,430 tons reported simply as potash salts.

The amount expended for all fertilizer materials in 1914 was $119,222,003, representing an increase of 62.9 per cent as compared with 1909. The greatest actual growth was in the groups of nitrogenous materials listed as cottonseed meal, and tankage and ammoniates, not elsewhere specified, the consumption of these having increased to the extent of 370,611 tons, or 44 per cent in quantity, and $11,349,913, or 66 per cent in value from 1909 to 1914.

Ammonium sulphate, a by-product of coke manufacture, used as a source of nitrogen, showed the greatest proportionate increase—128.6 per cent in quantity and 141.6 per cent in value—during the period 1909–1914. While it is said to have a tendency to produce an acid condition of the soil deleterious to some crops and to be slower in its action than nitrate of soda, it is less subject to leaching or loss by drainage. Some of it is absorbed directly by the plants as ammonia and the remainder first converted into nitrates. In 1909 ammonium sulphate was used as a fertilizer material to the value of $3,732,112, and nitrate of soda to the value of $3,916,320. In 1914, although the statistics show enormous increases in the use of both materials, ammonium sulphate had become from the standpoint of cost the more important of the two.

Phosphorus as contained in mixed fertilizers for plant assimilation is usually in the form of acid phosphate, obtained by treating phosphate rock with sulphuric acid. Phosphate rock was used in greater quantities than any other material for the manufacture of fertilizers in 1914, the statistics showing an increase of 34.3 per cent in quantity and 27.1 per cent in value since 1909. Phosphate material was used in the form of fish (which also supplies nitrogen), raw bones, steamed bone, ground bone, and bone discard, the consumption of these constituents in 1914 aggregating 398,301 tons at a cost of $6,522,536.

Prior to the European war the consumption of potash salts, principally in the form of muriate of potash, had increased rapidly, having nearly doubled in quantity and cost during the five-year period ending with the year 1914. But the imports of potash of all kinds and for all purposes in 1914 were but 242,909 net tons, valued at $8,743,973, as compared with 306,507 net tons; valued at $10,805,720 in 1913; and in the last quarter of 1914 it was but 24,454 tons as compared with 91,988 tons in the last quarter of 1913. Reference has heretofore been made (p. 23) to the efforts in progress to develop domestic sources of supply.

Sulphuric acid.—The fertilizer industry is a large consumer of sulphuric acid. Of the total production, approximately 4,072,000 tons 50° B. acid, 2,005,600 tons, or a fraction less than 50 per cent, were used in the manufacture of fertilizers, and the bulk of this was manufactured by the fertilizer establishments where consumed—all by the chamber process.

Table 54 shows, by states, the quantity of sulphuric acid used, both purchased and manufactured, and the number of establishments reporting its manufacture.

Table 54

STATE.	SULPHURIC ACID.			
	Total consumption (tons, 2,000 pounds).	Manufactured by fertilizer works.		Purchased (tons).
		Number of establishments.	Tons.	
United States	2,005,604	128	1,276,715	728,889
Alabama	156,452	9	72,242	84,210
Florida	46,615	4	45,506	1,109
Georgia	386,818	34	282,176	104,642
Louisiana	66,334	4	31,016	35,318
Maryland	304,509	6	110,568	193,941
Mississippi	51,576	5	42,406	9,170
New Jersey	127,712	6	88,041	39,671
North Carolina	160,143	12	129,307	30,836
Ohio	107,993	6	73,242	34,751
South Carolina	190,715	13	160,327	30,388
Tennessee	89,775	4	70,750	19,025
Virginia	116,683	8	93,071	23,612
All other states	200,279	17	78,063	122,216

Of the total quantity of sulphuric acid used in the fertilizer industry in 1914, reduced to the basis of

chamber acid, 50° Baumé, 63.7 per cent was manufactured in 128 fertilizer establishments and 36.3 per cent was purchased. The corresponding proportions for 1909 were 58.2 per cent manufactured and 41.8 per cent purchased.

In addition to the sulphuric acid made and consumed in fertilizer establishments in 1914, 129,053 tons were manufactured and sold. Assuming this to have been sold to other fertilizer establishments and included in the quantity of sulphuric acid reported as purchased, the industry would appear to have produced more than seven-tenths of the sulphuric acid consumed by it in the manufacture of fertilizers.

The quantity of sulphuric acid made and consumed in 1914—1,276,715 tons—which, however, includes a small amount—2,168 tons—made and consumed in the manufacture of fertilizers by establishments making fertilizers as a subsidiary product, is comparable with 841,935 tons in 1909 and 692,904 tons in 1904.

Another material made and consumed to a large extent by the fertilizer establishments is acid phosphate. In 1914 the quantity made and consumed was 2,723,317 tons, including 56,089 tons made and used in establishments manufacturing fertilizers as subsidiary products, the corresponding figures for 1909 being 1,838,865 tons, and for 1904, 884,211 tons.

Products.—Table 55 shows, for 1914, 1909, 1904, and 1899, the statistics of all establishments making fertilizers, whether as a primary or subsidiary product.

Table 55

	FERTILIZERS (TONS OF 2,000 POUNDS).			
	1914	1909	1904	1899
PRODUCTS.				
Total value	$169,017,550	$111,871,481	$63,008,593	$46,209,397
Fertilizer industry	153,196,152	103,060,213	56,541,253	44,657,385
Fertilizers, subsidiary products of other industries	15,821,398	7,911,268	6,467,340	1,552,012
Fertilizers:				
Tons	8,432,206	5,618,234	3,591,771	2,887,014
Value	$153,260,212	$100,089,071	$56,928,034	$42,097,673
Complete and ammoniated fertilizers [1]				
Tons	5,612,421	3,523,759	2,385,201	1,622,474
Value	$121,676,386	$74,109,307	$44,325,882	$28,781,883
Superphosphates				
Production, tons	4,416,022	3,062,834	1,670,078	.....
For sale, tons	1,692,705	1,223,969	786,767	937,098
For sale, value	$14,778,054	$13,744,831	$7,821,096	$8,592,360
Made and consumed, tons	2,723,317	1,838,865	884,211	(2)
Concentrated phosphate				
Tons	67,583	270,128	(2)	(2)
Value	$1,367,065	$2,713,513	(2)	(2)
Other fertilizers				
Tons	1,059,405	660,378	419,803	327,532
Value	$15,438,167	$9,522,320	$4,781,056	$4,723,430

	FERTILIZERS (TONS OF 2,000 POUNDS).			
	1914	1909	1904	1899
PRODUCTS—continued.				
Sulphuric acid (reduced to 50° Baumé):				
Production, tons	1,405,768	995,384	717,406	.....
For sale, tons	129,053	153,449	24,502	71,176
For sale, value	$768,873	$928,582	$194,578	$437,925
Made and consumed, tons	1,276,715	841,935	692,904	(2)
Fish scrap:				
Tons	62,930	78,484	(2)	(2)
Value	$1,915,530	$2,006,724	(2)	(2)
Pyrite cinder:				
Tons	[3] 245,082	[3] 201,653	(2)	(2)
Value	$231,869	$143,607	(2)	(2)
Oil:				
Gallons	2,445,026	3,218,393	(2)	(2)
Value	$778,337	$810,938	(2)	(2)
Bone black:				
Pounds	41,054,709	(2)	(2)	(2)
Value	$1,413,166	(2)	(2)	(2)
Glue	$1,131,243	(2)	(2)	(2)
Grease	$1,209,334	(2)	(2)	(2)
All other products	[4] $8,308,986	$7,891,059	$5,885,981	$3,673,799

[1] Includes fertilizers reported as ammoniated fertilizers but containing both superphosphates and potash, viz, in 1914, 1,519,156 tons; 1909, 522,389 tons; 1904, 775,987 tons; and 1899, 142,898 tons.
[2] Figures not available.
[3] In addition, 155,634 tons in 1914, and 72,402 tons in 1909, of no value at the works.
[4] Includes chemicals—such products, acids, etc.—to the value of $496,597.

The total production of fertilizers in 1914, including that manufactured by slaughtering and meat-packing establishments and as a subsidiary product by other industries, was 8,432,206 tons, valued at $153,260,212, representing an increase of 50.1 per cent in quantity and 53.1 per cent in value over the production of 1909, and 134.8 per cent in quantity and 169.2 per cent in value over that of 1904. The highest rate of increase for the decade is indicated by the statistics for superphosphates, including acid phosphate consumed in further processes of manufacture in the works where produced—164.3 per cent—and the lowest for complete and ammoniated fertilizers—135.3 per cent.

Changes in grade and classification of products as reported at different censuses may affect the comparability of the statistics. Considering all classes of fertilizers, the figures show a quite uniform advance in unit value—from $14.58 per ton in 1899 to $15.84 in 1904, $17.81 in 1909, and $18.17 in 1914. The greatest decrease in production is shown for concentrated phosphates, the quantity reported for 1914, being one-fourth of that reported for 1909, but the production for the later census appears to have been of a much higher grade.

Table 56 gives for 1914 the quantity and value of the different kinds of fertilizers produced by all establishments, by states, and for 1909, by states, the figures for tonnage for establishments engaged primarily in the manufacture of fertilizers. The 1909 figures do not include a total production of 378,070 tons, the product of establishments engaged primarily in other lines of manufacture.

Table 56

PRODUCT AND STATE.	TONS. 1914	TONS. 1909	Value, 1914.
FERTILIZERS.			
All kinds, total	8,432,206	[1]5,240,164	$153,260,212
Georgia	1,749,465	888,137	30,408,787
Maryland	875,996	608,699	13,488,984
South Carolina	733,753	512,714	14,005,858
Alabama	687,643	411,177	10,983,528
North Carolina	635,230	323,562	11,702,757
Virginia	541,690	364,613	9,524,113
New Jersey	475,821	343,703	10,281,447
Ohio	339,353	224,222	6,313,075
Tennessee	329,457	179,356	4,408,922
Illinois	294,802	105,124	4,565,435
Pennsylvania	276,088	274,699	5,296,917
Florida	246,506	155,852	6,290,067
Louisiana	221,434	78,878	3,696,424
New York	163,042	260,554	2,869,126
Mississippi	159,263	133,101	2,383,019
California	69,977	62,619	2,094,371
Kentucky	67,379	(2)	959,366
Connecticut	59,156	31,581	1,948,194
Indiana	56,889	21,850	1,049,526
Maine	51,465	28,777	1,590,756
Texas	35,685	2,509	845,375
Delaware	25,201	14,222	505,918
Missouri	21,732	11,415	515,674
All other states	315,779	202,800	7,532,573
Complete and ammoniated fertilizers.			
Total	5,612,421	3,242,840	121,676,386
Georgia	1,155,559	595,105	24,387,229
Maryland	516,958	318,542	10,013,331
South Carolina	491,076	278,894	11,199,158
Complete and ammoniated fertilizers—Con.			
North Carolina	458,295	175,471	$9,999,225
Alabama	403,135	209,177	8,111,405
Virginia	375,256	229,785	7,576,028
New Jersey	353,310	254,316	8,723,747
Illinois	251,654	87,413	4,095,958
Ohio	218,601	143,710	4,496,321
Florida	200,663	98,322	5,729,326
Pennsylvania	171,461	201,760	3,818,919
Tennessee	164,109	140,047	2,871,655
Louisiana	132,287	47,488	2,558,982
New York	99,519	80,188	2,072,730
Mississippi	95,359	72,193	1,867,251
Maine	50,554	22,537	1,574,590
Connecticut	49,533	29,368	1,661,626
California	44,456	44,572	1,639,686
Indiana	41,318	16,090	787,466
Texas	32,807	(2)	794,488
Delaware	21,888	(2)	471,093
Kentucky	14,926	(2)	316,786
Missouri	10,375	8,875	267,059
All other states	259,322	188,987	6,651,327
Superphosphates and concentrated phosphates.			
Total	1,760,290	1,460,527	16,145,659
Georgia	459,783	217,594	4,138,243
Alabama	230,494	174,148	1,948,594
Maryland	228,045	208,901	2,006,040
South Carolina	182,407	178,776	1,642,797
North Carolina	147,694	92,328	1,285,889
New Jersey	82,674	72,323	941,738
Superphosphates and concentrated phosphates—Contd.			
Virginia	76,130	69,883	$669,654
Ohio	69,927	44,874	969,903
Mississippi	62,518	59,902	477,818
Louisiana	52,713	26,577	469,070
Tennessee	47,327	25,372	444,664
Florida	36,701	46,570	307,272
Pennsylvania	23,899	33,416	242,935
All other states	59,978	209,863	601,042
Other fertilizers.			
Total	1,059,495	536,797	15,438,167
Georgia	134,123	75,438	1,883,315
Maryland	130,993	81,256	1,469,613
Tennessee	118,021	13,937	1,092,603
Virginia	90,304	64,945	1,278,431
Pennsylvania	80,728	39,523	1,235,063
South Carolina	60,270	55,044	1,163,903
New York	54,022	25,028	691,478
Alabama	53,414	27,852	923,529
Kentucky	52,453	(2)	642,580
Ohio	50,825	35,638	846,851
New Jersey	39,837	17,064	615,962
Louisiana	36,434	4,813	668,372
Illinois	32,961	5,609	402,360
North Carolina	29,241	55,763	417,643
Missouri	11,077	(2)	242,735
Indiana	10,094	(2)	186,036
California	9,749	(2)	312,584
Connecticut	9,503	(2)	284,888
Florida	9,142	10,960	262,409
All other states	46,304	23,927	817,752

[1] In addition 378,070 tons, not distributable by states, was produced by establishments engaged primarily in other lines of manufacture—comprising 280,919 tons of complete and ammoniated fertilizers, 33,570 tons of superphosphates, and 63,581 tons of other fertilizers.
[2] Included in "all other states."

In Table 42 the states are ranked according to the value of all products, and the rank of some of the leading states differs slightly from that shown in the above table. Alabama and North Carolina rank fourth and fifth, respectively, in Table 56, and ahead of Virginia and New Jersey, which rank fourth and fifth in Table 42.

In value of fertilizers Georgia contributed 19.8 per cent of the total for this industry in the United States in 1914, and 17.2 per cent in 1909. In 1914 the value of fertilizers in Georgia exceeded the combined value reported for the next two ranking states—Maryland and South Carolina.

The production of fertilizers of all kinds in Georgia nearly doubled during the five-year period.

North Carolina ranked first in the production of ammoniated fertilizers, with a product of 277,128 tons, valued at $6,124,806, or more than 18 per cent of the total quantity reported for the United States. The statistics for ammoniated fertilizers have been merged for presentation in the table with those for complete fertilizers (a mixture of superphosphates with both potash and ammoniates), and Georgia, which held first rank, reported more than one-fifth the total production of these two classes in the United States.

Maryland held second rank except in the production of superphosphates, in which it was third, Alabama occupying second place.

DETAIL STATE TABLES.

Table 57 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the industry. Table 58 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 57.—FERTILIZERS—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	784	22,815	114,281	$10,532	$107,955	$153,196
	1909	550	18,310	64,711	7,477	69,522	103,960
	1904	399	14,184	47,989	5,127	39,288	56,541
Alabama	1914	80	1,416	7,112	546	8,077	10,870
	1909	42	1,233	4,484	392	4,264	6,423
	1904	19	551	1,485	153	1,606	2,341
California	1914	16	196	1,586	158	1,860	2,331
	1909	15	226	1,579	155	1,796	2,313
	1904	14	123	852	69	519	894
Connecticut	1914	10	329	1,689	185	1,477	1,972
	1909	12	295	1,273	137	1,091	1,573
	1904	10	310	607	124	525	943
Delaware	1914	9	64	295	28	382	510
	1909	10	134	805	52	452	860
	1904	7	149	665	33	287	371
Florida	1914	22	781	3,070	367	4,656	6,995
	1909	12	589	1,710	218	2,875	3,878
	1904	8	242	555	70	1,325	1,590
Georgia	1914	230	3,833	19,097	1,406	21,220	29,046
	1909	110	2,770	10,488	921	10,944	16,800
	1904	57	2,192	6,531	581	6,527	9,461
Illinois	1914	12	696	3,739	398	2,350	3,775
	1909	11	444	2,145	225	1,425	2,386
	1904	4	48	445	24	91	131
Indiana	1914	14	193	1,293	95	747	1,136
	1909	15	123	1,012	62	254	456
	1904	14	97	652	46	156	299
Louisiana	1914	6	408	1,948	171	1,932	2,818
	1909	6	295	1,178	127	1,324	1,757
	1904	4	344	910	123	1,014	1,556
Maine	1914	8	155	973	68	1,195	1,583
	1909	5	95	323	36	431	597
	1904	3	26	228	12	39	66
Maryland	1914	48	1.991	7,242	1,052	9,968	13,987
	1909	41	1,439	5,324	617	6,963	9,673
	1904	39	1,256	3,984	524	4,992	6,632
Mississippi	1914	11	379	2,809	$155	$1,605	$2,060
	1909	10	449	1,823	141	1,385	2,125
	1904	5	348	645	79	857	1,082
Missouri	1914	5	60	865	37	197	345
	1909	5	98	700	47	183	302
New Jersey	1914	23	1,530	5,829	814	7,587	11,198
	1909	22	1,208	2,459	541	5,685	7,672
	1904	25	1,139	3,555	637	3,928	5,632
New York	1914	9	466	2,055	252	1,669	2,477
	1909	15	908	2,799	542	2,655	4,231
	1904	13	596	1,537	254	1,334	2,0[illegible]2
North Carolina	1914	41	1,690	8,155	734	7,704	10,308
	1909	34	933	3,132	393	4,183	6,316
	1904	27	908	2,653	282	2,218	3,099
Ohio	1914	24	1,005	4,739	590	4,627	7,246
	1909	27	841	3,059	368	2,535	4,435
	1904	17	490	2,630	235	1,386	2,2[illegible]9
Pennsylvania	1914	47	1,110	4,647	608	4,170	6,178
	1909	48	1,224	5,174	575	4,613	6,5[illegible]3
	1904	43	958	4,551	447	2,891	4,095
South Carolina	1914	55	2,050	7,576	803	10,316	13,825
	1909	26	1,851	4,766	671	5,629	9,025
	1904	20	1,071	4,286	304	2,692	3,638
Tennessee	1914	15	706	3,752	329	2,592	4,372
	1909	12	559	2,152	204	2,122	3,249
	1904	10	781	1,970	210	1,712	2,701
Texas	1914	8	101	522	63	366	638
	1909	3	9	53	3	49	57
Virginia	1914	57	2,470	19,577	1,051	7,996	11,350
	1909	45	1,956	5,560	760	5,389	8,035
	1904	37	1,801	5,643	571	3,241	4,659
All other states	1914	34	1,186	5,711	622	5,262	8,176
	1909	24	631	2,713	290	3,275	5,234
	1904	23	754	3,605	349	1,948	2,960

TABLE 58.—FERTILIZERS—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male	Under 16. Female	Capital.	EXPENSES. Salaries and wages. Officials.	EXPENSES. Salaries and wages. Clerks, etc.
United States	784	28,301	373	1,557	3,090	466	22,815	Mh 38,332	De 16,854	25,219	25,078	108	33	.....	$217,064,890	$3,192,611	$4,049,831
Alabama	80	1,816	25	160	195	20	1,416	Mh 3,219	Au 710	1,778	1,776	.....	2	.....	15,260,264	253,711	238,668
California	16	269	3	23	40	7	196	Mh 259	My 161	178	178	.....	.....	.....	2,834,047	56,901	58,108
Connecticut	10	415	6	26	43	11	329	Ap 416	No 256	319	296	20	3	.....	1,804,167	53,106	60,291
Delaware	9	91	8	10	7	2	64	Ap 102	De 36	82	82	.....	.....	.....	381,765	14,970	5,728
Florida	22	966	4	52	106	23	781	Fe 1,219	Au 553	915	910	5	.....	.....	7,612,929	138,236	154,028
Georgia	230	5,005	136	412	571	53	3,833	Mh 9,997	Jy 1,920	4,885	4,859	2	24	.....	46,507,610	651,493	672,126
Illinois	12	873	5	45	111	16	696	Se 837	Oc 550	588	588	.....	.....	.....	2,759,270	133,456	156,324
Indiana	14	263	12	19	29	10	193	Se 332	Ja 133	223	221	2	.....	.....	1,105,114	40,853	49,164
Kentucky	6	186	2	7	36	9	132	Ap 200	De 82	93	93	.....	.....	.....	865,205	20,652	61,673
Louisiana	6	479	.....	15	53	3	408	Mh 917	Au 152	502	501	.....	1	.....	3,285,310	40,037	60,872
Maine	8	250	2	12	63	18	155	Mh 249	Se 96	133	133	.....	.....	.....	3,385,625	40,423	83,274
Maryland	48	2,505	42	112	312	48	1,991	Se 2,648	De 1,504	2,011	2,001	10	.....	.....	16,324,989	286,237	338,028
Mississippi	11	444	2	26	34	3	379	Mh 646	Au 192	445	445	.....	.....	.....	2,922,592	41,781	61,919
Missouri	5	79	2	6	9	2	60	Fe 84	De 29	47	47	.....	.....	.....	348,820	8,934	7,145
New Jersey	23	1,833	16	58	203	26	1,530	Mh 1,997	Au 1,271	1,626	1,619	7	.....	.....	13,505,686	188,983	282,259
New York	9	593	2	17	88	20	466	Se 568	De 348	502	499	3	.....	.....	4,803,011	68,101	165,125
North Carolina	41	1,931	13	75	130	23	1,690	Ap 3,081	Jy 1,030	1,702	1,700	1	1	.....	16,702,881	163,224	221,739
Ohio	24	1,296	5	68	184	34	1,005	Se 1,647	Oc 771	1,009	1,003	6	.....	.....	8,531,660	71,857	287,974
Pennsylvania	47	1,384	51	73	120	30	1,110	Mh 1,391	No 902	997	997	.....	.....	.....	6,658,303	183,252	164,221
South Carolina	55	2,451	5	139	226	31	2,050	Mh 4,859	Au 982	1,942	1,941	1	.....	.....	23,888,514	311,363	287,901
Tennessee	15	839	5	28	91	9	706	Ap 1,291	Je 446	717	717	.....	.....	.....	6,460,457	70,235	125,772
Texas	8	116	3	7	5	.....	101	My 156	De 37	178	178	.....	.....	.....	412,355	12,150	3,906
Virginia	57	2,846	7	126	209	34	2,470	Ap 3,246	De 1,227	3,217	3,215	.....	2	.....	20,559,658	234,617	272,047
All other states [1]	28	1,371	17	41	225	34	1,054	.....	.....	1,130	1,079	51	.....	.....	10,144,658	108,039	231,539

STATE.	EXPENSES—continued. Salaries and wages—Con. Wage earners.	For contract work.	Rent and taxes. Rent of factory.	Rent and taxes. Taxes, including internal revenue and corporation income.	For materials. Principal materials.	For materials. Fuel and rent of power.	Value of products.	Value added by manufacture.	POWER. Primary horsepower. Total.	Steam engines.[2]	Internal-combustion engines.[3]	Water wheels and motors.[2]	Electric (rented).	Electric horsepower generated in establishments reporting.
United States	$10,532,005	$192,859	$292,401	$979,016	$106,072,835	$1,881,809	$153,196,152	$45,241,508	114,281	60,353	6,141	337	47,450	17,816
Alabama	546,343	6,889	6,707	96,639	7,980,996	95,585	10,869,679	2,793,098	7,112	3,763	831	.....	2,518	947
California	158,440	14,167	21,008	15,285	1,837,504	22,056	2,330,761	471,201	1,586	205	95	.....	1,286	.....
Connecticut	184,789	50	.....	7,916	1,451,377	25,835	1,971,991	494,779	1,689	1,240	125	75	249	.....
Delaware	27,955	.....	1,030	859	377,068	4,669	510,036	128,299	295	240	40	.....	15	5
Florida	367,263	5,683	5,718	41,067	4,608,080	47,961	6,995,051	2,339,010	3,070	1,595	519	32	924	789
Georgia	1,405,619	57,467	61,835	193,940	20,997,048	222,872	29,045,903	7,825,983	19,097	4,996	1,818	.....	12,283	757
Illinois	397,653	3,102	51,503	16,203	2,233,930	115,797	3,775,287	1,425,560	3,739	1,196	.....	.....	2,543	343
Indiana	94,766	5,552	736	4,422	729,962	17,536	1,135,794	388,296	1,293	516	32	.....	745	.....
Kentucky	49,880	914	1,728	4,536	494,337	4,740	793,032	293,955	298	165	15	.....	118	.....
Louisiana	171,329	1,197	1,434	19,258	1,912,100	19,410	2,818,455	886,945	1,948	335	.....	.....	1,613	64
Maine	68,110	627	650	6,840	1,188,959	8,528	1,583,481	387,994	973	718	55	20	180	.....
Maryland	1,051,920	29,053	32,643	73,721	9,855,633	111,969	13,986,704	4,019,102	7,242	4,081	68	15	3,078	2,192
Mississippi	155,409	2,247	1,750	27,418	1,572,527	32,458	2,059,786	454,801	2,809	1,402	50	.....	1,357	.....
Missouri	37,216	500	4,178	1,210	179,532	17,557	345,427	148,338	865	375	.....	.....	490	.....
New Jersey	813,819	11,789	3,311	57,424	7,451,553	135,531	11,197,690	3,610,606	5,829	4,215	159	.....	1,455	3,566
New York	252,446	2,188	1,100	13,387	1,618,368	50,670	2,476,881	807,843	2,055	905	64	.....	1,086	101
North Carolina	733,918	13,866	13,536	96,197	7,582,875	121,342	10,307,856	2,603,639	8,155	4,740	892	25	2,498	1,577
Ohio	590,307	8,477	76	39,544	4,534,802	91,892	7,245,998	2,619,304	4,739	3,365	265	.....	1,109	2,397
Pennsylvania	608,406	5,494	22,853	21,277	4,036,995	133,184	6,177,610	2,007,431	4,647	3,779	40	138	690	1,148
South Carolina	803,092	609	13,600	102,405	10,199,529	116,210	13,824,659	3,508,920	7,576	4,060	311	.....	3,205	1,921
Tennessee	329,174	9,376	3,416	21,535	2,537,847	53,892	4,372,427	1,780,688	3,752	1,952	25	.....	1,775	208
Texas	63,169	.....	9,949	984	337,178	29,271	638,277	271,828	522	140	92	.....	290	.....
Virginia	1,050,645	13,432	2,982	82,711	7,770,639	225,282	11,350,120	3,354,199	19,577	13,809	206	32	5,530	752
All other states [1]	570,337	180	30,658	34,238	4,585,996	177,562	7,383,247	2,619,689	5,413	2,561	439	.....	2,413	1,049

[1] All other states embrace: Arkansas, 2 establishments; Colorado, 1; Iowa, 2; Kansas, 4; Massachusetts, 4; Michigan, 3; Minnesota, 1; Nebraska, 1; Oregon, 2; Rhode Island, 2; Utah, 2; Washington, 1; West Virginia, 1; Wisconsin, 1; Wyoming, 1.

[2] Owned power only.

[3] Includes rented power, other than electric.

PAINT AND VARNISH.

GENERAL STATISTICS.

Scope of the industry.—The statistics presented in this report relate to two classes of establishments—(1) those engaged primarily in the manufacture of pigments and paints, and (2) those engaged primarily in the manufacture of varnishes, japans, and lacquers. The principal products of establishments of the second class are mainly solutions of gums, resins, asphaltum, or other ingredients in such solvents or vehicles as turpentine, linseed oil, alcohol, naphtha, benzine, etc. The statistics for each branch of the paint and varnish industry have been tabulated separately, each establishment being classified according to the product of chief value. A number of the tables following show figures for the combined industry, since many establishments manufacture both classes of products. In addition to the paints and varnishes manufactured by establishments in the classified industries, considerable quantities were manufactured by establishments engaged primarily in other lines of manufacture, and these subsidiary products are included in the detail statistics for products.

Table 59 gives for 1914 and 1909 statistics for the combined paint and varnish industry and for each branch of the industry with the per cent distribution for the two components.

Table 59	Total.		Establishments engaged primarily in the manufacture of—				Per cent distribution.			
			Paint.		Varnish.		Paint.		Varnish.	
	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909
Number of establishments	800	791	585	588	215	203	73.1	74.3	26.9	25.7
Persons engaged	25,682	21,896	20,072	17,168	5,610	4,728	78.2	78.4	21.8	21.6
Proprietors and firm members	391	456	304	355	87	101	77.7	77.9	22.3	22.1
Salaried employees	9,208	7,200	6,419	4,949	2,789	2,251	69.7	68.7	30.3	31.3
Wage earners (average number)	16,083	14,240	13,349	11,864	2,734	2,376	83.0	83.3	17.0	16.7
Primary horsepower	70,611	56,162	62,955	50,566	7,656	5,596	89.2	90.0	10.8	10.0
Capital	$129,533,935	$103,994,908	$99,673,137	$77,886,395	$29,860,798	$26,108,513	76.9	74.9	23.1	25.1
Salaries and wages	24,369,021	18,649,074	17,921,684	13,326,786	6,447,337	5,322,288	73.5	71.5	26.5	28.5
Salaries	14,188,733	10,378,361	9,606,461	6,589,988	4,582,272	3,788,373	67.7	63.5	32.3	36.5
Wages	10,180,288	8,270,713	8,315,223	6,736,798	1,865,065	1,533,915	81.7	81.5	18.3	18.5
Paid for contract work	91,602	91,549	73,637	90,229	17,965	1,320	80.4	98.6	19.6	1.4
Rent and taxes (including internal revenue)	1,647,370	977,751	1,313,289	772,403	334,081	205,348	79.7	79.0	20.3	21.0
Cost of materials	88,465,757	79,015,555	71,588,364	62,458,250	16,877,393	16,557,305	80.9	79.0	19.1	21.0
Value of products	145,623,691	124,889,422	112,408,742	94,572,005	33,214,949	30,317,417	77.2	75.7	22.8	24.3
Value added by manufacture (value of products less cost of materials)	57,157,934	45,873,867	40,820,378	32,113,755	16,337,556	13,760,112	71.4	70.0	28.6	30.0

The manufacture of paint represents approximately three-fourths and of varnish one-fourth of the combined industry for both years, with slight increases in the proportion of the former with respect to most of the items.

Comparison with earlier censuses.—Table 60 summarizes the statistics of establishments engaged in the manufacture of paint and varnish for each census year from 1869 to 1914, and gives percentages of increase.

Table 60	Paint and varnish.							Per cent of increase.[1]					
	1914	1909	1904	1899	1889	1879	1869	1909–1914	1904–1909	1899–1904	1989–1899	1879–1889	1869–1879
Number of establishments	800	791	639	600	522	325	202	1.1	23.8	6.5	14.9	60.6	60.9
Persons engaged	25,682	21,896	16,480	13,819	(2)	(2)	(2)	17.3	32.9	19.3	.....	.....	.....
Proprietors and firm members	391	456	439	412	(2)	(2)	(2)	−14.3	3.9	6.6	.....	.....	.....
Salaried employees	9,208	7,200	4,408	3,710	(2)	(2)	(2)	27.9	63.3	18.8	.....	.....	.....
Wage earners (average number)	16,083	14,240	11,633	9,697	8,189	5,056	3,355	12.9	22.4	20.0	(3)	(3)	(3)
Primary horsepower	70,611	56,162	41,288	30,443	24,640	(2)	7,487	25.7	36.0	35.6	23.6	.....	.....
Capital	$129,533,935	$103,994,908	$75,486,214	$60,052,674	$45,318,146	$17,333,392	$13,325,140	24.6	37.8	25.7	32.5	161.4	30.1
Salaries and wages	24,369,021	18,649,074	11,941,059	9,942,241	7,354,687	2,498,971	1,819,096	30.7	56.2	20.1	35.2	194.3	37.4
Salaries	14,188,733	10,378,361	5,677,451	5,016,651	(2)	(2)	(2)	36.7	82.8	13.2	.....	.....	.....
Wages	10,180,288	8,270,713	6,263,608	4,925,590	(2)	(2)	(2)	23.1	32.0	27.2	.....	.....	.....
Paid for contract work	91,602	91,549	146,734	197,055	(2)	(2)	(2)	0.1	−37.6	−25.5	.....	.....	.....
Rent and taxes (including internal revenue)	1,647,370	977,751	[4] 665,568	[4] 621,975	(2)	(2)	(2)	68.5	.....	.....	.....	.....	.....
Cost of materials	88,465,757	79,015,555	59,826,674	44,738,517	32,736,195	20,762,236	14,779,825	12.0	32.1	33.7	36.7	57.7	40.5
Value of products	145,623,691	124,889,422	90,839,609	69,562,235	54,233,681	29,111,941	21,923,810	16.6	37.5	30.6	28.3	86.3	32.8
Value added by manufacture (value of products less cost of materials)	57,157,934	45,873,867	31,012,935	24,823,718	21,497,486	8,349,705	7,143,985	24.6	47.9	24.9	15.5	157.5	16.9

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Figures not strictly comparable. [4] Exclusive of internal revenue.

This table shows the growth in the industry since 1869. The value of products shows an increase during the period from 1909 to 1914 of 16.6 per cent, while the number of establishments remains practically the same. Proprietors and firm members show a marked decrease, 14.3 per cent, due to changes in character of ownership. During the period between the censuses the form of ownership of some establishments changed from

"individual" or "firm" to "corporation," and proprietors and firm members reported at one census may be classed as officers of corporations at a later census.

Summary, by states.—Table 61 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states for which data can not be shown separately without disclosing the operations of individual establishments ranked higher than some of those named in the table.

Table 61

STATE.	CENSUS OF 1914.												PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.			Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909-1914	1904-1909	1899-1904	1909-1914	1904-1909	1899-1904	1909-1914	1904-1909	1899-1904
United States	800	16,083	100.0	....	....	$145,623,691	100.0	....	....	$57,157,934	100.0	....	....	12.9	22.4	20.0	16.6	37.5	30.6	24.6	47.9	2.49
New York	150	3,450	21.5	1	1	31,884,421	21.9	1	1	13,292,761	23.3	1	1	13.2	−6.2	19.9	11.6	13.7	33.1	24.6	29.2	25.4
Illinois	72	2,110	13.1	3	3	24,488,449	16.8	2	2	9,011,951	15.8	2	2	17.7	40.4	43.5	19.8	53.4	62.9	19.6	61.3	84.9
Ohio	95	2,107	13.1	4	4	19,326,576	13.3	3	4	7,987,354	14.0	3	3	37.3	38.2	31.9	41.9	59.6	27.2	58.3	88.7	3.3
New Jersey	60	1,737	10.8	5	5	16,086,717	11.0	4	5	6,145,405	10.8	4	5	16.3	55.5	13.3	26.0	83.2	12.1	35.3	53.7	23.7
Pennsylvania	114	2,643	16.4	2	2	16,004,616	11.0	5	3	5,604,723	9.8	5	4	32.7	9.5	0.2	14.2	20.5	3.0	16.3	34.9	−24.1
Michigan [2]	21	695	4.3	6	6	6,110,200	4.2	8	6	2,777,385	4.9	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....
Missouri	34	599	3.7	7	7	5,791,895	4.0	7	7	2,042,162	3.6	8	7	−12.6	13.4	17.3	−15.2	6.7	40.5	−4.1	28.1	39.0
Massachussetts	34	490	3.0	8	8	4,875,740	3.3	8	9	2,254,184	3.9	7	8	14.5	−4.0	14.9	40.6	34.8	2.7	61.7	47.7	4.9
California	38	392	2.4	9	9	4,082,160	2.8	9	8	1,209,252	2.1	9	9	−1.0	35.2	65.5	8.6	58.6	88.2	9.3	59.8	118.3
Minnesota	15	144	0.9	14	13	1,683,962	1.2	15	13	622,613	1.1	10	12	−12.2	.....	.....	13.1	.....	.....	3.8	.....	.....
Wisconsin	9	192	1.2	10	12	1,586,156	1.1	11	12	459,007	0.8	14	13	−1.0	27.6	.....	3.9	45.6	18.8	−5.0	70.1	37.9
Kentucky [3]	16	151	0.9	12	14	1,518,729	1.0	12	10	463,974	0.8	13	10	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indiana	22	178	1.1	11	11	1,481,440	1.0	13	15	559,431	1.0	11	14	−11.0	.....	.....	33.7	48.1	85.6	31.5	36.7	110.1
Maryland	9	145	0.9	13	15	1,027,441	0.7	14	16	357,931	0.6	15	16	14.2	.....	.....	2.6	.....	.....	18.7	.....	.....
Nebraska [4]	6	67	0.4	18	16	957,829	0.7	15	14	334,049	0.6	16	15	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut	13	126	0.8	15	10	951,241	0.7	16	11	537,636	0.9	12	11	−46.6	.....	.....	−38.4	.....	.....	−25.1	.....	.....
Tennessee	9	84	0.5	17	18	620,889	0.4	17	20	231,683	0.4	18	20	.....	.....	.....	56.4	−17.5	218.5	45.9	−17.6	.....
Rhode Island	6	56	0.3	19	22	583,603	0.4	19	18	213,679	0.4	19	17	.....	.....	.....	24.0	.....	.....	16.3	.....	.....
Colorado	7	54	0.3	20	20	452,951	0.3	20	19	135,589	0.2	20	24	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas	8	35	0.2	22	26	284,490	0.2	21	29	125,277	0.2	21	28	.....	.....	.....	149.1	.....	.....	.....	.....	.....
Washington [4]	6	23	0.1	26	19	264,502	0.2	22	23	113,611	0.2	22	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia	6	27	0.2	24	23	225,248	0.2	23	25	63,526	0.1	23	29	.....	.....	.....	1.4	−14.0	41.8	.....	−51.5	.....
Virginia [4]	4	46	0.3	21	21	184,077	0.1	24	21	70,252	0.1	24	21	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon	5	18	0.1	29	24	160,935	0.1	26	22	38,480	0.1	29	18	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa	4	25	0.2	25	27	155,648	0.1	27	27	61,732	0.1	26	25	.....	.....	.....	1.3	.....	74.5	.....	.....	.....
West Virginia	3	19	0.1	28	31	111,440	0.1	29	35	50,919	0.1	28	32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Florida	3	8	(5)	32	30	48,886	(5)	33	34	21,503	(5)	32	30	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	31	462	2.9	....	....	4,673,450	3.2	....	....	2,371,865	4.1	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 76. A minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products, or value added by manufacture, or when comparable figures can not be given.
[2] Excludes statistics for 5 establishments, to avoid disclosure of individual operations.
[3] Excludes statistics for 2 establishments, to avoid disclosure of individual operations.
[4] Excludes statistics for 1 establishment, to avoid disclosure of individual operations.
[5] Less than one-tenth of 1 per cent.

New York is the most important state in the industry, ranking first at the censuses of 1914 and 1909 in number of wage earners, value of products, and value added by manufacture. In average number of wage earners, Pennsylvania held second place at both censuses, but in value of products and value added by manufacture, Illinois was second. In 1914 New York state reported more than one-fifth of the paint and varnish products. Although the industry is distributed throughout the United States, establishments being reported from 38 states, it is largely centralized, the five leading states—New York, Illinois, Ohio, New Jersey, and Pennsylvania—together reporting approximately three-fourths of the total number of wage earners, of the value of products, and of the value added by manufacture.

Persons engaged in the industry.—Table 62 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 62

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	25,682	22,777	2,905	88.7	11.3
	1909	21,896	19,496	2,400	89.0	11.0
Proprietors and officials	1914	2,135	2,091	44	97.9	2.1
	1909	2,016	1,960	56	97.2	2.8
Proprietors and firm members	1914	391	379	12	96.9	3.1
	1909	456	422	34	92.5	7.5
Salaried officers of corporations	1914	852	830	22	97.4	2.6
	1909	793	773	20	97.5	2.5
Superintendents and managers	1914	892	882	10	98.9	1.1
	1909	767	765	2	99.7	0.3
Clerks and other subordinate salaried employees.	1914	7,464	5,849	1,615	78.4	21.6
	1909	5,640	4,436	1,204	78.7	21.3
Wage earners (average number)	1914	16,083	14,837	1,246	92.3	7.7
	1909	14,240	13,100	1,140	92.0	8.0
16 years of age and over	1914	16,036	14,797	1,239	92.3	7.7
	1909	14,159	13,037	1,122	92.1	7.9
Under 16 years of age	1914	47	40	7	85.1	14.9
	1909	81	63	18	77.8	22.2

Table 63 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914, and the per cent distribution at the two censuses.

Table 63

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
				Total.		Male.		Female.	
	Total.	Male.	Female.	1914	1909	1914	1909	1914	1909
All classes	17.3	16.8	21.0	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	5.9	6.7	.....	8.3	9.2	9.2	10.1	1.5	2.3
Proprietors and firm members	−14.3	−10.2	.....	1.5	2.1	1.7	2.2	0.4	1.4
Salaried officers of corporations	7.4	7.4	.....	3.3	3.6	3.6	4.0	0.8	0.8
Superintendents and managers	16.3	15.3	.....	3.5	3.5	3.9	3.9	0.3	0.1
Clerks and other subordinate salaried employees	32.3	31.9	34.1	29.1	25.8	25.7	22.8	55.6	50.2
Wage earners (average number)	12.9	13.3	9.3	62.6	65.0	65.1	67.2	42.9	47.5
16 years of age and over	13.3	13.5	10.4	62.4	64.7	65.0	66.9	42.7	46.7
Under 16 years of age	.....	.....	.....	0.2	0.4	0.2	0.3	0.2	0.8

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

The number of persons engaged in the paint and varnish industry, in 1914, was 25,682, of whom 62.6 per cent were wage earners; 8.3 per cent proprietors and officials; and 29.1 per cent were clerks and other subordinate salaried employees. Of the total number engaged in the industry, 88.7 per cent were males and 11.3 per cent were females. The number of wage earners under 16 years of age represented only two-tenths of 1 per cent of the total number.

The average number of wage earners as reported at the censuses of 1914, 1909, and 1904 is given, by states, for the paint and varnish industry combined, in Table 76. The distribution of the average number by sex and age is not shown for the individual states, but Table 77 gives such a distribution of the number employed on December 15, or the nearest representative day for each of the industries.

There has been very little change in the per cent distribution of the persons engaged in the industry during the five-year period 1909–1914. The proportion which clerks and other subordinate salaried employees formed of the total increased slightly, from 25.8 per cent in 1909 to 29.1 per cent in 1914. On the other hand, there was a slight decrease in the proportion of proprietors and officials, and in wage earners, the former decreasing from 9.2 per cent in 1909 to 8.3 per cent in 1914 and the latter from 65 per cent to 62.6 per cent. The proportion which male wage earners 16 years of age and over formed of the total number of wage earners increased from 91.6 per cent to 92 per cent, and the proportion represented by female wage earners 16 years of age and over decreased from 7.9 per cent to 7.7 per cent.

The rate of increase in salaried employees has been materially higher than that for wage earners.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909 and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 64

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	15,723	13,223	11,062	93.0	90.0	89.9
February	16,277	13,835	11,572	96.3	94.2	94.0
March	16,593	14,360	11,989	98.2	97.7	97.4
April	16,852	14,635	12,307	99.7	99.6	100.0
May	16,905	14,692	12,022	100.0	100.0	97.7
June	16,870	14,582	11,984	99.8	99.3	97.4
July	16,030	14,202	11,401	94.8	96.7	92.6
August	15,821	14,141	11,357	93.6	96.2	92.3
September	15,872	14,236	11,553	93.9	96.9	93.9
October	15,564	14,444	11,664	92.1	98.3	94.8
November	15,288	14,296	11,515	90.4	97.3	93.6
December	15,201	14,231	11,170	89.9	96.9	90.8

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

This industry shows comparatively little fluctuation in the number of wage earners employed during any one year. In 1914 the minimum number, 15,201, reported for December, formed 89.9 per cent of the maximum, 16,905, reported for May.

Table 65 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more in 1914.

Although the states show quite a variation in the per cent ratio that the minimum number employed is of the maximum, the states showing the greatest variation—Michigan 17.3 per cent and Missouri 17.7 per cent—are not the leading states.

Table 65

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	16,083	15,723	16,277	16,593	16,852	**16,905**	16,870	16,030	15,821	15,872	15,564	15,288	*15,201*	89.9
Illinois	2,110	2,167	2,250	2,298	**2,328**	2,319	2,205	2,011	1,940	1,996	1,971	*1,903*	1,932	81.7
Michigan	878	871	930	980	992	948	932	911	887	836	792	736	*721*	72.7
Missouri	599	*599*	664	649	652	650	**704**	584	609	586	552	513	516	72.3
New Jersey	1,737	1,741	1,706	1,730	**1,789**	1,776	1,777	1,735	1,763	1,719	*1,671*	1,731	1,766	93.4
New York	3,450	3,344	3,429	3,510	3,594	**3,598**	3,574	3,496	3,410	3,381	3,414	3,361	*3,289*	91.4
Ohio	2,107	2,056	2,168	2,247	2,267	2,269	2,227	2,075	2,059	2,005	1,972	1,969	*1,950*	85.9
Pennsylvania	2,643	2,589	2,606	2,648	2,626	2,656	**2,765**	2,588	2,652	2,745	2,654	2,611	*2,576*	93.2

Prevailing hours of labor.—In Table 66 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

Table 66

STATE.	Census year.	AVERAGE NUMBER OF WAGE EARNERS.								
		Total.	In establishments where the prevailing hours of labor per week were—							
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
United States	1914	16,083	887	2,763	4,000	5,409	1,943	862	9	150
	1909	14,240	656	2,332	2,601	4,681	3,440	67	297	166
Illinois	1914	2,110	49	433	358	1,053	182	35	....	.....
	1909	1,792	152	217	148	982	281	12	....	.....
Michigan	1914	878	1	16	455	379	27	.....	....	.....
	1909	1,024	.....	25	634	69	296	.....	....	.....
Missouri	1914	599	52	50	138	146	167	.....	....	46
	1909	685	16	28	130	15	432	.....	....	64
New Jersey	1914	1,737	44	535	365	506	198	.....	....	89
	1909	1,493	93	480	28	282	364	17	229	.....
New York	1914	3,450	234	1,046	728	984	423	35	....	.....
	1909	3,047	121	951	512	844	619	.....	....	.....
Ohio	1914	2,107	82	319	235	925	546	.....	....	.....
	1909	1,535	53	267	198	520	497	.....	....	.....
Pennsylvania	1914	2,643	180	70	853	617	143	780	....	.....
	1909	1,992	49	90	326	1,127	345	38	17	.....

The preceding table emphasizes the tendency toward a shortening of the working day.

Of the wage earners employed, 18.4 per cent in 1914 and 27.9 per cent in 1909 were in establishments where the prevailing number of hours per week were 60 and over; 33.6 per cent in 1914, and 32.9 per cent in 1909, were in establishments where the prevailing hours per week were between 54 and 60; and 47.9 per cent in 1914, and 39.2 per cent in 1909, were in establishments where the prevailing hours per week were 54 and less. The wage earners in the long-hour groups were chiefly in establishments engaged in the manufacture of pigments which involves the continuous operation of furnaces or roasters.

In Illinois, in 1914, about one-half of the total number of wage earners was employed between 54 and 60 hours per week. In New York the most common working time was between 48 and 54, while a number almost equally as large was employed between 54 and 60 hours. In Pennsylvania the largest number was employed 54 hours, and in Ohio between 54 and 60 hours.

The average number of hours of labor per wage earner per week was 55.7 in 1914 and 56.3 in 1909, indicating an average decrease of six-tenths of an hour per week for the five-year period. In making this computation, the lowest group, "48 and under," has been figured at 48; the "between 48 and 54" group at 51; the "between 54 and 60" group at 57; the "between "60 and 72" group at 66; and the "over 72" group at 72.

Character of ownership.—Table 67 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry for 1914 and 1909, and for 1914 only for such states as reported an average of 500 wage earners or more.

Table 67

STATE.	Census year.	NUMBER OF ESTABLISHMENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.							VALUE OF PRODUCTS.					
					Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.	
		Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.
United States	1914	152	558	90	16,083	827	14,489	767	5.1	90.1	4.8	$145,623,691	$5,791,435	$133,240,662	$6,591,594	4.0	91.5	4.5
	1909	160	526	105	14,240	910	12,087	1,243	6.4	84.9	8.7	124,889,422	7,536,788	106,349,811	11,002,823	6.0	85.2	8.8
Illinois	1914	10	59	3	2,110	144	1,959	7	6.8	92.8	0.3	24,488,449	922,581	23,503,708	62,160	3.8	96.0	0.3
Michigan	1914	2	22	2	878	.....	874	[1] 4	.....	99.5	0.5	8,306,609	.....	8,282,642	[1] 23,967	.....	99.7	0.3
Missouri	1914	2	31	1	599	[2] 7	592	.....	1.2	98.8	.....	5,791,895	[2] 99,024	5,692,871	.....	1.7	98.3	.....
New Jersey	1914	12	43	5	1,737	41	1,618	78	2.4	93.1	4.5	16,086,717	387,707	15,002,843	696,167	2.4	93.3	4.3
New York	1914	39	91	20	3,450	300	2,836	314	8.7	82.2	9.1	31,884,421	2,334,956	26,554,871	2,994,594	7.3	83.3	9.4
Ohio	1914	17	72	6	2,107	30	2,039	38	1.4	96.8	1.8	19,326,576	227,772	18,719,880	378,924	1.2	96.9	2.0
Pennsylvania	1914	32	62	20	2,643	196	2,355	92	7.4	89.1	3.5	16,004,616	998,521	14,176,902	829,193	6.2	88.6	5.2

[1] Includes the group "individuals."

[2] Includes the group "all others."

The most important distinction shown is that between corporate and the other forms of ownership. Of the total number of establishments reported in 1914, 69.8 per cent were under corporate ownership, and in 1909, 66.5 per cent were so reported. In 1914 the average number of wage earners in these establishments represented 90.1 per cent of the total number of wage earners, and the value of products represented 91.5 per cent of the total value. The group designated "all others" consists chiefly of partnerships or firms. In New York, the leading state, corporations controlled 60.7 per cent of the total number of establishments, employed 82.2 per cent of the wage earners, and contributed 83.3 per cent of the total value of products.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 68.

In 1914, 4.1 per cent of the establishments reported products to the value of $1,000,000 and over, as compared with 3.3 per cent in 1909, and 2.5 per cent in 1904. While such establishments represented a comparatively small proportion of the total number, they reported 40.4 per cent of the total value of products in 1914, 35.3 per cent in 1909, and 32.9 per cent in 1904.

The average value of products per establishments increased from $142,159 in 1904 to $157,888 in 1909 and to $182,030 in 1914, and the value added by manufacture from $48,533 in 1904 to $57,995 in 1909 and to $71,447 in 1914.

Table 69 shows the size of establishments in 1914 and 1909 as measured by the number of wage earners employed, for the industry as a whole, and the 7 leading states.

Table 68

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	800	16,083	$145,623,691	$57,157,934
	1909	791	14,240	124,889,422	45,873,867
Less than $5,000	1914	85	54	209,101	105,631
	1909	104	82	244,517	121,015
$5,000 to $20,000	1914	189	418	2,125,922	993,197
	1909	175	386	2,034,695	961,382
$20,000 to $100,000	1914	261	1,538	12,700,449	4,860,301
	1909	273	1,734	13,241,833	5,516,438
$100,000 to $1,000,000	1914	232	7,835	71,738,753	28,454,103
	1909	213	7,133	65,259,238	23,689,490
$1,000,000 and over	1914	33	6,238	58,759,466	22,738,702
	1909	26	4,905	44,109,139	15,585,542
Per cent distribution:					
Less than $5,000	1914	10.6	0.3	0.1	0.2
	1909	13.1	0.6	0.2	0.3
$5,000 to $20,000	1914	23.6	2.6	1.5	1.7
	1909	22.1	2.7	1.6	2.1
$20,000 to $100,000	1914	32.6	9.6	8.8	8.5
	1909	34.5	12.2	10.6	12.0
$100,000 to $1,000,000	1914	29.0	48.7	49.3	49.8
	1909	26.9	50.1	52.3	51.6
$1,000,000 and over	1914	4.1	38.8	40.4	39.8
	1909	3.3	34.4	35.3	34.0

Of the 800 establishments reported in 1914, 5 per cent employed no wage earners, 75.2 per cent employed from 1 to 20, 14.9 per cent employed from 21 to 100, and 4.9 per cent employed more than 100. There were only 8 establishments that employed more than 250 wage earners, and of these only 1 employed over 500. The average number of wage earners per establishment was 18 in 1904 and in 1909, and 20 in 1914. In the case of the establishments with no wage earners the work was done by the proprietors or firm members or a few wage earners were employed for short periods, but the number was so small and the time of employment so short that in computing the average number of wage earners none could be shown for the establishments.

Table 69

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING— No wage earners	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		Over 500 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	800	16,083	40	385	935	217	2,354	81	2,664	38	2,761	31	4,532	7	2,281	1	556
	1909	791	14,240	38	411	1,017	191	2,056	79	2,551	38	2,588	31	4,682	2	715	1	631
Illinois	1914	72	2,110	4	30	80	17	179	8	312	6	462	6	743	1	334	.....	.....
	1909	74	1,792	2	38	109	11	164	13	480	5	395	5	644	.....	.....	.....	.....
Michigan	1914	26	878	2	11	19	6	57	3	95	2	123	1	165	1	419	.....	.....
	1909	20	1,024	1	7	17	8	79	1	39	.....	.....	2	258	.....	.....	1	631
Missouri	1914	34	599	3	13	32	10	119	6	203	1	83	1	162	.....	.....	.....	.....
	1909	32	685	1	13	25	13	147	2	64	1	64	1	127	1	258	.....	.....
New Jersey	1914	60	1,737	4	23	58	15	148	6	162	5	335	7	1,034	.....	.....	.....	.....
	1909	63	1,493	3	20	64	14	140	9	327	4	258	4	695	.....	.....	.....	.....
New York	1914	150	3,450	5	71	160	30	423	16	554	8	550	10	1,500	1	254	.....	.....
	1909	147	3,047	2	78	105	31	319	19	625	9	649	8	1,259	.....	.....	.....	.....
Ohio	1914	95	2,107	4	44	103	26	282	13	423	3	244	3	489	2	566	.....	.....
	1909	87	1,535	3	49	120	22	217	7	227	.....	.....	6	962	.....	.....	.....	.....
Pennsylvania	1914	114	2,043	7	59	157	26	322	12	377	7	523	.....	.....	2	708	1	556
	1909	114	1,902	8	54	133	31	335	9	207	9	544	2	316	1	457	.....	.....

Of the total number of wage earners reported, 20.5 per cent in 1914 and 21.6 per cent in 1909 were reported by establishments employing from 1 to 20; 33.7 per cent in 1914, and 36.1 per cent in 1909, by establishments employing from 21 to 100; and 45.8 per cent in 1914, and 42.3 per cent in 1909, by establishments employing more than 100.

Expenses.—The census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of depreciation or a large amount of miscellaneous expense, hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expense which were reported. Table 59 shows the total reported expenses in 1914 to have been $114,573,750, of which materials constituted 77.2 per cent; salaries, 12.4 per cent; wages, 8.9 per cent; and rent, taxes, and contract work, 1.5 per cent. In 1909 the corresponding percentages were materials, 80 per cent; salaries, 10.5 per cent; wages, 8.4 per cent; and rent, taxes, and contract work, 1.1 per cent.

Engines and power.—Table 70 shows for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 70

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	2,159	1,378	781	70,611	56,162	41,288	100.0	100.0	100.0
Owned	578	651	572	48,533	47,487	37,622	68.7	84.6	91.1
Steam engines and turbines [1]	439	510	456	43,881	42,191	34,952	62.1	75.1	84.7
Internal-combustion engines	107	110	87	3,226	3,290	1,673	4.6	5.9	4.1
Water wheels, turbines, and motors	32	31	29	1,426	2,006	997	2.0	3.6	2.4
Rented	1,581	727	209	22,078	8,675	3,666	31.3	15.4	8.9
Electric	1,581	627	209	19,035	7,814	2,650	27.0	13.9	6.4
Other	.....	.....	.....	3,043	861	1,016	4.3	1.5	2.5
Electric	2,804	1,353	515	34,917	17,037	7,540	100.0	100.0	100.0
Rented	1,581	727	209	19,035	7,814	2,650	54.5	45.9	35.1
Generated by establishments reporting	1,223	626	306	15,882	9,223	4,890	45.5	54.1	64.9

[1] Figures for horsepower include for 1909 the amounts reported under the head of "other" owned power.

The total primary power used increased 36 per cent from 1904 to 1909 and 25.7 per cent from 1909 to 1914. In 1914, as well as in 1909 and 1904, steam power formed the major part of the primary power, but its relative importance has decreased considerably since 1904. In that year steam power formed 84.7 per cent of the total primary power, in 1909 it formed 75.1 per cent, and in 1914 it formed only 62.1 per cent of the total. Electric power, both rented and generated, shows a large increase, and of the total primary power owned and rented 49.4 per cent was utilized in the form of electric power in 1914, 30.3 per cent in 1909, and 18.3 per cent in 1904.

Fuel.—Table 71 shows, for 1914, the quantity of each kind of fuel used for which data were obtained for the industry as a whole and for 7 separate states.

Bituminous coal was the principal fuel used in most of the states shown. In New York anthracite was the principal fuel used, 48,696 tons, or 59.7 per cent of the total for the industry being reported from that state. Ohio and Pennsylvania reported 90.1 per cent of the total natural gas used by the industry.

Table 71

STATE.	COAL.		Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet)
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).			
United States	81,566	301,554	25,461	23,584	366,695
Illinois	35	72,456	4,212	5,126	2,418
Michigan	21	19,582	2,598	.....	2,131
Missouri	4	20,613	211	1	1,138
New Jersey	20,921	49,062	3,113	60	10,451
New York	48,696	19,199	4,707	375	4,048
Ohio	13	18,026	3,540	9	223,179
Pennsylvania	9,703	65,886	2,040	561	107,042
All other states	2,173	36,730	5,040	17,452	16,288

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

Table 72 shows statistics for the principal materials used and the products manufactured for 1914, 1909, 1904, and 1899. It also shows the number of establishments manufacturing paint as a chief product, the number manufacturing varnish as a chief product, and the number engaged primarily in other lines of manufacture but making paint or varnish as a subsidiary product.

Table 72	1914	1909	1904	1899
Number of establishments	857	863	712	652
Paint industry	585	588	449	419
Varnish industry	215	203	190	181
Manufacturing paint or varnish as subsidiary products	57	72	73	52
MATERIALS.				
Total cost	$88,980,635	$79,136,194	$59,977,348	$44,738,517
Paint industry	71,588,364	62,458,250	46,306,183	33,799,386
Varnish industry	16,877,393	16,557,305	13,520,491	10,939,131
Other industries, producing paint and varnish as subsidiary products	514,878	120,639	150,674	(1)
Certain specified materials.				
Pig lead:				
Tons (2,000 lbs)	150,762	150,163	129,629	99,052
Cost	$11,488,113	$12,380,524	$11,214,961	$8,585,688
Grain alcohol:				
Gallons	1,061,324	356,225	59,064	78,309
Cost	$436,509	$226,724	$138,703	$175,907
Wood alcohol:				
Gallons	987,451	1,325,807	1,357,682	310,059
Cost	$422,122	$693,362	$790,243	$285,510
Linseed oil:				
Gallons	24,481,623	(1)	20,642,781	16,157,117
Cost	$12,049,218	(1)	$7,904,978	$7,495,196
Gums:				
Pounds	48,902,000	(1)	37,712,000	36,534,000
Cost	$4,797,944	(1)	$4,329,031	$3,470,695
Fuel and rent of power	$1,592,230	$1,306,297	$930,021	$667,151
All other materials	$58,194,499	$64,529,287	$34,669,411	$24,058,370
PRODUCTS.				
Total value	$149,173,400	$127,472,819	$92,060,947	$73,498,986
Paint industry	112,408,742	94,572,005	67,277,910	50,874,995
Varnish industry	33,214,949	30,317,417	23,561,699	18,687,240
Paint and varnish, subsidiary products of other industries	3,549,709	2,583,397	1,221,338	3,936,751
Colors (pigments)[2]	$17,450,482	$18,134,869	$13,933,290	$13,683,161
White lead, dry, pounds	279,269,860	247,971,503	240,092,000	254,692,000
For sale—				
Pounds	71,643,812	85,269,414	62,446,000	123,070,000
Value	$3,697,702	$3,924,528	$2,879,609	$4,501,058
Made and consumed, pounds	207,626,048	162,702,089	177,646,000	131,622,000
Lead oxides, pounds	61,335,290	70,293,679	73,326,000	64,466,000
For sale—				
Pounds	58,642,588	65,767,254	63,476,000	62,386,000
Value	$3,281,716	$3,798,551	$3,509,275	$2,862,743
Made and consumed, pounds	2,692,702	4,526,425	9,850,000	2,080,000
Barytes—				
Pounds	46,920,380	56,254,838	(1)	(1)
Value	$325,922	$348,470	(1)	(1)
Iron buff and other earth colors—				
Pounds	92,896,956	213,285,734	48,826,000	34,904,000
Value	$797,819	$1,085,438	$336,616	$367,987
Lithopone[3]—				
Pounds	48,972,062			
Value	$1,857,510			
Chrome yellow—				
Pounds	5,747,317			
Value	$641,534			
Orange or green—				
Pounds	8,024,409			
Value	$677,329	163,713,582	142,848,385	159,488,931
Prussian blue—		$6,523,728	$5,184,806	$4,080,746
Pounds	1,239,382			
Value	$387,077			
Ultramarine—				
Pounds	2,698,639			
Value	$222,769			
Other dry colors (not including fine colors)—[4]				
Pounds	95,616,993			
Value	$3,616,445			
Vermilion (true)—				
Pounds	322,759	259,558		
Value	$200,134	$107,472		
Fine colors not elsewhere specified—			8,030,330	3,898,447
Pounds	4,215,874	8,420,120	$1,091,853	$1,009,096
Value	$690,235	$1,052,443		

	1914	1909	1904	1899
PRODUCTS—continued.				
Colors (pigments)—Continued.				
Pulp colors, sold moist—				
Pounds	22,110,527	28,600,222	25,505,482	20,060,935
Value	$1,054,290	$1,294,239	$931,131	$861,531
Paints, in oil	$70,582,461	$57,380,539	$41,454,124	$33,181,681
In paste form:				
White lead—				
Pounds	281,417,563	246,569,970	229,622,000	119,012,000
Value	$18,141,444	$15,234,539	$11,789,982	$6,127,960
Zinc oxide—				
Pounds	9,551,840			
Value	$730,918	165,038,353	134,042,000	191,420,000
All other—		$11,435,937	$8,892,755	$11,751,240
Pounds	129,042,658			
Value	$10,165,819			
Mixed for use—				
Gallons	40,745,563	34,278,989	22,755,018	17,437,311
Value	$41,544,280	$30,710,063	$20,771,387	$15,302,481
Water paints and kalsomine:				
Dry or in paste—				
Pounds	61,904,258	47,465,715	28,457,447	14,412,653
Value	$2,055,180	$1,917,047	$936,607	$744,024
Mixed for use—				
Gallons	297,173	543,733	(1)	(1)
Value	$147,101	$64,114	(1)	(1)
Varnishes and japans	$36,142,256	$31,758,735	$21,808,409	$18,724,908
Oleoresinous varnishes—				
Gallons	17,801,438	18,692,527	17,323,719	14,804,251
Value	$18,762,399	$17,559,898	$15,704,237	$14,530,159
Spirit varnishes, not turpentine—				
Gallons	2,964,172	1,273,411	1,540,362	553,432
Value	$3,080,425	$1,502,398	$2,199,213	$921,169
Damar and similar turpentine and benzine varnishes—				
Gallons	3,297,371	3,483,994	(1)	(1)
Value	$2,865,256	$2,839,534	(1)	(1)
Pyroxylin varnishes—				
Gallons	852,571	1,886,541	452,561	171,129
Value	$1,308,796	$2,356,692	$555,959	$187,626
Drying japans and dryers—				
Gallons	6,560,406	6,638,706	4,357,505	6,564,370
Value	$3,015,907	$3,165,589	$3,349,000	$3,085,954
Baking japans and lacquers—				
Gallons	4,888,816	2,983,285	(1)	(1)
Value	$2,960,856	$2,079,927	(1)	(1)
All other	$4,148,617	$2,254,697	(1)	(1)
Fillers:				
Liquid—				
Gallons	965,636	1,166,533	1,059,948	123,552
Value	$670,033	$828,393	$786,517	$112,921
Dry or in paste—				
Pounds	49,587,548	65,148,395	(1)	(1)
Value	$1,318,720	$1,199,595	(1)	(1)
Putty:				
Pounds	69,828,017	67,767,348	43,931,556	17,287,323
Value	$1,250,421	$1,169,683	$728,468	$238,427
Linseed oil:				
Raw—				
Gallons	2,230,988	2,098,696	(1)	(1)
Value	$1,201,839	$1,106,181	(1)	(1)
Boiled—				
Gallons	572,561	1,379,025	(1)	(1)
Value	$306,569	$806,846	(1)	(1)
Other oils	$999,392	(1)	(1)	(1)
Bleached shellac:				
Pounds	8,654,514	3,905,593	(1)	(1)
Value	$1,806,802	$772,240	(1)	(1)
Acetate of lead:				
Pounds	2,896,313	(1)	(1)	(1)
Value	$150,587	(1)	(1)	(1)
Dryers:				
Gallons	1,047,140	(1)	(1)	(1)
Value	$257,725	(1)	(1)	(1)
All other products	$14,833,832	$12,334,577	$12,413,532	$6,813,864

[1] Figures not available.
[2] In addition, in 1914, 106,791 tons of pigments, valued at $9,978,710 were made by smelters direct from the ore, and 66,766 tons of natural mineral pigments valued at $473,076 were marketed; and in 1909, 87,525 tons of pigments, valued at $7,963,332 were made by smelters direct from the ore, and 61,137 tons of natural mineral pigments, valued at $613,133 were marketed.
[3] Marketed production of lithopone, as reported by the Geological Survey, short tons, 1914, 32,819; 1909, 14,847.
[4] Includes lampblack and other carbon blacks made by paint and varnish establishments.

Materials.—The more important materials are lead in the form of white lead and lead oxides; zinc white, dry colors, gums, and solvents or vehicles such as linseed oil, turpentine, benzine, and wood and grain alcohol. Pig lead, wood alcohol, grain alcohol, linseed oil, and gums were the only materials concerning which statistics of consumption were secured, and the total quantity and cost of these materials used in the manufacture of paints and varnishes by all establishments, including those engaged primarily in other industries, are given in the preceding table.

Table 73 shows for 1914, for the industry as a whole and for the leading states, the quantity and cost of the specified materials for which data were collected, inclusive of establishments engaged in other industries but which manufacture paint or varnish as a subsidiary product.

Table 73

STATE.	PIG LEAD.		GRAIN ALCOHOL.		WOOD ALCOHOL.		LINSEED OIL.		GUMS.	
	Quantity (tons).	Cost.	Quantity (gallons).	Cost.	Quantity (gallons).	Cost.	Quantity (gallons).	Cost.	Quantity (pounds).	Cost.
United States	150,762	$11,488,113	1,061,324	$436,509	987,451	$422,122	24,481,623	$12,049,218	48,901,876	$4,797,944
California	4,848	365,936	67,034	24,950	3,750	1,418	761,726	443,471	562,253	56,001
Colorado	.....	.....	.....	.....	.....	.....	280,545	139,993	30,000	6,000
Connecticut	.....	.....	171,532	53,791	21,544	12,814	192,676	91,279	572,611	69,074
Illinois	34,687	2,770,330	169,760	54,801	160,481	63,689	4,648,075	2,342,448	4,805,672	526,140
Indiana	.....	.....	27,152	8,955	438	238	221,680	112,619	2,177,243	133,812
Kentucky	.....	.....	7,820	2,735	1,445	529	654,053	274,457	2,109,693	94,287
Maryland	.....	.....	.....	.....	1,697	788	256,775	128,122	57,775	2,576
Massachusetts	1,822	148,341	83,788	28,894	74,820	33,680	356,943	178,860	2,902,541	351,826
Michigan	1,894	150,159	25,107	7,610	445,764	187,542	1,447,565	762,964	2,799,633	387,351
Minnesota	.....	.....	12,966	10,094	3,457	1,555	492,375	246,004	345,760	20,173
Missouri	16,928	1,319,509	11,807	4,687	35,784	13,267	1,329,531	633,272	689,542	74,383
Nebraska	5,053	389,924	.....	.....	10	6	158,687	76,411	3,900	195
New Jersey	11,717	939,849	48,013	21,418	54,034	24,623	2,098,021	1,073,335	5,074,945	695,997
New York	28,112	1,729,072	221,854	142,267	87,116	39,224	3,990,019	1,959,953	13,275,050	1,279,168
Ohio	19,126	1,545,559	56,787	19,801	26,789	11,971	3,862,169	1,736,013	7,642,942	699,932
Pennsylvania	26,557	2,126,828	146,556	47,145	27,939	11,969	2,781,532	1,370,943	5,369,993	337,798
All other states	18	2,606	11,148	9,361	42,383	18,809	949,251	479,074	482,323	63,231

In the consumption of pig lead in the manufacture of pigments Illinois, New York, Pennsylvania, Ohio, Missouri, and New Jersey, in the order named, were the leading states, and reported 91 per cent of the total amount consumed.

Products.—Table 72 shows that of the combined value of products of establishments manufacturing paint and varnish in 1914, 75.4 per cent constituted the value of the products of the classified paint industry. The value of all products in 1914 increased 17 per cent over that of 1909; the value of pigments and paints, for the same period, shows an increase of 16.6 per cent, and that of varnishes and japans 13.8 per cent.

Table 74 gives statistics in regard to products made and used in further processes of manufacture in establishments where produced, for 1914 and 1909.

Table 74

PRODUCT.	PRODUCTS CONSUMED IN THE ESTABLISHMENTS WHERE PRODUCED.	
	1914	1909
White lead, dry ..... pounds	207,626,048	162,702,089
Lead oxides ..... pounds	2,692,702	4,526,425
Lithopone ..... pounds	81,000	.....
Varnishes ..... gallons	4,928,577	4,407,312
Dryers and japans ..... gallons	1,754,693	3,090,756

Table 75 gives for 1914, by states, the statistics of production for the various pigments, classes of paints, varnishes, and japans and lacquers. It shows the quantity and value of the specific products and the number of establishments reporting same.

Table 75

PRODUCT AND STATE.	Number of establishments.	PIGMENTS, PAINTS, VARNISHES, AND JAPANS: 1914.	
		Quantity.	Value.
		Pounds.	
COLORS (PIGMENTS)	.....	.....	$17,450,482
White lead, dry	20	279,269,860	.....
For sale	18	71,643,812	3,697,702
Illinois	3	16,783,007	950,147
New York	3	12,341,619	631,642
Pennsylvania	4	10,295,241	517,772
All other states	8	32,223,945	1,598,141
Made and consumed	20	207,626,048	.....
Lead oxides	24	61,335,290	.....
For sale	22	58,642,588	3,281,716
Pennsylvania	5	18,107,863	930,496
Missouri	3	3,224,070	232,180
All other states	14	37,310,655	2,119,040
Made and consumed	7	2,692,702	.....
Lithopone	7	48,972,062	1,857,510
New Jersey	3	22,710,825	877,184
All other states	4	26,261,237	980,326
Barytes	6	46,920,380	325,922
Iron buff and other earth colors	23	92,896,956	797,819
Pennsylvania	4	28,791,520	199,576
Wisconsin	3	10,640,500	74,146
All other states	16	53,464,936	524,097
Chrome yellow	15	5,747,317	641,534
New Jersey	5	2,391,452	274,877
New York	4	1,922,729	208,150
Illinois	3	1,198,248	132,601
All other states	3	234,888	25,906
Orange or green	14	8,024,409	677,329
New Jersey	4	2,559,612	233,710
New York	3	1,989,878	183,356
Illinois	3	1,990,837	169,687
All other states	4	1,484,082	90,576

PRODUCE AND STATE.	Number of establishments.	PIGMENTS, PAINTS, VARNISHES, AND JAPANS: 1914.	
		Quantity.	Value.
		Pounds.	
COLORS (PIGMENTS)—Continued.			
Prussian blue	15	1,239,382	$387,077
New York	6	916,690	274,932
New Jersey	4	253,602	94,037
Illinois	4	64,090	16,312
All other states	1	5,000	1,796
Ultramarine	3	2,698,639	222,769
Vermilion (true), New York	4	322,759	200,134
Fine colors, not elsewhere specified	15	4,215,874	690,235
New York	6	2,513,300	450,419
Pennsylvania	3	495,583	62,580
All other states	6	1,206,991	177,236
Other dry colors	58	95,616,993	3,616,445
New York	20	14,844,816	1,274,060
Pennsylvania	11	58,130,582	933,862
New Jersey	6	7,023,877	816,963
Illinois	5	2,311,282	297,932
Massachusetts	4	10,448,632	148,609
All other states	12	2,857,804	145,019
Pulp colors, sold moist	29	22,110,527	1,054,290
New York	10	11,336,894	583,417
Pennsylvania	5	4,767,853	180,066
New Jersey	5	4,125,114	157,406
All other states	9	1,880,666	133,401
PAINTS: IN OIL	.....	.....	70,582,461
In paste form, ground in oil	.....	.....	29,038,181
White lead	214	281,417,563	18,141,444
Illinois	23	73,019,593	5,000,591
New York	20	63,805,600	3,795,370
Pennsylvania	38	41,526,000	2,470,052
Missouri	14	34,389,924	2,180,674
Ohio	26	29,011,498	1,910,042

Table 75—Continued.

PRODUCT AND STATE.	Number of establishments.	PIGMENTS, PAINTS, VARNISHES, AND JAPANS: 1914. Quantity.	Value.
PAINTS: IN OIL—Continued.			
In paste form, ground in oil—Continued.			
White lead—Continued.		*Pounds.*	
California	12	11,635,836	$711,044
New Jersey	10	12,210,026	668,300
Massachusetts	8	2,914,735	171,563
Michigan	6	2,317,205	140,463
Maryland	3	1,598,572	133,229
Indiana	8	832,890	53,369
Kentucky	5	309,166	20,135
Texas	5	293,210	19,421
Colorado	3	168,100	11,934
Tennessee	5	102,779	7,855
Delaware	3	54,584	6,349
Minnesota	3	52,262	3,324
All other states	22	7,174,923	836,829
Zinc oxide	158	9,551,840	730,018
New Jersey	7	2,944,815	230,500
Pennsylvania	25	1,746,243	179,632
New York	19	1,239,995	82,350
California	16	1,143,578	74,502
Illinois	17	963,116	53,745
Missouri	8	322,352	25,180
Ohio	17	215,583	22,436
Wisconsin	3	134,000	7,200
Indiana	4	62,050	4,700
Massachusetts	5	54,949	4,378
Washington	3	60,300	3,624
Michigan	5	30,563	3,286
Tennessee	4	29,943	3,044
All other states	25	604,353	36,341
All other	301	129,042,658	10,105,819
New York	38	22,202,006	1,985,570
Pennsylvania	57	28,190,754	1,404,036
Illinois	26	19,308,740	1,365,922
New Jersey	14	9,333,604	1,108,394
Ohio	40	13,024,015	1,064,064
Michigan	9	7,485,471	731,917
California	17	4,107,727	474,396
Missouri	14	3,311,460	403,319
Massachusetts	13	3,459,871	343,960
Wisconsin	6	4,165,767	333,873
Kentucky	8	4,224,946	255,950
Minnesota	5	1,785,554	183,066
Georgia	4	3,602,171	154,199
Indiana	9	1,767,362	138,469
Maryland	3	443,160	35,567
Connecticut	3	289,943	26,464
Washington	3	428,000	21,340
Tennessee	3	201,977	19,341
Nebraska	3	172,098	11,889
Texas	4	80,252	7,701
Oregon	3	108,842	6,115
All other states	19	1,249,038	89,307
		Gallons.	
In oil already mixed for use	448	40,745,563	41,544,280
Ohio	58	8,281,238	8,551,040
Illinois	34	8,467,040	7,818,036
New York	63	5,112,386	5,948,258
Pennsylvania	68	3,099,564	2,862,000
Michigan	17	2,546,901	2,807,270
New Jersey	23	2,967,518	2,803,888
Missouri	20	1,845,557	1,712,959
California	26	1,421,680	1,410,498
Minnesota	9	1,000,859	1,103,033
Kentucky	13	1,018,286	964,102
Massachusetts	15	748,594	907,359
Wisconsin	6	775,426	835,120
Maryland	6	645,097	709,066
Rhode Island	4	438,634	413,246
Indiana	14	372,032	395,234
Tennessee	7	264,976	352,784
Colorado	5	304,827	347,045
Connecticut	6	209,287	271,656
Nebraska	4	192,043	215,959
Texas	6	184,250	202,250
Washington	7	107,468	138,326
Virginia	3	129,010	123,010
Oregon	5	143,988	119,874
Georgia	5	103,250	112,674
Iowa	5	82,634	76,683
All other states	19	283,018	341,926
		Pounds.	
WATER PAINTS AND KALSOMINE			2,202,281
Dry or in paste	59	61,904,258	2,055,180
New York	19	31,191,409	1,051,983
WATER PAINTS AND KALSOMINE—Continued.			
Dry or in paste—Continued.		*Pounds.*	
Illinois	8	11,304,884	$409,069
New Jersey	3	12,818,350	362,259
Ohio	5	1,500,616	45,569
Missouri	4	487,763	44,800
Pennsylvania	7	305,499	14,079
All other states	13	4,295,737	127,430
		Gallons.	
Mixed for use	12	297,173	147,101
VARNISHES AND JAPANS			36,142,256
Oleoresinous varnishes	168	17,801,438	18,762,399
New York	28	4,866,192	5,125,746
New Jersey	22	2,626,073	3,015,083
Ohio	31	3,268,124	2,887,622
Illinois	18	2,762,458	2,775,662
Michigan	6	1,362,907	1,894,621
Massachusetts	6	493,918	435,114
Pennsylvania	21	458,946	394,964
California	9	481,647	364,021
Indiana	3	365,050	298,872
Connecticut	4	63,978	108,023
Texas	3	7,122	6,655
All other states	17	1,044,996	556,016
Spirit varnishes, not turpentine	161	2,964,172	3,080,425
New York	39	809,382	811,944
Massachusetts	8	711,774	705,702
Illinois	11	608,528	638,934
New Jersey	17	128,380	211,306
Pennsylvania	25	196,892	180,969
Connecticut	3	117,426	102,783
California	8	85,003	96,079
Ohio	17	97,209	84,001
Indiana	6	69,366	80,337
Rhode Island	3	26,674	48,831
Michigan	7	44,212	48,401
Missouri	4	18,026	14,777
Kentucky	4	11,899	13,096
All other states	9	39,401	43,265
Damar and similar turpentine and benzine varnishes	167	3,297,371	2,865,256
Kentucky	3	893,882	743,730
Illinois	24	680,502	738,051
New Jersey	16	636,665	337,521
Pennsylvania	30	300,268	285,705
New York	28	185,225	205,780
Ohio	27	151,659	172,309
Michigan	5	99,296	106,916
Indiana	6	67,627	65,172
Massachusetts	8	58,854	61,227
California	5	42,645	29,076
Missouri	3	78,050	22,891
All other states	12	93,608	96,878
Pyroxylin varnishes	24	852,571	1,308,796
New York	8	405,858	666,681
Missouri	3	117,542	54,528
Pennsylvania	3	22,146	25,835
All other states	10	307,025	561,752
Drying japans and dryers	203	6,560,406	3,015,907
Pennsylvania	32	1,610,416	597,503
Ohio	39	1,228,184	556,681
New York	30	789,772	461,387
Illinois	22	759,252	367,033
New Jersey	21	593,142	364,207
Michigan	7	294,857	151,389
Massachusetts	10	227,111	105,184
Kentucky	6	271,503	102,523
Indiana	8	203,716	82,598
Connecticut	4	43,733	54,268
California	6	107,320	43,385
Missouri	4	76,163	34,054
All other states	14	295,147	97,095
Baking japans and lacquers	118	4,888,816	2,960,856
New York	23	1,029,721	772,575
New Jersey	14	458,539	720,235
Ohio	23	651,462	353,212
Pennsylvania	17	1,410,190	234,457
Michigan	5	372,631	184,931
Illinois	15	201,410	156,227
Indiana	5	288,710	64,625
Missouri	3	32,775	19,803
California	4	35,807	16,515
All other states	9	407,571	438,276

White lead is essentially a basic carbonate of lead produced by the decomposition of a basic acetate of lead by means of carbon dioxide. The total production of dry white lead in 1914 was 139,635 short tons, of which three-fourths was consumed in the establishments producing it, and marketed in paste form or made into paint. The total production in 1914 shows a gain of 12.6 per cent as compared with 1909. The lead oxides comprise litharge, red lead or minium, and orange mineral. To obtain litharge

(PbO) the lead is oxidized at a temperature sufficiently high to melt the oxide as it forms. To obtain minium (Pb_2O_3 or Pb_3O_4) the oxidation is at a temperature below the melting point of litharge. Orange mineral, which has an analogous formula but a paler color and a lower specific gravity, is obtained by roasting white lead in an oxidizing atmosphere. It is used as a base, with eosin and other aniline colors, to produce artificial vermilion. The returns show a decrease of 12.7 per cent in the total products of lead oxides in 1914 as compared with 1909.

The production of lamp and other carbon blacks and of zinc oxide by establishments included in the industry was relatively small and they are included under "other dry colors."

The total production of lamp black in 1914 by all industries was valued at $503,856. This was the product of 12 establishments. It includes 4,786,394 pounds, valued at $215,212, and lamp black to the value of $288,644, for which quantity was not reported. The total production is estimated at 11,200,000 pounds. The total production of carbon black in 1914 by all industries was 22,869,000 pounds, valued at $918,091, the product of 20 establishments.

Zinc oxide, known as zinc white or Chinese white, is the most important of the zinc pigments. It is generally made direct from the ore and is a product of the zinc smelting industry. The production in 1914 may not be disclosed, but in 1909 it was 68,974 short tons.

Lithopone is a variable mixture by chemical precipitation of barium sulphate and zinc sulphide, with maybe some zinc oxide and zinc carbonate. The production from all sources as repo ted by the Geological Survey was 32,819 short tons in 1914 and 14,847 tons in 1909.[1] Other white pigments, products of the zinc smelting industry, which have zinc for a base in part, are leaded zinc oxide and zinc-lead oxide, the latter containing somewhat the larger percentage of lead. No zinc-lead oxide has been made since 1909. The production of leaded zinc pigment for 1914 may not be disclosed, but in 1910 it was 7,111 short tons.[1]

Barytes is obtained from heavy spar or native barium sulphate by grinding the cleaned and sorted mineral, bleaching by boiling in acid to remove iron and other staining constituents, washing, and grinding. It is mixed with white lead in different proportions and is used as a base in compounding many colored pigments. The production in 1914 was one-sixth less than that of 1909.

Establishments engaged in the manufacture of the amorphous barium sulphate, known as blanc fixé or "permanent white" have been included in the chemical industry and this commodity, though used to some extent as a pigment, is not included in the preceding table. The production of blanc fixé in 1914, reported as such, was 18,278,000 pounds, valued at $257,415, and was reported by 13 establishments.

The production of iron buff and other earth colors as reported in 1914 was less than one-half that returned in 1909, although nearly twice the production reported in 1904. There was a large output of natural mineral pigments, ordinarily considered mine products, which may not have been reported on the same basis at different censuses. The output of natural mineral pigments in 1914 was 66,766 short tons, valued at $473,026,[1] comprising: Metallic paint, 30,947 tons; ground slate and shale, 15,271 tons; ocher, 14,387 tons; mortar colors, 5,371 tons; and umber and sienna, 790 tons.

The production of orange or green pigments as shown in Table 75 consisted largely of chrome colors. Prussian blue is a ferrocyanide of iron. The statistics for cyanides, other than the cyanide blues, are included under Chemicals, Group VI. Fine colors as here used refer to colors for artists and for high-grade work like the painting of coach bodies.

Pulp colors are chiefly used in coloring window shades, book coverings, wall paper, and glazed paper. They have the consistency of a plastic watery pulp and frequently contain a considerable percentage of clay, and are adapted for work on a spreading machine when mixed with sizing.

Water paints and kalsomine embrace mixtures made from lime or whiting, dry colors, size, and water with possibly milk or casein. The benefit from the addition of milk is due to the casein in the milk. Casein paints are met with in commerce in the form of paste or liquids, containing the casein in a dissolved form, or as dry powders containing the casein and an alkali. When mixed with water the alkali dissolves and becomes a solvent for the casein and forms an insoluble compound that holds the pigments on the surface to which applied.

Paints in oil are grouped under two heads: (1) Those in paste form, ground in oil, and (2) oil paints ready mixed for use. Under the first head the figures for white lead and zinc, in paste form, ground in oil, are given separately, and for all other pigments, in paste form, ground in oil.

The total production of paints in oil was valued at $70,582,461 in 1914, an increase of $13,201,922, or 23 per cent over that of 1909, but of this increase the greater part was in ready mixed paints, which show an increase in value of $10,834,217, or 35.3 per cent, over that of 1909.

Varnishes and japans are viscous liquids containing a volatile solvent which on evaporation leaves a coherent, flexible, and usually transparent film.

There are a great variety of oil and turpentine varnishes. Chinese wood oil or tung oil, corn oil, and other oils are used in place of linseed oil, and rosin oil, benzine, benzol, and other volatile solvents in place of turpentine.

[1] Mineral Resources of the United States, 1914.

Pyroxylin varnishes or lacquers are formed by dissolving pyroxylin in a volatile solvent, as for example a mixture of methyl alcohol (wood alcohol), amyl alcohol, and amyl acetate. Colors are dissolved in these varnishes, or pigments ground up in them, and they are used as enamels.

These varnishes and japans are grouped under seven heads, including a miscellaneous or unclassified group.

The most important are the oleoresinous varnishes, which though showing a decrease of a little less than 5 per cent in quantity of production in 1914 as compared with 1909 increased nearly 7 per cent in value. Of the total production of varnishes and japans, the value of the oleoresinous varnishes formed a little more than one-half of the total value.

The increase in spirit varnishes, other than turpentine, for the period 1909–1914, was 132.8 per cent in quantity and 105 per cent in value; in baking japans and lacquers, 63.9 per cent in quantity and 42.4 per cent in value; and in miscellaneous products of this class designated as "all other," 84 per cent in value; while the other groups show decreases as to quantity and as to value except damar and similar turpentine and benzine varnishes which increased slightly in value.

Fillers occur as liquid fillers, paste fillers, and dry fillers and are used to fill the pores of the wood to which the paint or varnish is to be applied. Liquid fillers are commonly solutions of rosin. An example of a paste filler is a mixture of pulverized quartz with a quick-drying varnish. It is probable that there is some lack of uniformity in classifying products as reported by the same establishments at different censuses, which may affect in part the comparability of the statistics. The production of raw linseed oil as given in Table 72 is that which was expressed from the seed and sold by paint and varnish establishments. The establishments within the industry purchased and used 24,481,623 gallons of linseed oil, but figures are not available for the quantity produced and consumed.

DETAIL STATE TABLES.

The principal facts derived from the census inquiry concerning the paint industry and the varnish industry other than those relating to certain specified materials and to products, are presented in the following general tables.

Table 76 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the paint and varnish industry combined. Table 77 presents for 1914, by states, the more detailed statistics for these two industries, separately.

TABLE 76.—PAINT AND VARNISH—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	800	16,083	70,611	$10,180	$88,465	$145,624
	1909	791	14,240	56,162	8,271	79,016	124,889
	1904	639	11,633	41,288	6,264	59,827	90,840
California	1914	38	392	1,587	310	2,872	4,082
	1909	35	396	1,387	275	2,652	3,758
	1904	22	293	614	201	1,678	2,370
Georgia	1914	6	27	322	11	162	225
	1909	7	35	95	16	172	222
	1904	5	28	102	12	155	258
Illinois	1914	72	2,110	9,908	1,300	15,477	24,489
	1909	74	1,792	7,108	1,114	12,902	20,434
	1904	63	1,276	5,068	771	8,656	13,325
Indiana	1914	22	178	793	122	922	1,482
	1909	18	200	521	74	683	1,108
	1904	14	81	420	42	437	748
Iowa	1914	4	25	226	14	94	156
	1909	4	18	170	13	85	154
	1904	5	12	76	8	50	86
Kentucky	1914	[1] 16	151	815	93	1,055	1,519
	1909	17	146	768	79	1,213	1,962
	1904	13	143	498	59	565	1,023
Maryland	1914	9	145	453	82	669	1,028
	1909	12	127	450	55	700	1,001
	1904	[1] 11	182	509	74	411	681
Massachusetts	1914	34	490	1,411	301	2,621	4,876
	1909	41	428	1,819	251	2,075	3,469
	1904	33	446	1,536	237	1,630	2,574
Minnesota	1914	15	144	1,065	98	1,061	1,684
	1909	14	164	420	101	889	1,489
	1904	[2] 5	78	222	37	454	709
Missouri	1914	34	599	2,775	$393	$3,749	$5,792
	1909	32	685	2,706	366	4,698	6,828
	1904	30	604	2,028	313	4,737	6,400
Nebraska	1914	[2] 6	67	400	45	624	958
	1909	4	112	425	68	849	1,254
	1904	3	40	170	19	237	347
New Jersey	1914	60	1,737	7,505	1,071	9,941	16,086
	1909	63	1,493	5,924	844	8,226	12,767
	1904	42	960	2,799	527	4,013	6,967
New York	1914	150	3,450	14,648	2,282	18,592	31,884
	1909	147	3,047	10,857	1,863	17,895	28,559
	1904	128	3,250	10,559	1,823	16,870	25,121
Ohio	1914	95	2,107	8,721	1,295	11,340	19,327
	1909	87	1,535	5,572	904	8,570	13,617
	1904	75	1,111	4,275	581	5,855	8,530
Pennsylvania	1914	114	2,643	11,691	1,591	10,400	16,005
	1909	114	1,992	9,862	1,102	9,201	14,020
	1904	98	1,819	7,714	928	8,065	11,637
Tennessee	1914	9	84	1,180	48	359	621
	1909	6	71	1,045	37	238	397
	1904	4	76	295	30	288	481
Texas	1914	8	35	165	21	159	284
	1909	[2] 5	21	67	14	49	84
Wisconsin	1914	9	192	985	104	1,127	1,586
	1909	12	194	935	99	1,043	1,526
	1904	[2] 9	152	731	70	764	1,048
All other states	1914	99	1,507	5,961	999	7,211	13,540
	1909	99	1,784	6,031	996	6,876	12,240
	1904	79	1,082	3,672	532	4,962	8,535

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

TABLE 77.—PAINT AND VARNISH—

	STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male.	Under 16. Female.	Capital.
	PAINTS.															
1	United States	585	20,072	304	1,229	4,103	1,087	13,349	Je 14,048	De 12,573	12,926	11,857	1,036	26	7	$99,673,137
2	California	31	523	11	47	74	19	372	Je 401	Mh 345	363	336	27	.....	.....	2,303,547
3	Colorado	7	105	1	12	29	9	54	My [3] 60	De [3] 48	57	48	9	.....	.....	278,181
4	Florida	3	19	4	3	3	1	8	(4) 8	(4) 8	8	8	.....	.....	.....	43,993
5	Georgia	6	57	3	5	19	3	27	Se [3] 30	Fe 24	29	26	3	.....	.....	249,813
6	Illinois	40	2,728	10	137	772	139	1,670	Ap 1,856	No 1,488	1,488	1,338	149	1	.....	15,997,632
7	Indiana	17	178	2	19	28	15	114	My 125	Au 105	110	105	5	.....	.....	462,105
8	Iowa	4	42	3	8	4	2	25	My [3] 31	De 20	24	22	2	.....	.....	155,409
9	Kentucky	16	225	11	27	25	11	151	Fe 164	De 130	134	111	23	.....	.....	708,777
10	Maryland	6	203	15	2	43	10	133	Je 147	De [3] 125	128	98	30	.....	.....	669,349
11	Massachusetts	22	578	5	43	105	31	394	Jy 425	De 375	378	353	21	4	.....	2,267,351
12	Michigan	21	1,108	3	56	248	106	695	Ap 782	De 554	637	567	68	1	1	7,223,501
13	Minnesota	11	222	2	17	65	14	124	My 138	Au 110	117	92	25	.....	.....	1,150,783
14	Missouri	27	919	3	77	233	54	552	Je 654	Ja 457	498	462	35	1	.....	4,984,796
15	Nebraska	6	100	3	5	20	5	67	Jy 93	Ja 25	87	83	4	.....	.....	832,974
16	New Jersey	31	1,786	14	75	310	54	1,333	Ap 1,379	Oc 1,286	1,349	1,239	104	4	2	9,268,814
17	New York	105	3,769	73	211	643	187	2,655	Ap 2,782	De 2,511	2,538	2,269	265	1	3	19,124,045
18	Ohio	65	2,925	23	170	826	209	1,697	Ap 1,822	De 1,587	1,695	1,561	134	.....	.....	12,518,032
19	Oregon	5	30	4	3	4	1	18	Oc 23	Ja [3] 17	18	16	2	.....	.....	392,619
20	Pennsylvania	91	3,358	75	208	447	136	2,492	Je 2,612	De 2,425	2,498	2,406	77	14	1	15,942,052
21	Tennessee	9	134	3	19	18	10	84	My [3] 91	Ja 72	76	68	8	.....	.....	532,996
22	Texas	8	69	9	6	14	5	35	Ap 47	De 25	38	35	3	.....	.....	278,430
23	Virginia	4	60	5	3	3	3	46	Ja 47	No 45	45	45	.....	.....	.....	149,834
24	Washington	6	58	.....	10	18	7	23	Ap 26	Ja [3] 20	22	20	2	.....	.....	193,133
25	West Virginia	3	28	4	3	1	1	19	Se 24	De 10	17	17	.....	.....	.....	150,613
26	Wisconsin	9	299	5	18	59	25	192	Ap 197	Ja 178	197	167	30	.....	.....	1,356,714
27	All other states *	32	549	13	45	92	30	369	.....	.....	375	365	10	.....	.....	2,432,644

* All other states embrace: Alabama, 2 establishments; Connecticut, 9; Delaware, 4; District of Columbia, 1; Kansas, 2; Louisiana, 1; Maine, 1; Nevada, 1; North Carolina, 3; Oklahoma, 1; Rhode Island, 4; South Carolina, 1; Utah, 2.

	VARNISHES.															
1	United States	215	5,610	87	515	1,746	528	2,734	My 2,881	No 2,605	2,619	2,445	162	12	.....	$29,860,798
2	California	7	41	2	7	10	2	20	Jy 22	Ja 16	22	22	.....	.....	.....	302,181
3	Connecticut	4	43	2	9	11	2	19	(4) 19	(4) 19	19	19	.....	.....	.....	200,843
4	Illinois	32	902	5	75	290	92	440	Ap 472	De 410	413	371	40	2	.....	5,136,827
5	Indiana	5	130	.....	15	42	9	64	(4) 64	(4) 64	62	62	.....	.....	.....	737,011
6	Maryland	3	24	4	1	6	1	12	No 14	Ja [3] 11	12	10	2	.....	.....	44,372
7	Massachusetts	12	217	3	20	77	21	96	Ap [3] 111	Se [3] 83	102	96	6	.....	.....	914,027
8	Minnesota	4	45	2	7	13	3	20	My [3] 21	De 18	18	16	2	.....	.....	227,872
9	Missouri	7	75	1	12	13	2	47	Ja 52	De 40	40	33	7	.....	.....	316,772
10	New Jersey	29	756	8	72	223	49	404	Je 417	No 384	386	360	24	2	.....	5,352,272
11	New York	45	1,554	30	121	452	156	795	Je 836	Au 769	786	742	37	7	.....	8,125,220
12	Ohio	30	797	12	91	205	79	410	My 454	No 370	371	340	30	1	.....	4,443,920
13	Pennsylvania	23	261	15	34	35	26	151	My 154	Ja 147	151	147	4	.....	.....	1,300,843
14	All other states *	14	765	3	51	369	86	256	.....	.....	237	227	10	.....	.....	2,758,638

* All other states embrace: Kansas, 1 establishment; Kentucky, 2; Maine, 1; Michigan, 5; Nebraska, 1; Rhode Island, 2; Virginia, 1; Washington, 1.

[1] Owned power only.

[2] Includes rented power, other than electric.

DETAIL STATISTICS, BY STATES: 1914.

Expenses.								Value of products.	Value added by manufacture.	Power.						
Salaries and wages.			For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.	
Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[1]	Internal-combustion engines.[2]	Water wheels and motors.[1]	Electric (rented).		
PAINTS.																
$3,633,034	$5,972,527	$8,315,223	$73,637	$638,393	$674,896	$70,238,038	$1,350,326	$112,408,742	$40,820,378	62,955	39,685	6,026	1,252	15,992	14,835	1
96,767	85,328	291,716	1,090	39,163	10,634	2,682,118	35,301	3,801,204	1,083,785	1,554	250	50	.....	1,254	300	2
10,726	32,491	33,180	.....	2,292	1,688	311,200	6,072	452,051	135,589	403	.....	.....	.....	403	.....	3
4,600	2,294	4,545	.....	2,340	468	26,770	613	48,886	21,503	40	7	3	.....	30	.....	4
9,746	16,056	11,148	200	4,190	1,253	159,287	2,435	225,248	63,526	322	.....	185	.....	137	.....	5
534,655	1,041,598	986,440	54,459	62,432	103,300	12,235,187	161,708	19,042,769	6,595,874	8,304	7,170	108	.....	1,026	4,666	6
20,886	39,157	74,139	.....	10,687	4,330	610,772	7,704	862,730	244,254	631	100	5	.....	526	.....	7
15,520	16,137	13,560	.....	480	867	90,678	3,238	155,648	61,732	226	25	.....	.....	201	.....	8
102,044	34,280	93,466	173	8,480	9,543	1,044,310	10,445	1,518,729	463,974	815	241	25	.....	549	.....	9
7,000	45,823	76,953	.....	4,390	3,046	612,291	3,962	962,799	346,546	398	340	33	.....	25	.....	10
104,527	140,424	234,498	991	14,422	30,213	1,780,302	48,697	3,331,782	1,502,693	1,219	718	48	.....	453	115	11
222,634	532,204	480,897	.....	17,485	54,239	3,271,453	61,362	6,110,200	2,777,385	2,543	1,544	206	.....	793	1,076	12
51,215	95,485	88,802	.....	12,595	8,610	955,015	17,872	1,498,609	525,722	1,046	480	6	.....	560	.....	13
211,045	290,216	367,841	.....	59,885	28,605	3,487,676	43,711	5,450,382	1,918,995	2,715	2,170	21	.....	524	334	14
11,364	34,258	45,030	.....	72	4,163	616,644	7,136	957,829	334,049	400	350	.....	.....	50	125	15
240,500	413,585	769,058	1,743	54,092	66,969	7,852,433	202,062	10,853,242	3,297,847	6,479	5,706	130	25	618	3,283	16
716,116	1,118,950	1,734,975	4,740	140,745	127,243	13,559,166	263,658	22,425,958	8,603,134	12,234	7,066	2,902	260	2,006	2,220	17
487,834	1,135,401	1,031,701	2,573	57,950	116,112	8,803,724	104,884	14,824,073	5,015,465	7,709	4,292	812	.....	2,605	1,194	18
5,600	5,060	13,454	.....	2,353	1,783	120,720	1,726	160,935	38,480	137	.....	.....	.....	137	.....	19
545,992	590,623	1,488,185	5,208	95,053	62,303	9,224,981	277,571	14,207,095	4,704,543	11,120	6,806	795	810	2,709	689	20
32,704	20,716	48,158	400	2,380	3,268	378,212	10,994	620,889	231,683	1,180	940	.....	.....	240	350	21
12,240	19,572	21,320	.....	5,834	2,986	157,224	1,989	284,490	125,277	165	50	15	.....	100	.....	22
3,000	4,480	20,623	.....	3,000	848	111,089	2,136	184,077	70,252	190	.....	.....	125	65	.....	23
17,545	12,120	14,495	.....	9,388	1,053	148,453	2,438	264,502	113,611	191	.....	.....	.....	191	.....	24
6,854	3,385	14,161	.....	540	787	57,877	2,644	111,440	50,919	195	150	40	.....	5	123	25
42,700	60,639	103,982	.....	5,037	16,642	1,112,277	14,872	1,586,156	459,007	985	685	2	30	208	125	26
100,450	167,245	243,196	2,000	7,208	12,725	1,277,390	54,196	2,466,119	1,134,533	1,754	595	640	2	517	235	27
VARNISHES.																
$1,830,583	$2,751,680	$1,805,065	$17,065	$122,994	$211,087	$16,035,489	$241,904	$33,214,049	$16,337,556	7,656	4,196	243	174	3,043	1,047	1
15,040	9,392	18,207	.....	3,051	3,892	153,083	1,806	280,956	125,467	33	.....	.....	.....	33	.....	2
27,500	20,628	10,622	.....	180	1,850	88,173	1,837	215,316	126,306	45	40	.....	.....	5	.....	3
245,863	481,508	314,467	7,427	37,155	30,462	2,088,469	41,134	5,445,080	2,416,077	1,094	593	7	89	915	15	4
37,242	63,632	48,452	.....	.....	4,857	296,031	7,502	618,710	315,177	162	120	.....	.....	42	8	5
1,027	3,172	5,499	.....	915	323	52,803	394	64,642	11,385	55	.....	.....	.....	55	.....	6
76,311	108,740	67,466	3,000	2,375	7,636	783,374	9,093	1,543,958	751,491	192	20	.....	75	97	.....	7
12,685	27,003	9,078	.....	425	1,461	87,150	1,312	185,353	96,891	19	.....	.....	.....	19	.....	8
29,340	15,679	25,335	350	4,120	2,010	215,489	2,857	341,513	123,167	60	4	7	.....	49	.....	9
312,031	461,612	300,918	.....	10,931	36,204	2,354,453	31,464	5,233,475	2,847,558	1,026	830	52	.....	144	360	10
457,106	709,602	546,577	2,060	30,782	42,486	4,686,142	82,694	9,458,403	4,689,627	2,414	1,577	14	.....	823	366	11
203,442	347,254	263,120	2,119	10,793	37,600	2,401,943	28,671	4,502,503	2,071,889	1,012	570	25	.....	417	276	12
163,883	61,613	102,924	.....	8,487	5,337	884,611	12,730	1,797,521	900,180	571	370	132	.....	69	22	13
157,313	351,605	146,340	3,000	4,780	30,960	1,643,108	20,410	3,526,859	1,863,341	463	72	6	10	375	.....	14

[1] Same number reported for one or more other months.

[2] Same number reported throughout the year.

EXPLOSIVES.

GENERAL STATISTICS.

Scope of the industry.—This report covers the commercial manufacture of blasting powder, black gunpowder, nitroglycerin, dynamite, permissible explosives, guncotton including pyroxylin and other cellulose nitrates, smokeless powder, fulminates, and all other explosives. Statistics for establishments operated by the Federal Government are not included except as specially noted. Establishments engaged primarily in the manufacture of cartridges, detonators, railroad torpedoes, and signal and other fuses are included under "ammunition," and those making colored fires, rockets, and similar products are included under "fireworks."

Comparison with earlier censuses.—At the census of 1849, 54 establishments, with 579 wage earners and products valued at $1,590,332, were reported as engaged in the manufacture of explosives, and at the census of 1859, 58 establishments, with 747 wage earners and products valued at $3,223,090. Table 78 summarizes the statistics of establishments engaged in the manufacture of explosives for each census from 1869 to 1914 and gives percentages of increase.

Table 78	EXPLOSIVES.							PER CENT OF INCREASE.[1]					
	1914	1909	1904	1899	1889	1879	1869	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889	1869–1879
Number of establishments	[2] 111	[2] 86	124	97	69	54	36	(3)	(3)	27.8	40.6	27.8	50.0
Persons engaged	8,425	7,058	7,113	5,293	(4)	(4)	(4)	19.4	−0.8	34.4	.....	.....	.....
Proprietors and firm members	20	21	24	23	(4)	(4)	(4)	−4.8	−12.5	4.3	.....	.....	.....
Salaried employees	2,099	763	1,289	768	(4)	(4)	(4)	175.1	−40.8	67.8	.....	.....	.....
Wage earners (average number)	6,306	6,274	5,800	4,502	2,353	1,340	973	0.5	8.2	28.8	(3)	(3)	(3)
Primary horsepower	45,778	28,601	29,665	19,195	10,674	(4)	3,750	60.1	−3.6	54.5	79.8	.....	.....
Capital	$71,351,414	$50,167,976	$42,307,163	$19,465,846	$13,539,478	$6,585,185	$4,099,900	42.2	18.6	117.3	43.8	105.6	60.6
Salaries and wages	7,795,623	5,437,976	5,105,824	3,298,203	1,549,510	675,414	594,379	43.4	6.5	54.8	112.9	129.4	13.6
Salaries	3,307,335	1,133,606	1,797,050	914,447	(4)	(4)	(4)	191.8	−36.9	96.5	.....	.....	.....
Wages	4,488,288	4,304,370	3,308,774	2,383,756	(4)	(4)	(4)	4.3	30.1	38.8	.....	.....	.....
Paid for contract work	7,645	3,065	2,450	7,658	(4)	(4)	(4)	149.4	25.1	−68.0	.....	.....	.....
Rent and taxes (including internal revenue)	322,132	146,662	[5] 81,075	[5] 70,511	(4)	(4)	(4)	119.6	.....	.....	.....	.....	.....
Cost of materials	25,626,539	22,811,548	17,203,667	10,334,974	5,481,723	3,271,549	2,398,407	12.3	32.6	66.5	88.5	67.6	36.4
Value of products	41,432,970	40,139,661	29,602,884	17,125,418	11,352,615	5,802,029	4,237,539	3.2	35.6	72.9	50.8	95.7	36.9
Value added by manufacture (value of products less cost of materials)	15,806,431	17,328,113	12,399,217	6,790,444	5,870,892	2,530,480	1,839,132	−8.8	39.8	82.6	15.7	132.0	37.6

[1] A minus sign (−) denotes decrease.
[2] Represents 116 plants in 1914 and 124, in 1909.
[3] Figures not strictly comparable.
[4] Figures not available.
[5] Exclusive of internal revenue.

The statistics with respect to number of establishments in both 1909 and 1914 are misleading in that they include groups of plants under the same ownership. An establishment, within the scope of the census returns, may cover two or more plants operated under a common ownership within a state, but outside of cities of 10,000 inhabitants. The 111 establishments appearing for 1914 cover 116 separate plants, a slight decrease from the total number of plants reported in 1909, when the 86 establishments credited to the industry represented 124 plants, the same number that appeared for the number of establishments in 1904. In deductions based upon the number of explosive factories, the figures for number of plants will be used rather than the number of establishments given in the general tables.

The expansion of the industry incident to the European war was subsequent to 1914 and therefore is not reflected in this census. The production in 1914 was in fact below normal, and the period of expansion was just beginning at the close of the year. The small increase in the average number of wage earners, wages, cost of materials, and value of products in 1914 as compared with 1909 indicates the inactivity of the industry in this period. The number shown for wage earners was the average number employed, and was affected by the general depression during the early and middle parts of the year. The number of salaried employees, however, was the number employed in December when operations were beginning to be active.

Summary, by states.—Table 79 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products. Some of the states—California, Colorado, Missouri, New Jersey, Washington, and Wisconsin—for which data can not be shown separately without disclosing the operations of individual establishments, reported products exceeding $1,000,000 in value.

The industry was reported for 25 states in 1914 and 24 in 1909. New Jersey ranked first in value of products, Pennsylvania second, and California third in 1914 as well as in 1909. All of the other states, however, changed in rank during the five-year period. The most notable change was in Washington, which advanced from twenty-first place in 1909 to seventh place in 1914. In 12 of the states—California, Delaware, Indiana, Iowa, Kansas, Massachusetts, Michigan, New York, Ohio, Pennsylvania, Texas, and Wisconsin—the value of products in 1914 was less than that reported in 1909.

Table 79

STATE.	Number of establishments.	Wage earners.			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank.	Amount.	Per cent distribution.	Rank.	Amount.	Per cent distribution.	Rank.
	CENSUS OF 1914.									
United States	[1] 111	6,306	100.0	...	$41,432,970	100.0	...	$15,806,431	100.0	...
Pennsylvania	35	1,037	16.4	2	6,003,048	14.5	2	1,896,008	11.9	2
Illinois	9	366	5.8	4	2,581,762	6.2	5	920,580	5.9	5
Ohio	11	311	4.9	5	1,430,009	3.5	8	466,905	3.0	8
Kansas	3	87	1.4	14	623,819	1.5	13	200,262	1.3	16
Oklahoma	6	73	1.2	16	538,015	1.3	14	217,896	1.4	13
West Virginia	7	54	0.9	19	461,173	1.1	16	150,534	1.0	18
All other states	42	4,378	69.4	...	29,786,141	71.9	...	11,948,246	75.6	...

[1] Represents 110 plants: Pennsylvania, 35; Illinois, 9; Ohio, 11; Kansas, 3; Oklahoma, 7; West Virginia, 8; all other states, 43.

Persons engaged in the industry.—Table 80 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate made by the method described in the "Explanation of terms."

Table 80

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY.				
		Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	8,425	7,948	477	94.3	5.7
	1909	7,058	6,787	271	96.2	3.8
Proprietors and officials	1914	350	342	8	97.7	2.3
	1909	242	232	10	95.9	4.1
Proprietors and firm members	1914	20	15	5	75.0	25.0
	1909	21	13	8	61.9	38.1
Salaried officers of corporations	1914	92	90	2	97.8	2.2
	1909	66	64	2	97.0	3.0
Superintendents and managers	1914	238	237	1	99.6	0.4
	1909	155	155	.....	100.0	.....
Clerks and other subordinate salaried employees	1914	1,769	1,379	390	78.0	22.0
	1909	542	488	54	90.0	10.0
Wage earners (average number)	1914	6,306	6,227	79	98.7	1.3
	1909	6,274	6,067	207	96.7	3.3
16 years of age and over	1914	6,298	6,219	79	98.7	1.3
	1909	6,267	6,060	207	96.7	3.3
Under 16 years of age	1914	8	8	.....	100.0	.....
	1909	7	7	.....	100.0	.....

The average number of wage earners shows an increase of five-tenths of 1 per cent, proprietors and officials 44.6 per cent, and clerks and other subordinate salaried employees 226.4 per cent. The number of wage earners is the average number employed, and was affected by the industrial depression during the year, while the number of salaried employees is the number employed on December 15, when operations were beginning to be active. The figures for employees at different censuses may be affected by the method of reporting certain classes, such as chemists and inspectors, as wage earners at one census and as salaried employees at another census.

Of the total number of persons engaged in the industry in 1914, 74.8 per cent were wage earners, 4.2 per cent were proprietors and officials, and 21 per cent were clerks and other subordinate salaried employees. Of the total number of persons engaged in 1909, 88.9 per cent were wage earners, 3.4 per cent were proprietors and officials, and 7.7 per cent were clerks and other subordinate salaried employees. Of the total number reported in 1914, 7,948, or 94.3 per cent, were males, 477, or 5.7 per cent, females, and only 8 (wage earners) were under 16 years of age. The females employed increased from 1909 to 1914 by 76 per cent and the males employed by 17.1 per cent, but the gain in the former was confined to clerks and other subordinate employees. The females employed as wage earners show a marked decrease. Of the total number of females employed in 1914, 81.8 per cent were clerks and other subordinate salaried employees and 16.6 per cent were wage earners, whereas, in 1909, 19.9 per cent were clerks and 76.4 per cent were wage earners.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 81

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	6,308	5,813	5,840	80.5	81.8	98.8
February	6,168	5,737	5,831	77.6	80.7	98.6
March	6,218	5,771	5,885	78.2	81.2	99.5
April	6,154	5,504	5,912	77.4	77.5	100.0
May	5,917	5,893	5,883	74.4	82.9	99.5
June	5,910	6,138	5,829	74.3	86.4	98.6
July	5,877	6,407	5,835	73.9	90.2	98.7
August	5,947	6,548	5,679	74.8	92.1	96.1
September	5,990	6,680	5,761	75.3	94.0	97.4
October	6,129	6,799	5,738	77.1	95.7	97.1
November	7,014	6,899	5,751	88.2	97.1	97.3
December	7,950	7,106	5,656	100.0	100.0	95.7

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

In 1914 the largest number of wage earners employed during any month was 7,950, in December, and the smallest number, 5,877, in July. From the beginning of the year until July the number generally declined. The stimulation due to war demands shows to a marked degree in November, with an increase of 14.4 per cent over October, followed by an increase of 13.3 per cent in December over November. Between July, the month of minimum employment, and December, the maximum month, the average number of wage earners increased 2,073, or 35.3 per cent. In 1909, though the month of minimum employment was three months earlier and that of maximum employment the same as in 1914, the increase was only 1,602, or 29.1 per cent.

Prevailing hours of labor.—In Table 82 the average number of wage earners reported for 1914 and 1909 has been classified according to the number of hours of labor per week prevailing in the establishment in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

Table 82

PREVAILING HOURS OF LABOR PER WEEK.	WAGE EARNERS IN ESTABLISHMENTS WITH SPECIFIED NUMBER OF HOURS.			
	Average number.		Per cent distribution.	
	1914	1909	1914	1909
All classes	6,306	6,274	100.0	100.0
48 and under	635	216	10.1	3.4
Between 48 and 54	1,399	.....	22.2	.....
54	1,288	373	20.4	5.9
Between 54 and 60	1,272	205	20.2	3.3
60	1,624	5,344	25.8	85.2
Between 60 and 72	88	136	1.4	2.2

The figures emphasize the tendency toward shortening the working day of wage earners. In 1909, 5,480, or almost nine-tenths of the total average number of wage earners, were employed in establishments where the prevailing hours of labor were 60 or more per week, whereas only 1,712, or a little more than one-fourth, were so employed in 1914.

Character of ownership.—Table 83 presents statistics concerning character of ownership or legal organization of establishments in this industry for 1914 and 1909.

The industry is practically under corporate control, this form of ownership reporting over 99 per cent of the average number of wage earners, value of products, and value added by manufacture in 1914 as in 1909. The 111 establishments in 1914 represent 116 plants, of which 109 were owned by corporations, and the 86 establishments in 1909 represent 124 plants, of which 115 were owned by corporations.

Table 83

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage-earners.	Value of products.	Value added by manufacture.
All classes	1914	[1] 111	6,306	$41,432,970	$15,806,431
	1909	[2] 86	6,274	40,139,661	17,328,113
Individuals	1914	3	3	9,641	3,241
	1909	5	26	210,103	81,978
Corporations	1914	104	6,290	41,343,107	15,787,491
	1909	77	6,234	39,799,995	17,198,638
All others	1914	4	13	80,222	15,699
	1909	4	14	129,563	47,497
Per cent distribution:					
Individuals	1914	.....	(3)	(3)	(3)
	1909	.....	0.4	0.5	0.5
Corporations	1914	.....	99.7	99.8	99.9
	1909	.....	99.4	99.2	99.3
All others	1914	.....	0.2	0.2	0.1
	1909	.....	0.2	0.3	0.3

[1] Represents 116 plants—individual, 3; corporation, 109; all other, 4.
[2] Represents 124 plants—individual, 5; corporation, 115; all other, 4.
[3] Less than one-tenth of 1 per cent.

Size of establishments.—The average value of products per plant or factory was $357,181 in 1914, $323,707 in 1909, and $238,732 in 1904, and the average number of wage earners per plant or factory was 54, 51, and 47, respectively. These figures indicate a slight progressive increase in the average size of the plants, measured by number of wage earners, with an increase in the average value of the output per wage earner. On account of the inclusion of several factories in one report, as before noted, groupings based upon the value of products per establishment and upon the number of wage earners per establishment would be misleading and are not given.

Engines and power.—Table 84 shows, for 1914, 1909, and 1904, the number and horsepower capacity of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and rated horsepower capacity of electric motors operated by current generated in the establishment reporting.

Table 84

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	872	433	605	45,778	28,601	29,665	100.0	100.0	100.0
Owned	435	426	605	37,884	28,468	29,665	82.8	99.5	100.0
Steam engines and turbines [1]	396	346	375	36,304	25,558	22,061	79.3	89.4	74.4
Internal-combustion engines	10	17	15	62	221	427	0.1	0.8	1.4
Water wheels, turbines, and motors	29	63	215	1,518	2,689	7,177	3.3	9.4	24.2
Rented—Electric	437	7	.....	7,894	133	.....	17.2	0.5	.....
Electric	1,567	885	428	25,560	14,836	7,889	100.0	100.0	100.0
Rented	437	7	.....	7,894	133	.....	30.9	0.9	.....
Generated by establishments reporting	1,130	878	428	17,666	14,703	7,889	69.1	99.1	100.0

[1] Figures for horsepower include for 1904 the amounts reported under the head of "other" owned power.

The total primary power increased 16,113 horsepower, or 54.3 per cent, from 1904 to 1914, and 17,177 horsepower, or 60.1 per cent, from 1909 to 1914. Steam power predominated, as indicated by the per cent distribution. Electric power, however, was used to a much greater extent in 1914 than in 1904 or 1909, and shows an increase of 17,671 horsepower in 1914 as compared with 1904. Of the electric power used in 1914 that generated in the establishments reporting formed 69.1 per cent. Water power and that of internal-combustion engines show large decreases in the periods presented in the table.

Fuel.—Table 85 shows, for 1914 and 1909, the quantity of each kind of fuel used for which data were obtained in 1914.

Table 85

KIND OF FUEL.	Unit.	QUANTITY. 1914	QUANTITY. 1909
Anthracite coal	Tons, 2,240 pounds.	68,746	39,482
Bituminous coal	Tons, 2,000 pounds.	269,563	[1] 286,056
Coke	Tons, 2,000 pounds.	510	664
Oil	Barrels	103,679	144,427
Gas	1,000 cubic feet	22,100	[1] 68,434

[1] Figures do not agree with those published because it was necessary to make certain revisions in order to make them comparable with those for 1914.

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

Materials.—Table 86 shows statistics for materials purchased and used in the industry, and also for those produced in establishments where they were used in further processes of manufacture, for 1914, 1909, 1904, and 1899.

Table 86

MATERIAL.	EXPLOSIVES (ton of 2,000 pounds). 1914 [1]	1909 [2]	1904	1899
Total cost	$25,620,539	$22,811,548	$17,203,667	$10,334,974
Sulphur or brimstone:				
Tons	15,832	17,389	19,574	12,742
Cost	$372,763	$307,866	$507,469	$317,383
Pyrites:				
Tons	25,885	36,544	12,250	(3)
Cost	$139,496	$183,899	$67,261	(3)
Nitrate of soda:				
Tons	190,960	188,889	133,034	88,524
Cost	$8,970,877	$7,892,336	$5,608,557	$2,002,866
Glycerin:				
Tons	20,002,008	(3)	(3)	(3)
Cost	$5,439,405	(3)	(3)	(3)
Acids:				
Sulphuric—				
Consumption, tons	83,665	65,066	49,292	40,230
Purchased, tons	52,398	22,501	18,208	7,864
Purchased, cost	$723,795	$406,204	$247,301	$130,690
Produced in works where consumed, tons	31,267	42,555	30,994	32,366
Nitric—				
Consumption, pounds	102,920,184	70,559,756	40,675,500	15,015,587
Purchased, pounds	8,694,684	7,591,756	2,699,500	467,587
Purchased, cost	$476,404	$541,314	$122,047	$17,171
Produced in works where consumed, pounds	94,226,000	62,968,000	37,976,000	14,548,000
Mixed—				
Consumption, pounds	177,306,992	(3)	(3)	(3)
Purchased, pounds	38,509,594	51,764,694	105,552,404	66,966,146
Purchased, cost	$1,047,377	$1,512,626	$3,693,420	$1,505,754
Produced in works where consumed, pounds	138,797,398	(3)	(3)	(3)
All other materials, cost	$8,447,422	$11,907,693	$7,557,603	$5,461,101
Produced in works where consumed.				
Acids:				
Sulphuric, tons	31,267	42,555	30,994	32,366
50° Baumé	23,596	(3)	(3)	(3)
66° Baumé	7,611	(3)	(3)	(3)
Nitric, pounds	94,226,000	62,968,000	37,976,000	14,548,000
Mixed, pounds	138,797,398	(3)	(3)	(3)
Saltpeter, pounds	5,409,350	12,050,225	3,559,376	(3)
Nitroglycerin, pounds	61,517,409	70,289,667	44,077,828	31,661,806
Nitrate of ammonia, pounds	27,214,667	10,904,319	2,863,857	483,975
Cellulose nitrates, pounds	6,294,065	5,000,226	(3)	(3)
Charcoal, bushels	139,598	737,884	1,156,018	(3)

[1] In addition 872 tons of sulphur or brimstone, 1,090 tons of nitrate of soda, 2,436 tons of sulphuric acid, 1,361 pounds of nitric acid, and 5,926,700 pounds of mixed acids were used in the manufacture of explosives by establishments operated by the Federal Government.

[2] In addition 50 tons of sulphuric acid, 137,400 pounds of nitric acid, and 300,140 pounds of mixed acids were used in the manufacture of explosives by establishments engaged primarily in the manufacture of other products; and 546 tons of pyrites, 619 tons of nitrate of soda, 193 tons of sulphuric acid, 1,500 pounds of nitric acid, and 1,051,713 pounds of mixed acids in establishments operated by the Federal Government.

[3] Figures not available.

Products.—Table 87 shows the quantity and value of the different kinds of explosives manufactured in 1914, 1909, 1904, and 1899. The figures in the body of the table do not include the production of establishments operated by the Federal Government nor the subsidiary products of establishments engaged primarily in other lines of manufacture.

Table 87

PRODUCT.	EXPLOSIVES. 1914	1909	1904	1899
Total value	$41,432,970	$40,139,661	$29,602,884	$17,125,418
Explosives, total:				
Pounds	[1] 481,752,040	[2] 487,481,152	[3] 360,980,734	215,980,720
Value	$39,645,382	$37,983,868	$27,695,963	$16,950,976
Dynamite—				
Number of establishments	26	26	(4)	31
Pounds	223,667,630	[5] 220,145,791	130,920,829	85,846,456
Value	$20,553,653	[5] $20,998,820	$12,000,193	$8,247,223
Permissible explosives—				
Number of establishments	20	13	(4)	(4)
Pounds	18,113,601	9,607,448	(4)	(4)
Value	$1,604,072	$863,209	(4)	(4)
Nitroglycerin—				
Number of establishments	58	49	(4)	(4)
For sale as such	32	23	(4)	(4)
For consumption	27	26	(4)	(4)
Production, pounds	65,302,883	[5] 74,212,980	52,013,764	35,280,498
Sold as such—				
Pounds	3,785,474	[5] 3,923,313	7,935,036	3,618,692
Value	$950,611	[5] $863,360	$1,620,117	$783,299
Consumed in works where produced, pounds	61,517,409	70,289,667	44,077,828	31,661,806
Blasting powder—				
Number of establishments	48	38	(4)	47
Pounds	207,423,675	233,477,175	205,436,200	
Value	$8,459,113	$9,608,265	$7,377,977	
Gunpowder, black—				
Number of establishments	8	8	(4)	123,314,104
Pounds	7,085,036	12,862,700	10,383,944	$5,310,351
Value	$977,455	$1,736,427	$1,541,483	
Other explosives—				
Number of establishments—				
Guncotton or pyroxylin	4	2	(4)	10
Smokeless powder	5	4	(4)	9
Other	6	8	(4)	(4)
Pounds	21,076,624	[5] 7,464,725	6,303,825	3,201,468
Value	$7,100,478	$3,913,787	$4,256,193	$2,610,103
All other products, value	$1,787,588	$2,155,793	$1,906,921	$174,442

[1] In addition 5,072,387 pounds, to the value of $1,632,335, were made by Federal establishments, comprising 4,998,537 pounds of smokeless powder and 73,850 pounds of other explosives.

[2] In addition 1,471,042 pounds, to the value of $656,969, were made by Federal establishments and 219,356 pounds, to the value of $135,979, by establishments engaged primarily in the manufacture of products other than explosives.

[3] In addition 1,105,082 pounds, to the value of $567,804, were made by Federal establishments and by establishments engaged primarily in the manufacture of products other than explosives.

[4] Figures not available.

[5] Figures do not agree with those published in 1909 because certain establishments revised their reports.

The total production of explosives in 1914 was 486,824,427 pounds; in 1909, 489,171,550 pounds; and in 1904, 362,085,816 pounds. These figures include the production of the Federal establishments and also the subsidiary product of other establishments in 1909 and 1904. In 1914 no explosives were reported by establishments assigned to other classifications.

During the decade 1904 to 1914 the production of explosives by commercial establishments increased 120,771,306 pounds, or 33.5 per cent in quantity, and $11,949,419, or 7 per cent in value. Of the total increase in quantity, dynamite, including permissible explosives, contributed 110,860,402 pounds, or 91.8 per cent.

Dynamite and permissible explosives.—The aggregate production of dynamite and permissible explosives in 1914 was 241,781,231 pounds, valued at $22,157,725, as compared with 229,753,239 pounds, valued at $21,862,029, in 1909. The so-called permissible explosives are those which are approved by the United States Bureau of Mines as suitable for use in mines where dust or gas explosions are likely to occur. They were first reported separately at the census of 1909. Generally they are similar in composition to dynamite and in 1904 and 1899 were probably reported as dynamite.

The leading states in the manufacture of dynamite were New Jersey, California, Missouri, Pennsylvania, Washington, Wisconsin, and Illinois in the order named. These states produced nearly nine-tenths of the total production, the first three states named producing more than one-half of the total.

The leading states reporting permissible explosives in 1914 were New Jersey, Pennsylvania, and Missouri, in the order named, these states producing a little more than three-fourths of the total.

Nitroglycerin.—The bulk of the production of nitroglycerin is consumed by the producing establishments in the manufacture of dynamite and similar explosives; 94.2 per cent of the total production was so used in 1914; 94.7 per cent in 1909; 84.7 per cent in 1904; and 89.7 per cent in 1899. The nitroglycerin reported as sold was used chiefly in shooting gas and oil wells and was mainly the product of establishments that manufactured and used it in this business. The bulk of the nitroglycerin sold as such—more than two-thirds—was reported by establishments located in Oklahoma, Ohio, and Pennsylvania, in the order named.

Blasting powder and gunpowder.—The aggregate production of blasting powder and black gunpowder in 1914 was substantially the same as in 1904, while the combined product in 1909 was 14.1 per cent greater in quantity than that of 1904, and the 1904 production 75 per cent in excess of that of 1899. Blasting powder constituted 96.4 per cent of the combined product in quantity in 1914, 94.8 per cent in 1909, and 95.2 per cent in 1904. The leading states reporting blasting powder in 1914 were Pennsylvania, Ohio, Illinois, Iowa, and Kansas, in the order named. These states produced 71.7 per cent of the total production. The bulk of the production of black gunpowder was reported for Massachusetts, New York, and New Jersey, in the order named, these states reporting 68.6 per cent of the total production.

Guncotton.—The production by all establishments in 1914, inclusive of those operated by the Federal Government, was 2,997,126 pounds, as compared with 257,212 pounds in 1909, 383,162 pounds in 1904, and 848,342 pounds in 1899. The bulk of the product by commercial establishments in 1914 was reported from New Jersey.

Smokeless powder.—The total production by all establishments in 1914, including those operated by the Federal Government, was 12,684,072 pounds in 1914, 6,315,067 pounds in 1909, 7,009,720 pounds in 1904, and 3,053,126 pounds in 1899. The commercial product in 1914 was chiefly from New Jersey.

Other explosives.—The bulk of the same in 1914 was reported from Wisconsin, New Jersey, Pennsylvania, and California, in the order named as to value, these states manufacturing 97. 8 per cent of the total production reported under this head.

Other products returned by the explosives factories were saltpeter and acids sold as such, and recovered acid.

The manufacture of wood flour, used as an absorbent in the manufacture of explosives, was reported by two establishments in 1914, located in Maine and New York. These have been included in the wood-pulp industry.

DETAIL STATE TABLES.

Table 88 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, as reported for explosives. Table 89 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 88.—EXPLOSIVES—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	[1] 111	6,306	45,778	$4,488	$25,627	$41,433
	1909	[2] 86	6,274	28,601	4,304	22,812	40,140
	1904	124	5,800	29,665	3,309	17,204	29,603
Illinois	1914	9	366	2,083	194	1,655	2,582
	1909	8	290	1,828	190	935	1,469
	1904	5	142	1,383	83	412	712
Ohio	1914	11	311	5,646	188	972	1,439
	1909	11	358	2,692	204	1,104	1,719
	1904	16	428	4,075	236	1,275	1,843
Pennsylvania	1914	33	1,037	5,831	$716	$4,107	$6,003
	1909	27	1,033	4,594	629	4,088	6,388
	1904	40	897	5,699	527	2,517	4,013
All other states	1914	58	4,592	32,218	3,390	18,893	31,409
	1909	40	4,593	19,487	3,281	16,685	30,564
	1904	63	4,333	18,508	2,463	13,000	23,035

[1] Represents 116 plants: Illinois, 9; Ohio, 11; Pennsylvania, 35; all other states, 61.
[2] Represents 124 plants: Illinois, 10; Ohio, 12; Pennsylvania, 39; all other states, 63.

TABLE 89.—EXPLOSIVES—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	Persons engaged in the industry.								Wage earners Dec. 15, or nearest representative day.					Capital.	Expenses.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male	Female		Officials.	Clerks, etc.
United States	[1] 111	8,425	20	330	1,379	390	6,306	De 7,950	Jy 5,877	5,826	5,746	73	7	.....	$71,351,414	$1,164,232	$2,143,103
Illinois	9	477	.....	24	63	24	366	Se 403	My 327	362	361	.....	1	.....	2,855,036	71,420	123,513
Kansas	3	116	.....	5	19	5	87	Jy 98	Mh 76	90	90	.....	.....	.....	816,207	12,806	31,163
Ohio	11	369	.....	25	25	8	311	My 321	De 295	295	294	1	.....	.....	2,265,848	76,215	40,928
Oklahoma	6	96	2	11	7	3	73	Ja 103	De 38	74	74	.....	.....	.....	649,167	21,952	10,253
Pennsylvania	33	1,360	18	74	193	38	1,037	My 1,112	De 760	958	929	27	2	.....	8,519,334	199,959	250,407
West Virginia	7	75	.....	6	11	4	54	De 61	Jy [2] 51	56	56	.....	.....	.....	815,959	17,460	17,085
All other states [3]	42	5,932	.....	185	1,061	308	4,378	.....	.....	3,991	3,942	45	4	.....	55,429,863	764,411	1,669,754

STATE.	Expenses—continued.						Value of products.	Value added by manufacture.	Power.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.	Internal-combustion engines.	Water wheels and motors.	Electric (rented).	
United States	$4,488,288	$7,645	$14,129	$308,003	$24,735,846	$890,693	$41,432,970	$15,806,431	45,778	36,304	62	1,518	7,894	17,666
Illinois	193,905	903	1,500	9,668	1,618,640	36,542	2,581,762	926,580	2,083	2,077	6	.....	.....	1,350
Kansas	74,700	.....	.....	3,392	412,675	10,882	623,819	200,262	905	905	.....	.....	.....	734
Ohio	188,050	5,485	1,585	20,292	933,258	38,846	1,439,009	466,905	5,646	2,413	40	500	2,693	.....
Oklahoma	79,523	.....	2,646	5,495	317,416	2,703	538,015	217,896	477	477	.....	.....	.....	380
Pennsylvania	716,033	.....	3,629	32,866	4,005,411	101,629	6,003,048	1,896,008	5,831	5,004	10	100	717	1,751
West Virginia	48,829	947	959	2,967	304,097	6,542	461,173	150,534	864	864	.....	.....	.....	470
All other states [3]	3,187,248	310	3,810	233,323	17,144,349	693,549	29,786,144	11,948,246	29,972	24,564	6	918	4,484	12,951

[1] Represents 116 plants: Illinois, 9; Kansas, 3; Ohio, 11; Oklahoma, 7; Pennsylvania, 35; West Virginia, 8; all other states, 43.
[2] Same number reported for one or more other months.
[3] All other states embrace: Alabama, 2 establishments; Arkansas, 1; California, 5; Colorado, 2; Delaware, 1; Indiana, 2; Iowa, 1; Kentucky, 1; Maine, 1; Massachusetts, 2; Michigan, 1; Minnesota, 1; Missouri, 4; New Jersey, 8; New York, 3; Tennessee, 2; Texas, 1; Washington, 2; and Wisconsin, 2.

DYESTUFFS AND EXTRACTS.

GENERAL STATISTICS.

Scope of the industry.—Establishments in this industry make materials for dyeing and tanning purposes. The products include natural dyestuffs made from wood, bark, or berries; dyeing extracts; artificial dyestuffs, including synthetic or coal-tar dyes, and the mineral colors or dyes; tanning extracts and liquors, including chrome tanning solutions; and mordants, assistants, and sizes.

Comparison with earlier censuses.—Table 90 summarizes the statistics of establishments engaged in the manufacture of dyestuffs and extracts for each census year from 1869 to 1914, and gives percentages of increase.

Table 90

	DYESTUFFS AND EXTRACTS.							PER CENT OF INCREASE.[1]					
	1914	1909	1904	1899	1889	1879	1869	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889	1869–1879
Number of establishments	112	107	98	77	62	41	73	4.7	9.2	27.3	24.2	51.2	−43.8
Persons engaged	3,551	3,015	3,150	(2)	(2)	(2)	(2)	17.8	−4.3	.....	.....	.....	.....
Proprietors and firm members	56	65	82	(2)	(2)	(2)	(2)	−13.8	−20.7	.....	.....	.....	.....
Salaried employees	656	553	361	229	(2)	(2)	(2)	18.6	53.2	57.6	.....	.....	.....
Wage earners (average number)	2,839	2,397	2,707	1,647	2,111	992	803	18.4	−11.5	64.4	(3)	(3)	(3)
Primary horsepower	23,290	22,213	17,671	11,409	11,896	(2)	2,694	4.8	25.7	54.9	−4.1	.....	.....
Capital	$21,283,974	$17,934,545	$14,904,150	$7,839,034	$8,645,458	$2,363,700	$1,802,710	18.7	20.3	90.1	−9.3	265.8	31.1
Salaries and wages	3,001,959	2,233,705	1,873,282	1,100,051	1,289,987	512,097	398,649	34.4	19.2	70.3	−14.7	151.9	28.5
Salaries	1,388,843	942,326	608,790	312,109	252,336	(2)	(2)	47.4	54.8	95.1	23.7	.....	.....
Wages	1,613,116	1,291,379	1,264,492	787,942	1,037,651	(2)	(2)	24.9	2.1	60.5	−24.1	.....	.....
Paid for contract work	2,487	4,738	2,675	(2)	(2)	(2)	(2)	−47.5	77.1	.....	.....	.....	.....
Rent and taxes (including internal revenue)	225,582	106,415	[4]77,639	(2)	(2)	(2)	(2)	112.0	.....	.....	.....	.....	.....
Cost of materials	13,237,995	9,683,651	6,829,340	4,745,912	6,500,928	3,918,741	1,667,257	36.7	41.8	43.9	−27.0	65.9	135.0
Value of products	20,620,336	15,954,574	10,893,113	7,350,748	9,292,514	5,253,038	2,878,609	29.2	46.5	48.2	−20.9	76.9	82.5
Value added by manufacture (value of products less cost of materials)	7,382,341	6,270,923	4,063,773	2,604,836	2,791,586	1,334,297	1,211,352	17.7	54.3	56.0	−6.7	109.2	10.1

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Figures not strictly comparable. [4] Exclusive of internal revenue.

During the 15 years from 1899 to 1914 the number of establishments in the industry increased by nearly one-half, while the number of wage earners nearly doubled and the value of products nearly trebled. The period of most marked relative increase in these, as well as in most of the other items shown in the table, was from 1899 to 1904. The number of proprietors and firm members was smaller at each of the last two censuses than at the census preceding.

Summary, by states.—Table 91 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. One state, Connecticut, for which data can not be shown separately without disclosing the operations of individual establishments, ranked higher than some of those named in the table.

Table 91

	CENSUS OF 1914.													PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.				Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904
United States	112	2,839	100.0	....	....	$20,620,336	100.0	....	....	$7,382,341	100.0	....	....	18.4	−11.5	64.4	29.2	46.5	48.2	17.7	54.3	56.0
New York	23	647	22.8	1	1	6,225,856	30.2	1	1	2,341,239	31.7	1	1	54.8	−19.5	−3.5	38.2	66.5	28.1	42.9	55.4	24.3
New Jersey	18	343	12.1	4	5	4,968,962	24.1	2	2	1,925,323	26.1	2	2	22.9	11.6	.....	58.7	43.8	332.8	65.8	71.7	206.0
Virginia	13	429	15.1	2	3	1,676,879	8.1	3	5	539,003	7.3	4	5	24.0	−18.4	110.9	39.8	62.9	53.7	5.0	49.3	100.8
Massachusetts	17	148	5.2	8	9	1,674,097	8.1	4	7	512,224	6.9	5	8	85.0	−46.7	.....	130.8	−27.4	−24.4	139.6	−44.1	94.2
Pennsylvania	9	265	9.3	5	2	1,568,612	7.6	5	3	410,576	5.6	6	3	−28.2	81.8	−21.0	−33.1	142.7	−23.9	−57.8	188.6	−44.6
Tennessee	6	365	12.9	3	4	1,535,503	7.4	6	4	765,285	10.4	3	4	8.6	29.7	.....	16.9	82.3	.....	14.0	87.5	.....
Rhode Island	7	91	3.2	9	8	792,817	3.8	7	6	280,633	3.8	7	7	.....	.....	.....	−14.5	80.8	.....	−5.2	59.3	.....
West Virginia	4	66	2.3	10	....	363,026	1.8	10	....	44,473	0.6	12	....	.....	.....	.....	43.7	1.6	1.2	.....	.....	.....
All other states	15	485	17.0	....	....	1,814,584	8.8	....	....	563,585	7.6	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 104. A minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture, or where comparable figures can not be given.

New York and New Jersey were the leading states in 1914 and 1909, as measured by value of products and value added by manufacture, New York being also the leading state in the number of wage earners employed. These states combined reported in 1914, 54.3 per cent of the total value of products, 57.8 per cent of the value added by manufacture, and 34.9 per cent of the total number of wage earners.

The manufacture of dyestuffs is largely centered in the Middle Atlantic and New England states. Six of the Southern states are represented in this industry with 30 establishments engaged chiefly in the manufacture of tanning extracts and of ground wood and bark. Only one establishment was located west of the Mississippi River, and this in California, while the Middle West was represented by only 6 establishments in four different states.

Persons engaged in the industry.—Table 92 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 92

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	3,551	3,402	149	95.8	4.2
	1909	3,015	2,901	114	96.2	3.8
Proprietors and officials	1914	270	262	8	97.0	3.0
	1909	264	262	2	99.2	0.8
Proprietors and firm members	1914	56	50	6	89.3	10.7
	1909	65	64	1	98.5	1.5
Salaried officers of corporations	1914	103	102	1	99.0	1.0
	1909	91	91	.....	100.0	.....
Superintendents and managers	1914	111	110	1	99.1	0.9
	1909	108	107	1	99.1	0.9
Clerks and other subordinate salaried employees	1914	442	330	112	74.7	25.3
	1909	354	278	76	78.5	21.5
Wage earners (average number)	1914	2,839	2,810	29	99.0	1.0
	1909	2,397	2,361	36	98.5	1.5
16 years of age and over	1914	2,823	2,796	27	99.0	1.0
	1909	2,391	2,355	36	98.5	1.5
Under 16 years of age	1914	16	14	2	87.5	12.5
	1909	6	6	.....	100.0	.....

Table 93 gives for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914 and the per cent distribution at the two censuses.

Table 93

CLASS.	PERSONS ENGAGED IN THE INDUSTRY. Per cent of increase,[1] 1909-1914. Total.	Male.	Female.	Per cent distribution. Total. 1914	Total. 1909	Male. 1914	Male. 1909	Female. 1914	Female. 1909
All classes	17.8	17.3	30.7	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	2.3	.....	.....	7.6	8.8	7.7	9.0	5.4	1.8
Proprietors and firm members	.....	.....	.....	1.6	2.2	1.5	2.2	4.0	0.9
Salaried officers of corporations	.....	.....	.....	2.9	3.0	3.0	3.1	0.7	.....
Superintendents and managers	2.8	2.8	.....	3.1	3.6	3.2	3.7	0.7	0.9
Clerks and other subordinate salaried employees	24.9	18.7	.....	12.4	11.7	9.7	9.6	75.2	66.7
Wage earners (average number)	18.4	19.0	.....	79.9	79.5	82.6	81.4	19.5	31.6
16 years of age and over	18.1	18.7	.....	79.5	79.3	82.2	81.2	18.1	31.6
Under 16 years of age	.....	.....	.....	0.5	0.2	0.4	0.2	1.3	.....

[1] A minus sign (—) denotes decrease; percentages are omitted when base is less than 100.

Of the total number of persons engaged in the industry in 1914, wage earners represented 79.9 per cent; clerks and other subordinate employees 12.4 per cent, and proprietors and officials 7.6 per cent. Very few women and children were employed as wage earners in the industry, 99 per cent being males of 16 years of age and over. Most of the females were employed as clerks and other subordinate salaried employees.

Wage earners employed, by months.—Table 94, on the following page, gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

The industry is not to any appreciable extent subject to seasonal variations, though in 1914 the fall and early winter months show the largest enrollment of labor. The greatest number employed during any month in 1914 was 2,989, for October, and the least was 2,662, for February, the latter number being 89.1 per cent of the maximum number. In 1909 and 1904 the largest number of wage earners was employed in August.

Table 94 MONTH.	WAGE EARNERS IN THE INDUSTRY. Number.[1] 1914	1909	1904	Per cent of maximum. 1914	1909	1904
January	2,719	2,293	2,625	91.0	92.5	89.7
February	2,662	2,351	2,737	89.1	94.9	93.6
March	2,779	2,351	2,744	93.0	94.9	93.8
April	2,838	2,436	2,809	94.9	98.3	96.0
May	2,848	2,344	2,910	95.3	94.6	99.5
June	2,849	2,399	2,794	95.3	96.8	95.5
July	2,798	2,432	2,832	93.6	98.1	96.8
August	2,785	2,478	2,925	93.2	100.0	100.0
September	2,917	2,453	2,832	97.6	99.0	96.8
October	2,989	2,324	2,500	100.0	93.8	85.5
November	2,967	2,450	2,436	99.3	98.9	83.3
December	2,917	2,439	2,340	97.6	98.4	80.0

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Prevailing hours of labor.—In Table 95 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

Table 95 PREVAILING HOURS OF LABOR PER WEEK.	WAGE EARNERS IN ESTABLISHMENTS WITH SPECIFIED NUMBER OF HOURS. Average number. 1914	1909	Per cent of total. 1914	1909
Total	2,839	2,397	100.0	100.0
48 and under	85	97	3.0	4.0
Between 48 and 54	173	39	6.1	1.6
54	46	58	1.6	2.4
Between 54 and 60	452	351	15.9	14.6
60	1,311	1,361	46.2	56.8
Between 60 and 72	640	310	22.5	12.9
72	132	181	4.7	7.6

Of the 2,839 wage earners in the industry, 1,311, or 46.2 per cent of the total, were employed in establishments where 60 hours per week was the usual working time and 772, or 27.2 per cent, in establishments where the working time was over 60 hours per week.

Character of ownership.—Table 96 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry for 1914 and 1909.

Table 96 CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	112	2,839	$20,620,336	$7,382,341
	1909	107	2,397	15,954,574	6,270,923
Individuals	1914	25	143	1,144,266	339,217
	1909	23	145	946,201	297,960
Corporations	1914	75	2,615	18,854,821	6,877,161
	1909	69	2,151	14,558,545	5,785,230
All others	1914	12	81	621,249	165,963
	1909	15	101	449,828	187,733
Per cent distribution:					
Individuals	1914	22.3	5.0	5.5	4.6
	1909	21.5	6.1	5.9	4.8
Corporations	1914	67.0	92.1	91.4	93.2
	1909	64.5	89.7	91.2	92.2
All others	1914	10.7	2.9	3.0	2.2
	1909	14.0	4.2	2.8	3.0

Of the total number of establishments in the industry, 67 per cent were under corporate ownership in 1914, as compared with 64.5 per cent in 1909, and 56.1 per cent in 1904. These establishments reported 91.4 per cent of the total value of products in 1914 91.2 per cent in 1909; and 86.2 per cent in 1904.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 97.

Table 97 VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	112	2,839	$20,620,336	$7,382,341
	1909	107	2,397	15,954,574	6,270,923
Less than $5,000	1914	6	3	11,372	6,264
	1909	10	12	25,838	15,571
$5,000 to $20,000	1914	19	49	216,921	110,230
	1909	19	66	240,409	105,736
$20,000 to $100,000	1914	37	308	1,860,718	670,451
	1909	36	390	1,892,747	832,605
$100,000 and over	1914	[1] 50	2,479	18,531,325	6,595,396
	1909	42	1,929	13,795,580	5,317,011
Per cent distribution:					
Less than $5,000	1914	5.4	0.1	0.1	0.1
	1909	9.3	0.5	0.2	0.2
$5,000 to $20,000	1914	17.0	1.7	1.1	1.5
	1909	17.8	2.8	1.5	1.7
$20,000 to $100,000	1914	33.0	10.8	9.0	9.1
	1909	33.6	16.3	11.9	13.3
$100,000 and over	1914	44.6	87.3	89.9	89.3
	1909	39.3	80.5	86.5	84.8

[1] Includes three establishments with products valued at $1,000,000 and over.

Of the 112 establishments in 1914, there were 50, or 44.7 per cent of the total, whose products were valued at $100,000 or more, including 3 with products valued at $1,000,000 and over. These 50 establishments reported 89.9 per cent of the total value of products for the industry. The average value of products per establishment increased from $111,154 in 1904 to $149,108 in 1909 and to $184,110 in 1914, and the value added by manufacture from $41,467 in 1904 to $58,607 in 1909 and to $65,914 in 1914, while the average number of wage earners per establishment increased from 22 in 1909 to 25 in 1914.

Table 98 shows the size of establishments in the industry in 1914 and 1909 as measured by the number of wage earners employed.

Table 98 WAGE EARNERS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS. 1914	1909	WAGE EARNERS. Average number. 1914	1909	Per cent of total. 1914	1909
All establishments	112	107	2,839	2,397	100.0	100.0
No wage earners	4	3	.....	.....	.....	.....
1 to 5	37	36	86	85	3.0	3.5
6 to 20	33	35	383	377	13.5	15.7
21 to 50	20	20	662	687	23.3	28.7
51 to 100	12	7	832	491	29.3	20.5
101 to 250	6	6	876	757	30.9	31.6

There were 4 establishments for which no wage earners were reported in 1914. These are comparatively small plants in which the work is done by the proprietors or firm members. Some of these

establishments employed a few wage earners for a short time but the number was so small and the period of employment so short that in computing the average number as described in the "Explanation of terms," no wage earners could be shown. There were no establishments which employed over 250 wage earners.

Expenses.—The census figures for expenses do not purport to represent the cost of manufacture, since they take no account of interest, or depreciation, or a large amount of miscellaneous expense, and therefore can not properly be used for determining profits. Facts of interest, however, can be brought out concerning the relative importance of the different classes of expenses which were reported.

Table 90 shows the total reported expenses to have been $16,468,023, of which materials constituted 80.4 per cent; wages 9.8 per cent; salaries 8.4 per cent; and rent, taxes, and contract work 1.4 per cent. The corresponding per cent distribution of the expenses reported in 1909 was: Materials 80.5; wages 10.8; salaries 7.8; and rent, taxes, and contract work nine-tenths of 1 per cent.

Engines and power.—Table 99 shows for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 99

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	306	270	201	23,290	22,213	17,671	100.0	100.0	100.0
Owned	224	251	199	22,543	22,020	17,624	96.8	99.1	99.7
Steam engines and turbines [1]	218	247	192	22,032	21,685	17,424	94.6	97.6	98.6
Internal-combustion engines	4	1	1	455	15	4	2.0	0.1	(2)
Water wheels, turbines, and motors	2	3	6	56	320	196	0.2	1.4	1.1
Rented	82	19	2	747	193	47	3.2	0.9	0.3
Electric	82	19	2	745	191	20	3.2	0.9	0.1
Other	.....	.....	.....	2	2	27	.....	.....	0.2
Electric	195	106	35	2,750	1,664	659	100.0	100.0	100.0
Rented	82	19	2	745	191	20	27.1	11.5	3.0
Generated by establishments reporting	113	87	33	2,005	1,473	639	72.9	88.5	97.0

[1] Figures for horsepower include for 1904 the amounts reported under the head of "other" owned power.

[2] Less than one-tenth of 1 per cent.

As shown in Table 90, the amount of primary power reported for this industry in 1899 was 11,409, which increased to 23,290 in 1914. Of the total primary horsepower in 1914, 94.6 per cent was steam power, as compared with 97.6 per cent in 1909, and 98.6 per cent in 1904.

Fuel.—Table 100 shows, for 1914 and 1909, the quantity of each kind of fuel used for which data were obtained in 1914 for the industry as a whole. The amount expended for fuel and rent of power is shown, by states, in Table 105.

Table 100

KIND.	Unit.	QUANTITY	
		1914	1909
Anthracite	Tons, 2,240 lbs.	24,457	20,669
Bituminous coal	Tons, 2,000 lbs.	173,888	164,789
Coke	Tons, 2,000 lbs.	25	31
Oil, including gasoline	Barrels	227	2,200
Gas	1,000 cubic feet	187,673	223,467

SPECIAL STATISTICS RELATING TO PRODUCTS.

Products.—While much of the value of the census of manufactures lies in the presentation of the development of an industry as shown by comparison with the results of former censuses, it is often necessary to enlarge and modify the scope of the inquiries. In 1914 the inquiries regarding the products of mills manufacturing dyestuffs and extracts were so modified that in several instances there were items not comparable with former census reports. For this reason Table 101, which shows the products reported at the last four censuses and the number of establishments involved, must be regarded as only approximately comparable in several of the items. Moreover, several rather large establishments found it impossible to give an exact statement of their production of dyestuffs, either as to kind or quantity and therefore estimated their output.

Table 101 shows statistics for the principal products manufactured for 1914, 1909, 1904, and 1899. It covers not only the dyestuffs and extracts manufactured by establishments as a chief product, but that of establishments making dyestuffs and extracts as a subsidiary product.

Table 101	1914	1909	1904	1899
Number of establishments	133	124	112	.....
Dyestuff and extract industry	112	107	98	77
Manufacturing dyestuffs and extracts as subsidiary products	21	17	14	(1)
PRODUCTS.				
Total value	$21,382,689	$16,788,676	$10,912,224	.....
Dyestuff and extract industry	$20,620,336	$15,954,574	$10,893,113	$7,350,748
Subsidiary products of other industries	$762,353	$834,102	2 $19,111	(1)
Dyestuffs	$7,114,855	$4,819,247	$3,331,738	$3,494,632
Natural dyestuffs	$1,862,162	$1,135,694	$1,567,284	$1,687,902
Dyewood extracts:				
Logwood—				
Number of establishments	9	6	(1)	(1)
Pounds	28,989,962	22,317,248	29,799,606	39,252,743
Value	$1,311,966	$991,974	$1,472,047	$1,485,971
Fustic—				
Number of establishments	5	(1)	(1)	(1)
Pounds	4,509,943	(1)	(1)	(1)
Value	$222,804	(1)	(1)	(1)
Quercitron—				
Number of establishments	4	(1)	(1)	(1)
Pounds	3,844,882	(1)	(1)	(1)
Value	$112,945	(1)	(1)	(1)
Other dyewood extracts—				
Brazilwood, cutch, etc—				
Number of establishments	4	.....	.....	.....
Pounds	3,434,150	(1)	(1)	(1)
Value	$90,934	(1)	(1)	(1)
All other—dyewoods, ground or chipped, and dyestuffs not dyewoods	$123,513	$143,720	$95,237	$201,931
Artificial dyestuffs:				
Synthetic or coal-tar dyes, including intermediates and products resulting from the blending of imported colors—				
Number of establishments	16	.....	.....	.....
Pounds	12,169,635	a 12,658,770	4,600,462	6,581,850
Value	$4,652,947	$3,683,553	$1,764,454	$1,806,730
Mineral colors or dyes, such as chrome yellow, orange or green, iron buff, prussian blue, ultramarine, etc.—				
Number of establishments	14	.....	.....	.....
Pounds	4,991,336	.....	.....	.....
Value	$599,746	.....	.....	.....

	1914	1909	1904	1899
PRODUCTS—continued.				
Tanning materials	$7,898,672	a $7,323,971	$4,967,095	$1,866,030
Extracts:				
Oak and chestnut—				
Pounds	a328,197,524	a 266,529,514	156,520,123	28,983,036
Value	a$4,130,042	$4,321,637	$2,411,184	$529,670
Hemlock—				
Pounds	18,978,013	12,588,078	18,833,450	26,011,714
Value	$340,402	$280,487	$406,619	$563,591
Sumac—				
Pounds	4,512,361	3,148,790	4,093,619	4,349,742
Value	$129,631	$107,456	$95,958	$103,085
Quebracho, chrome tanning, spruce, myrobalans, gambier, mangrove or palmetto, and gallnuts extracts, in the order named as to value—				
Pounds	a109,597,041	a $2,614,391	$2,053,334	$669,684
Value	$2,944,906			
Other tanning materials	a $353,691			
Mordants:				
Tannic acid—				
Pounds	760,100	a $598,516	a $264,792	a $235,128
Value	$234,630			
Other	$157,791			
Assistants:				
Turkey red oil—				
Pounds	11,681,884	1,814,506	3,022,470	2,210,000
Value	$820,491	$108,292	$159,666	$14,757
Other	$716,510	(1)	(1)	(1)
Sizes:				
Dextrins—				
Pounds	18,913,641	16,148,931	6,651,731	(1)
Value	$705,584	$610,999	$231,708	(1)
Gums, other than rosin—				
Pounds	3,832,182			
Value	$205,282			
Rosin—				
Pounds	20,717,148	$1,835,046	$217,859	$2,543
Value	$373,218			
Other sizes	$1,768,777			
All other products	$1,386,879	a $1,492,605	a$1,720,255	a$1,737,653

1 Figures not available.
2 Not distributable by kind.
a The final figures here given differ from and should be substituted for the figures published in Table 111, p. 181 of the Abstract.

The concerns manufacturing dyestuffs and extracts in 1914 numbered 133; of these 112 reported these goods as their primary product, while 21 manufactured dyestuffs and extracts as subsidiary products, these latter concerns including establishments engaged primarily in the manufacture of leather, soap, patent medicines and compounds, cleansing and polishing preparations, chemicals, paints, and paving materials. These establishments all manufactured dyestuffs or extracts for sale. The statistics for dyestuffs and extracts made by dye and print works or by tanneries for their own use in the further processes of manufacture are not included in the report for this industry.

Of the total value of the products made for sale, $21,382,689, the value of dyestuffs amounted to one-third (33.3 per cent). The largest proportion consisted of artificial dyestuffs, and the value of these products was reported as $5,252,693. The manufacture of artificial dyestuffs was reported by 26 establishments, of which 12 manufactured coal-tar dyes only, and 10 mineral colors or dyes, while 4 reported the production of both coal-tar and mineral dyes. The coal-tar dyes include azo, benzidine, anthracene, alizarin, etc. Several of these establishments merely mixed the colors, while others purchased aniline and other coal-tar intermediates, largely imported stock, from which they manufactured dyes. The production of artificial dyestuffs in the United States in 1914 shows a very large increase over that of 1904, the value of this product being almost three times as great.

Of the value of natural dyestuffs in 1914, the value of logwood extract constituted more than seven-tenths (70.4 per cent). Although a greater amount of logwood extract was reported in 1914 than in 1909, it was considerably less than that reported either in 1904 or 1899. Other dyewood extracts, such as fustic, quercitron, cutch, Brazilwood, etc., to the value of $426,683; ground or chipped dyewoods to the value of $37,751; and natural dyestuffs, other than dyewoods, to the value of $85,762 were also reported. The latter class includes cochineal, curcuma, turmeric, indigo, and annatto.

The total value of tanning materials amounted in 1914 to $7,898,672, or 36.9 per cent of the total value of products. The largest portion of the tanning materials consisted of oak and chestnut extract, the value of which in 1914 amounted to $4,130,042, or 52.3 per cent of the value of all tanning materials reported. The number of pounds of oak and chestnut extract produced shows a rapid increase from census to census, although the value of this product in 1914 was slightly less than that reported in 1909. Quebracho extract ranked second among the tanning extracts, both in the quantity produced and in the value reported in 1914, but statistics for this product can not be shown separately without disclosing individual operations. The production of hemlock extract was about the same in 1914 as in 1904, but considerably less than in 1899, while the production of sumac extract shows only a slight increase in 1914 over that for 1904 and 1899. The production of 704,763 pounds of gambier extract was reported in 1914, valued at $26,400. Other tanning extracts (in addition to quebracho extract) for which separate figures can not be shown are: Chrome tanning, spruce, myrobalans, mangrove or palmetto, and gallnuts.

Mordants, assistants, and sizes to the value of $4,982,283, and "all other products" to the value of $1,386,879 were also produced.

Table 102 gives for 1914 the quantity and value of the chief products reported by all establishments engaged in the manufacture of dyestuffs and tanning materials for the United States and for the states for which data can be shown separately without disclosing the operations of individual establishments.

Table 102

KIND AND STATE.	PRODUCTS: 1914. Pounds.	PRODUCTS: 1914. Value.
United States		$21,382,080
Natural dyestuffs	45,887,938	1,862,162
Artificial dyestuffs	17,100,971	5,252,093
Synthetic or coal-tar dyes	12,100,635	4,052,947
Massachusetts	1,003,613	131,044
New Jersey	4,003,889	2,503,531
New York	6,300,433	1,025,752
All other states	102,700	32,020
Mineral colors or dyes	4,991,336	599,746
New Jersey	3,992,681	516,293
New York	98,375	15,675
All other states	900,280	67,778

KIND AND STATE.	PRODUCTS: 1914. Pounds.	PRODUCTS: 1914. Value.
Tanning materials		$7,898,672
Oak and chestnut extract	328,197,524	4,130,042
North Carolina	48,855,547	580,529
Tennessee	117,510,960	1,457,417
Virginia	119,701,202	1,472,084
All other states	42,129,815	620,012
Hemlock extract	18,978,013	340,402
Sumac extract	4,512,361	129,631
Other tanning extracts		2,944,906
Other tanning materials		353,691
Mordants		392,421
Massachusetts		48,545
New York		291,534
All other states		52,342

KIND AND STATE.	PRODUCTS: 1914. Pounds.	PRODUCTS: 1914. Value.
Assistants		$1,537,001
Turkey red oil	11,681,884	820,491
Massachusetts	1,698,450	137,467
New Jersey	2,367,635	227,223
All other states	7,615,799	455,801
Other assistants		716,510
Sizes		3,052,861
Dextrines, gums, and resin		1,284,084
Massachusetts		505,852
All other states		778,232
Other sizes		1,768,777
Massachusetts		331,029
New Jersey		386,390
All other states		1,051,358
All other products		1,386,879

In addition to the products manufactured for sale, the establishments in the industry reported the quantity of wood, bark, leaves, roots, and nuts or fruits which were ground and consumed by each of them in the manufacture of dyestuffs and extracts. Table 103 gives the quantities of these materials ground and consumed in further processes of manufacture in the same establishments for 1914 and as far as reported for 1909 and 1904.

Table 103

KIND.	MATERIALS GROUND AND CONSUMED IN THE SAME ESTABLISHMENTS—TONS (2,000 LBS.). 1914	1909	1904
Wood	886,125	468,289	262,253
Bark	44,092	146,531	20,195
Leaves	844	978	1,793
Roots	15	(1)	(1)
Nuts or fruits	1,105	(1)	(1)

[1] Not reported.

DETAIL STATE TABLES.

Table 104 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, as reported for the dyestuffs and extract industry. Table 105 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 104.—DYESTUFFS AND EXTRACTS—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	112	2,839	23,290	$1,613	$13,238	$20,620
	1909	107	2,397	22,213	1,291	9,684	15,955
	1904	98	2,707	17,671	1,264	6,829	10,893
Massachusetts	1914	17	148	520	99	1,162	1,674
	1909	10	80	325	50	512	725
	1904	16	150	1,205	84	617	999
New Jersey	1914	18	343	1,625	216	3,044	4,969
	1909	13	279	1,006	179	1,969	3,130
	1904	14	250	1,018	138	1,500	2,176
New York	1914	23	647	3,576	450	3,885	6,226
	1909	18	418	3,647	259	2,867	4,505
	1904	9	519	2,353	317	1,652	2,706
Pennsylvania	1914	9	265	3,113	182	1,158	1,569
	1909	14	369	3,516	187	1,373	2,345
	1904	8	203	2,420	105	629	966
Rhode Island	1914	7	91	729	52	512	793
	1909	10	87	689	82	632	928
	1904	8	70	294	41	327	513
Tennessee	1914	6	365	4,065	173	770	1,536
	1909	6	336	4,119	156	642	1,313
	1904	5	259	2,396	103	362	720
Virginia	1914	13	429	4,309	161	1,138	1,677
	1909	14	346	4,209	123	686	1,200
	1904	12	424	4,400	137	393	737
West Virginia	1914	4	66	581	40	319	363
	1909	3	63	506	24	159	253
	1904	5	82	435	28	119	249
All other states	1914	15	485	4,772	240	1,250	1,813
	1909	19	419	4,196	231	844	1,556
	1904	21	750	3,150	311	1,230	1,827

TABLE 105.—DYESTUFFS AND EXTRACTS—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male	Female		Officials.	Clerks, etc.
United States	112	3,551	56	214	330	112	2,839	Oc 2,989	Fe 2,662	2,997	2,952	28	15	2	$21,283,974	$768,190	$620,653
Massachusetts	17	212	11	16	31	6	148	Au 160	De 131	131	130	1			813,134	46,075	45,991
New Jersey	18	530	11	47	108	21	343	Oc 362	Fe 333	339	320	11	6	2	3,830,109	218,537	251,178
New York	23	863	10	46	105	55	647	No 719	Au 564	707	692	13	2		6,115,736	205,177	190,707
Pennsylvania	9	320	2	19	22	12	265	Oc 298	Fe 223	278	276	1	1		1,991,830	48,283	35,121
Rhode Island	7	122	4	11	10	6	91	No 111	Jy 70	101	100	1			486,955	48,904	25,595
Tennessee	6	397		19	12	1	365	No 399	Ja 321	389	389				2,101,854	46,249	14,248
Virginia	13	480	6	27	13	5	429	De 455	Ja 377	489	483		6		2,002,230	66,712	18,993
West Virginia	4	83	6	9	2		66	Au 72	Ja 60	67	67				303,702	23,060	1,208
All other states[1]	15	544	6	20	27	6	485			496	495	1			3,638,424	65,193	37,612

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[2]	Internal-combustion engines.[3]	Water wheels and motors.[2]	Electric (rented).	
United States	$1,613,116	$2,487	$94,740	$130,842	$12,698,387	$539,608	$20,620,336	$7,382,341	23,290	22,032	457	56	745	2,005
Massachusetts	99,134		8,012	7,821	1,137,467	24,406	1,674,097	512,224	520	393	25		102	
New Jersey	216,017	325	8,150	20,598	2,992,860	50,779	4,968,962	1,925,323	1,625	1,491			134	85
New York	449,389	2,150	69,458	39,729	3,775,641	108,976	6,225,856	2,341,239	3,576	3,262	15		299	72
Pennsylvania	182,417	12	2,371	11,387	1,136,790	21,246	1,568,612	410,576	3,113	3,056	2		55	657
Rhode Island	52,319		4,991	2,887	496,341	15,843	792,817	280,633	729	689			40	6
Tennessee	173,358			15,190	674,683	95,535	1,535,503	765,285	4,065	3,665	400			394
Virginia	160,951		981	14,416	1,025,517	112,359	1,676,879	539,003	4,309	4,238		56	15	23
West Virginia	40,241		100	819	309,936	8,617	363,026	44,473	581	565			16	
All other states[1]	238,790		677	17,995	1,149,152	101,847	1,814,584	563,585	4,772	4,673	15		84	763

[1] All other states embrace: Alabama, 1 establishment; California, 1; Connecticut, 1; Georgia, 2; Illinois, 2; Indiana, 1; Michigan, 1; North Carolina, 4; Wisconsin, 2.

[2] Owned power only.

[3] Includes rented power, other than electric.

WOOD DISTILLATION.

GENERAL STATISTICS.

Scope of the industry.—This report embraces the establishments engaged primarily in the distillation of wood in retorts, ovens, or kilns or by the steam process. Establishments engaged in charcoal burning without recovery of the volatile products and those making spirits of turpentine from crude turpentine or gum are not included, though it includes those that extract turpentine from the wood, from pine stumpage and trees past working for gum. The industry includes establishments engaged in the rectification of crude wood alcohol, and to the extent that crude alcohol is purchased for refining duplication is involved in the figures for cost of materials and value of products.

The principal products are wood alcohol or methyl alcohol, sometimes known as wood spirit, acetate of lime (calcium acetate) both brown and gray, acetate of soda, acetic acid, formaldehyde, acetone, pyroligneous acid and pyrolignite of iron, tar, wood creosote and charcoal, and turpentine in the case of pine wood distillation.

The wood used for making alcohol and acetate of lime is hardwood, such as oak, maple, beech, and birch. Beechwood and foliage trees in general yield distinctly more acid than coniferous trees, but the latter yield more tar. The quality and character of the yield depend upon the kind and age of the wood and the temperature and rate at which the charge is heated.

Comparison with earlier censuses.—Table 106 summarizes the statistics of establishments engaged in wood distillation for each census from 1899 to 1914, and gives percentages of increase.

Table 106

	WOOD DISTILLATION.				PER CENT OF INCREASE.[1]		
	1914	1909	1904	1899	1909-1914	1904-1909	1899-1904
Number of establishments	95	120	141	102	−20.8	−14.9	38.2
Persons engaged	3,142	3,095	2,655	(2)	1.5	16.6	.....
Proprietors and firm members	36	56	82	(2)	−35.7	−31.7	.....
Salaried employees	324	318	301	235	1.9	5.6	28.1
Wage earners (average number)	2,782	2,721	2,272	1,556	2.2	19.8	46.0
Primary horsepower	10,045	9,854	4,620	(2)	1.9	113.3	.....
Capital	$17,562,849	$13,017,192	$10,506,979	$6,729,127	34.9	23.9	56.1
Salaries and wages	1,968,011	1,818,059	1,364,314	913,509	8.2	33.3	49.3
Salaries	403,189	355,211	297,528	213,025	13.5	19.4	39.7
Wages	1,564,822	1,462,848	1,066,786	700,484	7.0	37.1	52.3
Paid for contract work	72,260	15,536	21,970	(2)	365.1	−29.3	.....
Rent and taxes (including internal revenue)	146,533	69,442	[3] 50,869	(2)	111.0	.....	.....
Cost of materials	6,495,570	5,875,851	4,847,770	3,455,015	10.5	21.2	40.3
Value of products	9,882,537	9,736,998	7,813,483	6,001,023	1.5	24.6	30.2
Value added by manufacture (value of products less cost of materials)	3,386,967	3,861,147	2,965,713	2,546,008	−12.3	30.2	16.5

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Exclusive of internal revenue.

The value of products reported for 1914 exceeded that of 1899 by $3,881,514, a relative increase of 64.7 per cent. The number of wage earners increased from 1,556 in 1899 to 2,782 in 1914, a gain of 78.8 per cent, while the amount paid in wages more than doubled during that time. The cost of materials in 1914 was equal to 65.7 per cent of the value of products, the highest proportion for any year shown, the others being 60.3 per cent in 1909, 62 per cent in 1904, and 57.6 per cent in 1899.

Summary, by states.—Table 107 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914.

Table 107

STATE.	CENSUS OF 1914.												PER CENT OF INCREASE.[1]					
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.			Wage earners (average number).		Value of products.		Value added by manufacture.	
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909-1914	1904-1909	1909-1914	1904-1909	1909-1914	1904-1909
United States	95	2,782	100.0	....	....	$9,882,537	100.0	....	....	$3,386,967	100.0	....	....	2.2	19.8	1.5	24.6	−12.3	30.2
Pennsylvania	46	1,185	42.6	1	1	3,417,199	34.6	1	2	1,199,611	35.4	1	1	27.0	−25.3	15.5	−4.3	−5.0	−7.8
New York	19	438	15.7	3	3	2,789,731	28.2	2	1	856,207	25.3	3	3	−26.1	21.3	−18.0	1.3	−3.1	0.7
Michigan	10	645	23.2	2	2	2,678,151	27.1	3	3	970,382	28.6	2	2	−20.0	177.0	11.6	244.9	−22.0	221.0
All other states	20	514	18.5	....	....	997,456	10.1	....	....	360,767	10.7	....	....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 120; a minus sign (−) denotes decrease.

Three states—Pennsylvania, New York, and Michigan—in 1914 together reported 81.5 per cent of the average number of wage earners, 89.9 per cent of the value of products, and 89.3 per cent of the value added by manufacture. Outside of the three leading states only 20 establishments were reported, these being distributed among 12 states—Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oregon, Tennessee, Vermont, West Virginia, and Wisconsin.

Persons engaged in the industry.—Table 108 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Of the total number of persons engaged in the industry in 1914, 88.5 per cent were wage earners; 7 per cent proprietors and officials; and 4.4 per cent clerks and other subordinate salaried employees. Comparatively few females were employed and none of them were wage earners.

Table 108

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	3,142	3,108	34	98.9	1.1
	1909	3,095	3,064	31	99.0	1.0
Proprietors and officials	1914	221	215	6	97.3	2.7
	1909	255	249	6	97.6	2.4
Proprietors and firm members	1914	36	32	4	88.9	11.1
	1909	56	50	6	89.3	10.7
Salaried officers of corporations	1914	76	74	2	97.4	2.6
	1909	73	73	.....	100.0	.....
Superintendents and managers	1914	109	109	.....	100.0	.....
	1909	126	126	.....	100.0	.....
Clerks and other subordinate salaried employees.	1914	139	111	28	79.9	20.1
	1909	119	94	25	79.0	21.0
Wage earners (average number), all 16 years of age and over.	1914	2,782	2,782	.....	100.0	.....
	1909	2,721	2,721	.....	100.0	.....

Table 109 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914 and the per cent distribution at the two censuses.

Table 109

CLASS.	PERSONS ENGAGED IN THE INDUSTRY. Per cent of increase,[1] 1909–1914. Total.	Male.	Female.	Per cent distribution. Total. 1914	Total. 1909	Male. 1914	Male. 1909	Female. 1914	Female. 1909
All classes	1.5	1.4	.....	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	−13.3	−13.7	.....	7.0	8.2	6.9	8.1	17.6	19.4
Proprietors and firm members	.....	.....	.....	1.1	1.8	1.0	1.6	11.8	19.4
Salaried officers of corporations	.....	.....	.....	2.4	2.4	2.4	2.4	5.9	.....
Superintendents and managers	−13.5	−13.5	.....	3.5	4.1	3.5	4.1	.....	.....
Clerks and other subordinate salaried employees	16.8	.....	.....	4.4	3.8	3.6	3.1	82.4	80.6
Wage earners (average number) all 16 years of age and over	2.2	2.2	.....	88.5	87.9	89.5	88.8	.....	.....

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month:

Table 110

MONTH.	WAGE EARNERS IN THE INDUSTRY. Number.[1] 1914	1909	1904	Per cent of maximum. 1914	1909	1904
January	3,531	2,800	2,399	100.0	91.7	100.0
February	3,359	2,868	2,374	95.1	93.9	99.0
March	2,887	2,807	2,381	81.8	91.9	99.2
April	2,552	2,754	2,342	72.3	90.2	97.6
May	2,463	2,626	2,256	69.8	86.0	94.0
June	2,453	2,563	2,164	69.5	84.0	90.2
July	2,434	2,519	2,052	68.9	82.5	85.5
August	2,607	2,478	2,088	73.8	81.2	87.0
September	2,664	2,604	2,182	75.4	85.3	91.0
October	2,721	2,707	2,286	77.1	88.7	95.3
November	2,787	2,869	2,392	78.9	94.0	99.7
December	2,926	3,053	2,348	82.9	100.0	97.9

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

The figures in general indicate a maximum employment of labor in winter and a minimum in summer. In the industry as a whole the largest number of wage earners employed during any month in 1914 was 3,531 in January, and the smallest number, 2,434, in July, the minimum number being equal to 68.9 per cent of the maximum. In 1909 the maximum number, 3,053, was reported for December, and the minimum number, 2,478, for August, the latter number being equal to 81.2 per cent of the former, and in 1904 the maximum number, 2,399, was reported for January and the minimum number, 2,052, for July, the latter number being equal to 85.5 per cent of the former. In only two states—Pennsylvania and Michigan—did the average number of wage earners employed exceed 500 in 1914. In Pennsylvania, with an average of 1,185 wage earners during the year, January was the maximum month with 1,455 and June the minimum with 994—68.3 per cent of the maximum; while in Michigan there was comparatively little monthly variation, the average number being 645, the minimum, 609 in July, and the maximum, 702 in the following month, August.

Prevailing hours of labor.—In Table 111 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

Table 111

PREVAILING HOURS OF LABOR PER WEEK.	AVERAGE NUMBER OF WAGE EARNERS.				
	United States.		Michigan, 1914.	New York, 1914.	Pennsylvania, 1914.
	1914	1909			
Total	2,782	2,721	645	438	1,185
48 and under	103	51	.....	44	11
54	8	42	.....	.....	8
Between 54 and 60	208	6	.....	.....	.....
60	1,221	1,023	167	300	678
Between 60 and 72	706	658	245	94	255
72	207	242	.....	.....	160
Over 72	329	699	233	.....	73

The comparative figures for the United States as a whole reflect the tendency toward the shortening of the working day of wage earners. In 1914, 88.5 per cent of the wage earners worked in establishments where the prevailing hours were 60 or more per week, as compared with 96.4 per cent in 1909. The largest single group shown in the table for both 1914 and 1909 is that made up of wage earners in establishments where the prevailing hours were 60 per week, such wage earners constituting 43.9 per cent of the total number for 1914, and 37.6 per cent for 1909.

Character of ownership.—Table 112 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry for 1914 and 1909, and for the three leading states for 1914 only.

Table 112

	UNITED STATES.		Michigan, 1914.	New York, 1914.	Pennsylvania, 1914.
	1914	1909			
Number of establishments	95	120	10	19	46
Owned by:					
Individuals	11	14	.....	7	4
Corporations	75	92	10	12	34
All others	9	14	.....	.....	8
Average number of wage earners	2,782	2,721	645	438	1,185
In establishments owned by—					
Individuals	155	275	.....	122	33
Corporations	2,383	2,215	645	316	912
All others	244	231	.....	.....	240
Per cent of total—					
Individuals	5.6	10.2	.....	27.9	2.8
Corporations	85.7	81.4	100.0	72.1	77.0
All others	8.8	8.5	.....	.....	20.3
Value of products	$9,882,537	$9,736,998	$2,678,151	$2,789,731	$3,417,199
Of establishments owned by—					
Individuals	485,921	648,479	.....	385,416	100,505
Corporations	8,758,425	8,414,986	2,678,151	2,404,315	2,680,503
All others	638,191	673,533	.....	.....	636,191
Per cent of total:					
Individuals	4.9	6.7	.....	13.8	2.9
Corporations	88.6	86.4	100.0	86.2	78.4
All others	6.5	6.9	.....	.....	18.6

The establishments under corporate ownership in 1914 formed 78.9 per cent of the total number of establishments as compared with 76.7 per cent in 1909 and 70.9 per cent in 1904, while the value of products represented 88.6 per cent of the total in 1914, 86.4 per cent in 1909, and 83.7 per cent in 1904.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 113.

Table 113

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	95	2,782	$9,882,537	$3,386,967
	1909	120	2,721	9,736,998	3,861,147
Less than $5,000	1914	5	12	14,116	8,638
	1909	8	35	22,670	10,279
$5,000 to $20,000	1914	9	54	95,102	38,645
	1909	30	268	392,267	198,356
$20,000 to $100,000	1914	54	1,082	2,764,619	953,720
	1909	61	1,216	3,111,998	1,296,796
$100,000 and over	1914	[1] 27	1,634	7,008,700	2,385,964
	1909	21	1,202	6,210,063	2,355,719
Per cent distribution:					
Less than $5,000	1914	5.3	0.4	0.1	0.3
	1909	6.7	1.3	0.2	0.3
$5,000 to $20,000	1914	9.5	1.9	1.0	1.1
	1909	25.0	9.8	4.0	5.1
$20,000 to $100,000	1914	56.8	38.9	28.0	28.2
	1909	50.8	44.7	32.0	33.6
$100,000 and over	1914	[1] 28.4	58.7	70.9	70.4
	1909	17.5	44.2	63.8	61.0

[1] Includes one establishment with products valued at over $1,000,000.

Of the 95 establishments reporting in 1914, 28.4 per cent manufactured products valued at $100,000 or over, and the value of these products represented 70.9 per cent of all products, as compared with 17.5 per cent and 63.8 per cent, respectively, in 1909. The average number of wage earners per establishment increased from 16 in 1904, to 23 in 1909 and to 29 in 1914, while the average value of products per establishment increased from $55,415 in 1904 to $81,142 in 1909 and to $104,027 in 1914.

Of the total number of wage earners reported in 1914, 18.4 per cent were in establishments employing from 1 to 20 wage earners, 29.8 per cent in establishments employing from 21 to 50, 38.9 per cent in establishments employing from 51 to 100, and 359 wage earners, or 12.9 per cent, in 3 establishments employing more than 100 wage earners.

Expenses.—The census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest, or depreciation, or frequently a large amount of miscellaneous expenses; hence, they can not be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 106 shows the total reported expenses in 1914 to have been $8,682,374, of which cost of materials constituted 74.8 per cent; wages, 18 per cent; salaries, 4.6 per cent; and rent and

taxes and contract work, 2.5 per cent. In 1909 the corresponding percentages were—materials, 75.5 per cent; wages, 18.8 per cent; salaries, 4.6 per cent; and rent, taxes, and contract work, 1.1 per cent; and in 1904, 77.1, 17, 4.7, and 1.2 per cent, respectively.

Engines and power.—Table 114 shows for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 114

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	256	226	205	10,045	9,854	4,620	100.0	100.0	100.0
Owned	237	224	203	9,110	9,779	4,588	90.7	99.2	99.3
Steam engines and turbines [1]	188	170	154	8,230	9,056	3,929	81.9	91.9	85.0
Internal-combustion engines	33	25	13	741	462	287	7.4	4.7	6.2
Water wheels, turbines, and motors	16	29	36	139	261	372	1.4	2.6	8.1
Rented	19	2	2	935	75	32	9.3	0.8	0.7
Electric	19	2	2	935	75	12	9.3	0.8	0.3
Other	.....	.....	.....	.....	.....	20	.....	.....	0.4
Electric	128	39	4	2,630	580	26	100.0	100.0	100.0
Rented	19	2	2	935	75	12	35.6	12.9	46.2
Generated by establishments reporting	109	37	2	1,695	505	14	64.4	87.1	53.8

[1] Figures for horsepower include for 1904 the amounts reported under the head of "other" owned power.

The total primary power used increased from 4,620 horsepower in 1904 to 9,854 in 1909, and 10,045 in 1914—an increase of 117.4 per cent for the decade. In 1914, as in 1909 and 1904, steam power formed the major part of the primary power, although steam power decreased from 1909 to 1914. Electric power, both rented and generated, shows a large increase, and of the total primary power, whether owned or rented, 26.2 per cent was utilized in the form of electric power in 1914, 5.9 per cent in 1909, and six-tenths of 1 per cent in 1904.

Fuel.—Table 115 shows, for 1914, the quantity of each kind of fuel used for which data were obtained for the industry as a whole and for the three leading states.

Bituminous coal was the fuel largely used; 107,150 tons, or 54.5 per cent of the total for the industry, were reported from Pennsylvania. Of the anthracite used, 29,599 tons, or 75.9 per cent, were reported from New York. In addition to the fuel shown in Table 115, considerable quantities of the products, such as charcoal and tar, for which there was not a ready market, were used as fuel. The amount reported as expended for fuel and rent of power in 1914 ($1,024,479) does not include the cost of wood consumed as material.

Table 115

STATE.	COAL.		Oil (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 pounds).	Bituminous (tons, 2,000 pounds).		
United States	38,994	196,594	18	1,521,666
Michigan	4,600	47,103	3	3,235
New York	29,599	28,206	12	.....
Pennsylvania	4,795	107,150	.....	1,431,016
All other states	.....	14,135	3	87,415

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

Materials.—The schedule employed in the canvass of the industry called for the quantity and kind of wood used and the quantity and cost of crude alcohol purchased in cases where crude alcohol was purchased for refining. Table 116 shows the number of establishments engaged in the industry and the data relating to materials for 1914, 1909, 1904, and 1899.

Table 116	1914	1909	1904	1899
Number of establishments	101	136	150	111
Wood distillation industry	95	120	141	102
Manufacturing wood-distillation products as subsidiary products	6	16	9	9
Number producing crude alcohol	[1] 79	98	129	93
Number producing refined alcohol	16	17	15	18
Number distilling pine wood	15	33	31	4
MATERIALS.				
Wood, cords	1,042,517	[2] 1,265,157	1,049,503	490,939
Hardwoods	970,308	1,149,847	1,018,072	487,805
Pine	72,209	115,310	31,431	3,134
Crude wood alcohol:				
Consumed, gallons	8,070,902	9,670,497	.....	.....
Purchased—				
Gallons	[1] 5,665,446	7,135,614	(3)	(3)
Cost	$1,408,124	$1,784,029	(3)	(3)
Made and consumed, gallons	[1] 2,405,456	2,534,883	1,468,028	(3)

[1] The final figures here given differ from and should be substituted for the figures published on pp. 199 and 200 of the Abstract.
[2] Forest products of the United States, 1909, p. 163; includes some wood used in charcoal burning.
[3] Figures not available.

There were 86 hardwood distilleries and crude-alcohol refineries in 1914 and 15 engaged in distilling from pine. Of the former, 70 made crude wood alcohol only, 7 were engaged solely in the refining of wood alcohol, and 9 made crude alcohol and refined it. The woods used, other than pine, were beech, maple and birch, oak, chestnut, and hickory, alder, ash, cherry, and ironwood. The reduction in number of establishments is due in part to differences in the methods of reporting at the different censuses. In 1914 combined reports were made in some cases for plants which in 1909 made separate reports.

The total consumption of crude wood alcohol in 1914 for purposes of refining was 8,070,902 gallons, with a production of 6,464,955 gallons of refined alcohol.

Products.—Table 117 gives comparative statistics of products for the years 1914, 1909, 1904, and 1899.

At the census of 1879, when this industry was first shown, the value of the wood alcohol reported was $86,274, that of charcoal $31,770, and that of acetate of lime $156,892. The production of crude wood alcohol in 1889 was reported as 1,116,075 gallons, valued at $688,764, and of acetate of lime, 26,778,415 pounds, valued at $315,430. The table gives the production for the subsequent years.

Refined wood alcohol was reported for the first time at the census of 1889. In the process of refining, the crude alcohol is reduced in volume about 20 per cent. In some cases where crude alcohol was made and refined, and the quantity of crude alcohol made and used was not reported, the amount was estimated.

Table 117	1914	1909	1904	1899
Products, total value	$10,529,829	$10,312,657	$9,037,313	.....
Wood-distillation industry	$9,882,537	$9,736,998	$7,813,483	$6,001,023
Subsidiary products of other industries	$647,292	$575,659	$1,223,830	(1)
Wood alcohol:				
Crude, gallons	[2] 9,602,431	9,307,583	8,282,286	.....
For sale—				
Gallons	7,196,975	6,772,700	6,814,258	4,945,963
Value	$1,605,880	$1,774,459	$2,201,961	$1,976,986
Made and consumed, gallons	[2] 2,405,456	2,534,883	1,468,028	(1)
Refined, gallons	6,464,955	.....	.....	.....
For sale—				
Gallons	6,235,113	6,732,877	5,917,153	3,038,140
Value	$2,709,369	$3,096,808	$3,455,625	$2,296,898
Made and consumed, gallons	229,842	(1)	(1)	(1)
Acetate of lime, pounds	166,084,523	.....	.....	.....
For sale—				
Pounds	163,521,577	141,478,296	110,383,997	86,826,000
Value	$2,138,909	$2,118,443	$1,527,733	$981,296
Made and consumed, pounds	2,562,946	(1)	(1)	(1)
Turpentine:				
Gallons	575,557	706,868	442,185	(1)
Value	$194,183	$249,526	$176,521	(1)
Tar, gallons	[2] 2,965,354	.....	.....	.....
For sale—				
Gallons	[2] 1,476,797	1,570,257	(1)	(1)
Value	[2] $145,964	$113,225	(1)	(1)
Made and consumed, gallons	1,488,557	(1)	(1)	(1)
Wood creosote:				
Pounds	2,073,057	2,549,190	(1)	(1)
Value	$38,872	$34,645	(1)	(1)
Charcoal:				
Bushels	[2] 44,827,836	39,952,235	29,917,212	17,154,302
Value	[2] $2,829,571	$2,426,648	$1,487,165	$726,672
Rosin:				
Barrels	51,825	(1)	(1)	(1)
Value	$198,165	(1)	(1)	(1)
Other wood-distillation products	$441,399	$231,192	$138,481	$19,181
All other products	$227,497	$267,711	$49,827	

[1] Figures not available.
[2] The final figures here given differ from and should be substituted for the figures published on p. 200 of the Abstract.

The total production of crude alcohol shows an increase of 12.4 per cent from 1904 to 1909 and of 3.2 per cent from 1909 to 1914. Refined alcohol for sale shows an increase in quantity of 13.8 per cent from 1904 to 1909 but a decrease of 7.4 per cent from 1909 to 1914.

Acetate of lime produced for sale shows an increase of 15.6 per cent from 1909 to 1914, and 28.2 per cent from 1904 to 1909. The production is substantially all the gray acetate; less than 1 per cent was reported as brown acetate. The figures give the total production of acetate of lime by all establishments reporting it.

The turpentine product from wood was 18.6 per cent less in 1914 than in 1909. This constituted but a very small portion of the turpentine product of the country, which amounted to 27,648,939 gallons in 1914, valued at $10,740,327. The total production of rosin in 1914 from all sources, chiefly of course from the turpentine industry, was 2,944,929 barrels, valued at $10,572,309.

The quantities of tar and wood creosote reported as sold were less in 1914 than in 1909, but both increased in value, tar 28.9 per cent and wood creosote 12.2 per cent.

The charcoal product of the wood distillation industry now constitutes the bulk of the charcoal product of the country. Establishments engaged in charcoal burning without recovery of the volatile products reported products valued at $408,227, which includes the subsidiary charcoal product of establishments in

other industries, giving with the charcoal product of the wood distillation plants a total value of $3,237,798. This includes, however, any revenues of the charcoal burning establishments other than from charcoal.

Other wood distillation products were reported in 1914 to the value of $441,399, including acetone, acetic acid, acetate of soda, formaldehyde, pyrolignite of iron, and wood ashes. These products were also reported by establishments in the chemical industry, and the total production for sale of certain of them by all classes of establishments was as follows: Acetone, 10,425,817 pounds, valued at $1,099,585; acetic acid, 70,617,637 pounds, valued at $1,272,294; and formaldehyde, 8,426,247 pounds, valued at $655,174.

Table 118 PRODUCT AND STATE.	PRODUCTION FOR SALE: 1914.	
	Quantity.	Value.
Wood alcohol, refined ..... gallons..	6,235,113	$2,709,369
Michigan	1,570,658	588,908
New York	4,229,389	1,956,397
All other states	435,066	164,064
Wood alcohol, crude ..... gallons..	7,196,975	1,605,880
Michigan	1,593,134	364,507
New York	939,523	227,626
Pennsylvania	4,235,636	904,700
All other states	428,682	109,047
Acetate of lime ..... pounds..	163,521,577	2,138,909
Michigan	57,756,234	718,753
New York	19,452,927	264,482
Pennsylvania	77,140,287	1,043,636
All other states	9,172,129	112,038
Charcoal ..... bushels..	44,827,836	2,829,571
Michigan	19,152,454	960,414
New York	4,004,412	302,299
Pennsylvania	17,726,774	1,318,109
All other states	3,944,196	248,749

Table 118 gives the production, by states, of wood alcohol, both crude and refined, acetate of lime, and charcoal made for sale in 1914.

New York produced over two-thirds of the refined wood alcohol, and Pennsylvania a little less than one-half of the acetate of lime.

Equipment.—Table 119 shows, by states, the equipment of the wood distillation plants in retorts, ovens, and kilns in 1914.

Table 119 EQUIPMENT.	United States.	Michigan.	New York.	Pennsylvania.	All other states.
Aggregate capacity, cords..	26,707	24,027	505	1,747	428
Retorts:					
Number	794	82	216	342	154
Capacity ..... cords..	1,850	595	287	558	410
Ovens:					
Number	228	36	26	164	2
Capacity ..... cords..	1,717	292	218	1,189	18
Kilns:					
Number	326	326	.....	.....	.....
Capacity ..... cords..	23,140	23,140	.....	.....	.....

The aggregate charge capacity was 26,707 cords of wood, of which 86.6 per cent was furnished by kilns, 6.9 per cent by retorts, and 6.4 per cent by ovens. In 1909 the aggregate charge capacity of the kilns, retorts, and ovens was 24,594 cords, and the distribution of the equipment as reported was 1,448 retorts of 2,703 cords capacity, 177 ovens of 1,080 cords capacity, and 310 kilns of 20,811 cords capacity. The detail figures are not strictly comparable, for in some cases equipment was reported as retorts at one census and ovens at the other census.

DETAIL STATE TABLES.

Table 120 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the wood distillation industry. Table 121 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 120.—WOOD DISTILLATION—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	95	2,782	10,045	$1,565	$6,490	$9,883
	1909	120	2,721	9,854	1,463	5,876	9,737
	1904	141	2,272	4,020	1,067	4,848	7,813
Michigan	1914	10	645	2,644	415	1,708	2,678
	1909	12	806	5,012	504	1,155	2,309
	1904	9	291	366	156	351	738
New York	1914	19	438	1,067	225	1,934	2,790
	1909	29	593	590	262	2,519	3,402
	1904	32	489	706	218	2,480	3,357
Pennsylvania	1914	46	1,185	2,514	$682	$2,218	$3,417
	1909	50	933	1,749	522	1,684	2,960
	1904	63	1,249	2,297	598	1,709	3,093
All other states	1914	20	514	3,820	243	636	998
	1909	29	389	2,494	175	518	976
	1904	37	243	1,251	95	308	625

TABLE 121.—WOOD DISTILLATION—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	Persons engaged in the industry.								Wage earners Dec. 15, or nearest representative day.					Capital.	Expenses.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.		Officials.	Clerks, etc.
United States	95	3,142	36	185	111	28	2,782	Ja 3,531	Jy 2,434	3,476	3,476	.....	.....	.....	$17,562,849	$304,940	$98,249
Michigan	10	709	.....	31	30	3	645	Au 702	Jy 609	676	676	.....	.....	.....	3,164,001	101,475	31,917
New York	19	510	7	35	23	7	438	Ja 555	Jy 312	556	556	.....	.....	.....	4,282,894	56,665	23,350
Pennsylvania	46	1,351	27	91	34	14	1,185	Ja 1,455	Je 994	1,358	1,358	.....	.....	.....	7,818,808	99,717	24,860
All other states [1]	20	572	2	28	24	4	514	.....	.....	886	886	.....	.....	.....	2,297,146	47,083	18,122

STATE.	Expenses—continued.						Value of products.	Value added by manufacture.	Power.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.	Internal-combustion engines.	Water wheels and motors.	Electric (rented).	
United States	$1,504,822	$72,260	$18,409	$128,124	$5,471,091	$1,024,479	$9,882,537	$3,386,967	10,045	8,230	741	139	935	1,695
Michigan	414,721	18,297	8,798	43,208	1,364,680	353,089	2,678,151	970,382	2,644	1,815	133	30	666	1,271
New York	225,174	20,586	.....	24,584	1,770,843	162,681	2,789,731	856,207	1,067	971	27	.....	69	4
Pennsylvania	681,763	24,096	9,301	43,840	1,777,735	439,853	3,417,190	1,199,611	2,514	1,909	546	59	.....	396
All other states [1]	243,164	281	250	16,432	507,833	68,856	997,456	360,767	3,820	3,535	35	50	200	24

[1] All other states embrace: Alabama, 3 establishments; Florida, 2; Georgia, 1; Kentucky, 1; Louisiana, 2; Mississippi, 2; North Carolina, 2; Oregon, 1; Tennessee, 1; Vermont, 1; West Virginia, 1; Wisconsin, 3.

ESSENTIAL OILS.

GENERAL STATISTICS.

Scope of the industry.—This report includes the statistics for establishments engaged in the manufacture of the natural essential oils, both crude and refined (except turpentine), and of witch-hazel extract.

Essential oils, volatile oils, or essences, are distinguished by the possession of strong and characteristic odors and by being vaporizable without decomposition and usually with little or no residue. The list of essential oils met with in commerce is quite extensive, but the bulk of the production is represented by comparatively few, principally peppermint, spearmint, black birch, wintergreen, and wormwood, separately reported, and cloves, sandalwood, camphor, and sassafras. There is a considerable production of synthetic oils and perfumery bases, notably oil of wintergreen. These products made artificially by chemical processes are included under Chemicals in Group XI—Fine chemicals.

Comparison with earlier censuses.—Table 122 summarizes the statistics of establishments engaged in the manufacture of essential oils for each census from 1869 to 1914, and gives percentages of increase.

Table 122

	ESSENTIAL OILS.							PER CENT OF INCREASE.[1]					
	1914	1909	1904	1899	1889	1879	1869	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889	1869–1879
Number of establishments	105	68	52	47	67	124	118	54.4	30.8	10.6	−29.9	−46.0	5.1
Persons engaged	435	408	237	(2)	(2)	(2)	(2)	6.6	72.2	.....	.....	.....	.....
Proprietors and firm members	116	73	68	(2)	(2)	(2)	(2)	58.9	7.4	.....	.....	.....	.....
Salaried employees	70	45	37	39	(2)	(2)	(2)	55.6	21.6	−5.1	.....	.....	.....
Wage earners (average number)	249	290	132	168	197	278	(2)	−14.1	119.7	−21.4	(3)	(3)	.....
Primary horsepower	2,309	1,218	849	1,048	465	(2)	34	89.6	43.5	−19.0	125.4	.....	.....
Capital	$1,616,682	$1,365,438	$723,004	$576,286	$102,223	$67,755	$145,475	18.4	88.9	25.5	463.8	50.9	−53.4
Salaries and wages	238,607	184,495	109,713	86,148	37,492	24,030	32,864	29.3	68.2	27.4	129.8	56.0	−26.9
Salaries	105,335	61,505	40,002	24,733	(2)	(2)	(2)	71.3	53.8	61.7	.....	.....	.....
Wages	133,272	122,990	69,711	61,415	(2)	(2)	(2)	8.4	76.4	13.5	.....	.....	.....
Paid for contract work	1,500	20	(2)	(2)	(2)	(2)	(2)	.....	.....	.....	.....	.....	.....
Rent and taxes (including internal revenue)	14,106	9,295	[4] 5,339	(2)	(2)	(2)	(2)	51.8	.....	.....	.....	.....	.....
Cost of materials	1,564,835	1,255,478	1,110,470	588,594	129,735	125,167	274,058	24.6	13.1	88.7	353.7	3.6	−54.3
Value of products	2,313,606	1,737,234	1,464,662	813,495	255,847	248,858	631,445	33.2	18.6	80.0	218.0	2.8	−60.6
Value added by manufacture (value of products less cost of materials)	748,771	481,756	354,192	224,901	126,112	123,691	357,387	55.4	36.0	57.5	78.3	2.0	−65.4

[1] A minus sign (—) denotes decrease. [2] Figures not available. [3] Figures not strictly comparable. [4] Exclusive of internal revenue.

Statistics for the industry were first obtained at the census of 1859. At that census 45 establishments, giving employment to 74 wage earners, were reported, and the value of their products amounted to $124,317. The very considerable decrease in value of products shown for the period 1869–1879, even after making allowance for the fact that the figures for 1869 were reported in currency at that time worth about 80 cents gold to the dollar, taken in connection with the great increase from 1859 to 1869, makes it seem possible that at the census of 1869 the production of essential oils on farms was included in the manufacturing statistics.

The statistics for 1914 show increases over those for 1909 in every item except the average number of wage earners employed. This item shows a considerable decrease, which, no doubt, is due to the fact that some establishments—notably one in Pennsylvania—which in 1909 employed a large number of wage earners, in 1914 were engaged in rectifying crude oil distilled by the farmers.

Persons engaged in the industry.—Table 123 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 123

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY.				
		Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	435	399	36	91.7	8.3
	1909	408	390	18	95.6	4.4
Proprietors and officials	1914	147	145	2	98.6	1.4
	1909	91	91	.....	100.0	.....
Proprietors and firm members	1914	116	115	1	99.1	0.9
	1909	73	73	.....	100.0	.....
Salaried officers of corporations	1914	18	17	1	94.4	5.6
	1909	8	8	.....	100.0	.....
Superintendents and managers	1914	13	13	.....	100.0	.....
	1909	10	10	.....	100.0	.....
Clerks and other subordinate salaried employees.	1914	39	25	14	64.1	35.9
	1909	27	22	5	81.5	18.5
Wage earners (average number), 16 years of age and over.	1914	249	229	20	92.0	8.0
	1909	290	277	13	95.5	4.5

Of the total number of persons engaged in the industry in 1914, 91.7 per cent were males and 8.3 per cent were females; the corresponding figures for 1909 were 95.6 per cent and 4.4 per cent. No wage earners under 16 years of age were reported at either census.

The only decrease shown (17.3 per cent) was in the number of male wage earners employed. Of the total number of males engaged in the industry, wage earners formed 57.4 per cent, clerks and other subordinate salaried employees, 6.3 per cent, and proprietors and officials, 36.3 per cent. Female wage earners, clerks, and proprietors and officials formed 55.6 per cent, 38.9 per cent, and 5.6 per cent, respectively, of the total number of females engaged in the industry.

Wage earners employed, by months.—Table 124 gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 124

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	202	211	168	56.3	53.4	100.0
February	199	215	164	55.4	54.4	97.6
March	215	310	168	59.9	78.5	100.0
April	218	395	141	60.7	100.0	83.9
May	223	380	116	62.1	96.2	69.0
June	288	317	95	80.2	80.3	56.5
July	287	206	88	79.9	52.2	52.4
August	359	234	136	100.0	59.2	81.0
September	307	303	112	85.5	76.7	66.7
October	253	338	120	70.5	85.6	71.4
November	231	336	132	64.3	85.1	78.6
December	206	233	144	57.4	59.0	85.7

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or nearest representative day; those for 1904, the average number employed during the month.

The industry is to a considerable degree seasonal, particularly as to the extraction of the crude oils, though on account of the blending of the operations of establishments engaged in distilling and of establishments engaged in rectifying, the rise and fall in the number of wage earners employed during a year do not harmonize for the different years. For 1914, the summer and autumn months show the greatest activity in the industry as a whole; the largest number of wage earners—359—was reported for August and the smallest number—199—for February, the minimum number being 55.4 per cent of the maximum. In 1909 April was the month of maximum employment and the minimum number was reported for July. In 1904 the months of maximum employment were January and March and the minimum month was July.

Prevailing hours of labor.—In Table 125 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

Table 125

PREVAILING HOURS OF LABOR PER WEEK.	WAGE EARNERS IN ESTABLISHMENTS WITH SPECIFIED NUMBER OF HOURS.			
	Average number.		Per cent of total.	
	1914	1909	1914	1909
Total	249	290	100.0	100.0
48 and under	2	12	0.8	4.1
Between 48 and 54	26	13	10.4	4.5
54	54	41	21.7	14.1
Between 54 and 60	1	9	0.4	3.1
60	132	172	53.0	59.3
Between 60 and 72	1	15	0.4	5.2
72	33	27	13.3	9.3
Over 72	.....	1	.....	0.3

The figures in this table reflect the general tendency toward a shortening of the hours of employment. In 1914 the number of wage earners in establishments where the prevailing hours per week were 60 and over represented 66.7 per cent of the total number of wage earners, and the number employed in establishments where the prevailing hours were less than 60 per week represented 33.3 per cent, whereas in 1909 the corresponding figures were 74.1 per cent and 25.9 per cent.

Character of ownership.—Table 126 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry, for 1914 and 1909.

Table 126

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	105	249	$2,313,606	$748,771
	1909	68	290	1,737,234	481,756
Individuals	1914	65	69	202,974	101,708
	1909	44	172	490,642	188,739
Corporations	1914	16	129	1,848,654	567,084
	1909	11	95	1,181,309	258,455
All others	1914	24	51	261,978	79,979
	1909	13	23	65,283	34,562
Per cent distribution: Individuals	1914	61.9	27.7	8.8	13.6
	1909	64.7	59.3	28.2	39.2
Corporations	1914	15.2	51.8	79.9	75.7
	1909	16.2	32.8	68.0	53.6
All others	1914	22.9	20.5	11.3	10.7
	1909	19.1	7.9	3.8	7.2

This table shows an increase from 1909 to 1914 in the number of establishments under each form of ownership. The greatest number of establishments at both censuses was reported for those under individual ownership, but measured by value of products and value added by manufacture those under corporate ownership are by far the most important.

Size of establishments.—The tendency of the industry to become concentrated in large establishments, or the reverse, is indicated by the statistics given in Table 127.

Table 127

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	105	249	$2,313,606	$748,771
	1909	68	290	1,737,234	481,756
Less than $5,000	1914	71	61	146,100	86,365
	1909	44	64	70,594	44,573
$5,000 to $20,000	1914	20	62	195,040	92,092
	1909	12	40	120,316	62,579
$20,000 to $100,000	1914	10	29	432,808	72,089
	1909	7	108	249,908	111,107
$100,000 to $1,000,000	1914	4	97	1,539,658	498,225
	1909	5	78	1,296,416	263,497
Per cent distribution:					
Less than $5,000	1914	67.6	24.5	6.3	11.5
	1909	64.7	22.1	4.1	9.3
$5,000 to $20,000	1914	19.0	24.9	8.4	12.3
	1909	17.6	13.8	6.9	13.0
$20,000 to $100,000	1914	9.5	11.6	18.7	9.6
	1909	10.3	37.2	14.4	23.1
$100,000 to $1,000,000	1914	3.8	39.0	66.5	66.5
	1909	7.4	26.9	74.6	54.7

There were 4 establishments in 1914 and 5 in 1909 with products valued at more than $100,000. These establishments reported 66.5 per cent of the total value of products in 1914 and 74.6 per cent in 1909. The average value of products per establishment decreased from $28,167 in 1904 to $25,548 in 1909 and to $22,034 in 1914, but the average value added by manufacture increased from $6,811 in 1904 to $7,085 in 1909 and to $7,131 in 1914.

A classification of the establishments according to number of wage earners employed shows that in 1914, 6 establishments reported no wage earners—the proprietors or firm members doing the work—92 employed from 1 to 5 wage earners, 4 from 6 to 20, and but 3 more than 20. In 1909, 5 establishments reported no wage earners, 52 from 1 to 5 wage earners, 9 from 6 to 20, and only 2 more than 20 wage earners.

Engines and power.—Table 128 shows for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 128

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	74	57	42	2,309	1,248	849	100.0	100.0	100.0
Owned	74	52	41	1,959	1,089	817	84.8	89.4	96.2
Steam engines and turbines	47	41	36	1,608	979	709	69.6	80.4	83.5
Internal-combustion engines	24	7	2	251	39	38	10.9	3.2	4.5
Water wheels, turbines, and motors	3	4	3	100	71	70	4.3	5.8	8.2
Rented		5	1	350	129	32	15.2	10.6	3.8
Electric		5	1		104	20		8.5	2.4
Other				350	25	12	15.2	2.1	1.4
Electric	16	5	1	181	104	20	100.0	100.0	100.0
Rented		5	1		104	20		100.0	100.0
Generated by establishments reporting	16			181			100.0		

The use of power was reported by 37 of the 105 establishments, and the total primary power increased 89.6 per cent from 1909 to 1914. Steam engines furnished the greatest part of the power used for the three censuses—69.6 per cent in 1914; 80.4 per cent in 1909; and 85.5 per cent in 1904.

Fuel.—The amount of fuel consumed in the industry in 1914 for all purposes—generation of power, distillation, etc.—comprised 3,959 tons (2,240 pounds) of anthracite; 5,568 tons (2,000 pounds) of bituminous coal; and small quantities of oil and gas. The amount expended for fuel was $30,482.

Expenses.—The census figures for expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation or of a large amount of miscellaneous expense; consequently they can not be used for determining profits. Of the total expenses reported in 1914, aggregating $1,819,048, as shown in Table 122, materials constitute 86 per cent; wages, 7.3 per cent; salaries, 5.8 per cent; and contract work and rent and taxes, nine-tenths of 1 per cent.

SPECIAL STATISTICS RELATING TO PRODUCTS.

Products.—Table 129 gives the quantity and value of the most important products for 1914, 1909, 1904, and 1899. The figures for 1914 and 1909 include the essential oil product of 2 and 6 establishments, respectively, engaged primarily in other lines of manufacture, whereas the figures for 1904 and 1899 do not include subsidiary production.

Table 129	1914 [1]	1909 [1]	1904 [2]	1899
Number of establishments	107	74	52	47
PRODUCTS.				
Total value	$2,505,361	$1,773,304	$1,464,662	$813,495
Essential oils, value	$1,289,482	$1,111,805	$1,023,937	$700,709
Peppermint:				
Pounds	363,991	305,781	130,022	202,550
Value	$601,017	$519,079	$470,037	$188,559
Spearmint:				
Pounds	94,209	33,400	(3)	(3)
Value	$238,074	$83,283	(3)	(3)
Black birch:				
Pounds	41,178	67,053	(3)	(3)
Value	$67,691	$102,045	(3)	(3)
Wintergreen:				
Pounds	6,000	22,281	4,737	2,166
Value	$24,538	$68,983	$15,579	$3,638
Wormwood:				
Pounds	4,702			
Value	$9,040	$338,415	$538,321	$508,512
Other essential oils	$348,522			
Witch-hazel extract:				
Gallons	917,690	691,823	797,700	110,260
Value	$575,938	$419,793	$367,873	$54,649
All other products	$699,041	$241,706	$72,852	$58,137

[1] Includes two establishments in 1914 and six in 1909, which were engaged primarily in other industries.
[2] In addition, essential oils to the value of $14,500, not distributable by kind, were produced by establishments engaged primarily in the manufacture of other products.
[3] Not reported separately.

The principal increases in the industry are shown in the production of oil of peppermint and oil of spearmint. The production of oil of peppermint for 1914 comprises 254,793 pounds of crude oil, valued at $353,076, and 109,198 pounds of refined oil, valued at $248,541. In 1909 there were reported 269,081 pounds of crude peppermint oil, valued at $450,981, and 36,700 pounds of refined oil, valued at $68,098. The production of oil of spearmint increased from 33,400 pounds in 1909 to 94,209 pounds in 1914. There was considerable decrease in some of the less important products reported, such as oils of black birch, wintergreen, wormwood, and tansy. No oil of spruce was reported for 1914, and the statistics for tansy were included with "other essential oils" to avoid the disclosure of individual operators. The group "other essential oils" includes, in addition to oils of sassafras, cedar, pennyroyal, and tansy specifically called for on the schedule of inquiry, considerable quantities of the oils of sandalwood, camphor, cloves, parsley, patchouli, lemon, and orange.

Michigan was the chief producer of crude peppermint and spearmint oils, while New York reported the largest proportion of these products in a refined state. Connecticut reported the greatest production of oil of black birch; Pennsylvania, of oil of wintergreen; and New York, of oil of wormwood. Indiana shows a large increase in the production of essential oils, principally oil of peppermint.

The production of witch-hazel extract increased very materially from 1909 to 1914, Connecticut, New Hampshire, and Pennsylvania being the leading states.

DETAIL STATE TABLES.

The principal statistics secured by the census inquiry concerning the manufacture of essential oils are presented in Tables 130 and 131. Table 130 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the industry. Table 131 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 130.—ESSENTIAL OILS—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	105	249	2,309	$133	$1,565	$2,314
	1909	68	290	1,218	123	1,255	1,737
	1904	52	132	849	70	1,111	1,465
Indiana	1914	29	61	43	30	18	102
	1909	8	15	60	5	2	21
	1904	13	3	130	1	13	25
Michigan	1914	53	38	619	17	226	492
	1909	23	54	365	17	415	486
	1904	6	13	11	8	166	240
New York	1914	5	13	120	$9	$132	$171
	1909	6	18	124	11	127	195
	1904	5	16	59	7	454	502
All other states	1914	18	137	1,527	77	1,189	1,549
	1909	31	203	669	90	711	1,035
	1904	28	100	649	54	478	698

TABLE 131.—ESSENTIAL OILS—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male	Female		Officials.	Clerks, etc.
United States	105	435	116	31	25	14	249	Au 359	Fe 199	533	490	43	.....	.....	$1,616,682	$67,259	$37,976
Indiana	29	105	42	2	.....	.....	61	Je 148	Fe[1] 2	197	157	40	.....	.....	177,790	2,000	.....
Michigan	53	110	62	7	1	2	38	Au 120	Fe[1] 2	124	124	.....	.....	.....	368,876	16,800	3,400
New York	5	23	3	6	1	.....	13	Ja[1] 15	My[1] 11	15	14	1	.....	.....	74,955	12,913	600
All other states[2]	18	197	9	16	23	12	137	.....	.....	197	195	2	.....	.....	995,061	35,646	33,976

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Con.		Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[3]	Internal-combustion engines.[4]	Water wheels and motors.[3]	Electric (rented).	
United States	$133,272	$1,500	$4,838	$9,268	$1,534,353	$30,482	$2,313,606	$748,771	2.309	1,608	601	100	.....	181
Indiana	30,882	.....	2,025	1,288	14,691	3,374	102,457	84,392	43	27	16	.....	.....	.....
Michigan	17,277	.....	.....	2,711	220,628	4,994	491,842	266,220	619	404	215	.....	.....	.....
New York	8,698	1,500	950	139	126,422	5,513	170,551	38,616	120	120	.....	.....	.....	10
All other states[2]	76,915	.....	1,863	5,130	1,172,612	16,601	1,548,756	359,543	1,527	1,057	370	100	.....	171

[1] Same number reported for one or more other months.
[2] All other states embrace: California, 1 establishment; Connecticut, 6; Kentucky, 1; Massachusetts, 1; New Hampshire, 2; New Jersey, 3; Pennsylvania, 2; Tennessee, 1; Wisconsin, 1.
[3] Owned power only.
[4] Includes rented power, other than electric.

BONE, CARBON, AND LAMP BLACK.

GENERAL STATISTICS.

Scope of the industry.—The census classification "bone, carbon, and lamp black" covers establishments engaged primarily in the carbonization of bones in retorts, producing bone black, or animal charcoal, also known technically as "char;" in the manufacture of carbon black by the imperfect combustion of natural gas, the flame impinging upon slate or metallic slabs or revolving cylinders with a deposition of carbon; and in the production of lampblack by the imperfect combustion of coal and wood tar, petroleum, rosin, etc., the dense smoke depositing the soot in chambers. The industry also includes establishments engaged primarily in the manufacture of ivory black, a pigment made by the carbonization of ivory scraps and waste. At censuses prior to 1909 the industry was known as "bone, ivory, and lamp black."

Comparison with earlier censuses.—At the census of 1849, 5 establishments were reported as engaged in the manufacture of bone, ivory, and lamp black; these establishments gave employment to 24 hands and turned out products valued at $42,250. At the census of 1859, 24 establishments were reported, with 168 hands and products valued at $376,710. At the census of 1869, 9 establishments were reported, with 56 hands and products valued at $193,800.

Table 132 summarizes the statistics of establishments in the industry for each census from 1879 to 1914, and gives percentages of increase.

Table 132

	BONE, CARBON, AND LAMP BLACK.						PER CENT OF INCREASE.[1]				
	1914	1909	1904	1899	1889	1879	1909-1914	1904-1909	1899-1904	1889-1899	1879-1889
Number of establishments	27	27	25	15	24	18	.....	8.0	66.7	−37.5	33.3
Persons engaged	437	302	258	123	(2)	(2)	44.7	17.1	109.8	.....	.....
Proprietors and firm members	17	7	11	17	(2)	(2)	142.9	−36.4	−35.3	.....	.....
Salaried employees	81	67	47	21	(2)	(2)	20.9	42.6	123.8	.....	.....
Wage earners (average number)	339	228	200	85	323	224	48.7	14.0	135.3	(3)	(3)
Primary horsepower	1,816	1,023	1,085	365	(2)	(2)	77.5	−5.7	197.3	.....	.....
Capital	$4,995,400	$1,841,966	$1,663,143	$782,247	$1,627,651	$627,350	171.2	10.8	112.6	−51.9	159.4
Salaries and wages	336,001	227,660	153,649	69,757	216,288	80,249	47.6	48.2	120.3	−67.7	169.5
Salaries	105,180	78,333	48,490	23,650	(2)	(2)	34.3	61.5	105.0	.....	.....
Wages	230,821	149,327	105,159	46,107	(2)	(2)	54.6	42.0	128.1	.....	.....
Paid for contract work	350	.....	.....	891	(2)	(2)	.....	.....	.....	.....	.....
Rent and taxes (including internal revenue)	21,995	22,351	[4] 12,156	8,885	(2)	(2)	−1.6	83.9	36.8	.....	.....
Cost of materials	686,240	444,608	203,396	105,712	485,867	440,068	54.3	118.6	92.4	−78.2	10.4
Value of products	1,463,569	1,093,494	647,717	359,787	1,031,030	661,376	33.8	68.8	80.0	−65.1	55.9
Value added by manufacture (value of products less cost of materials)	777,329	648,886	444,321	254,075	545,163	221,308	19.8	46.0	74.9	−53.4	146.3

[1] A minus sign (—) denotes decrease. [2] Figures not available. [3] Figures not strictly comparable. [4] Exclusive of internal revenue.

The variations from census to census may be due to differences in the classification of individual establishments. The large decreases for the decade 1889–1899 are no doubt due in part to changes in classification whereby establishments included under the classification "bone, ivory, and lamp black" in 1889 were assigned to other industries in 1899.

The statistics indicate that there has been a general growth in the industry during each intercensal period covered by the table.

Persons engaged in the industry.—The total number of persons engaged in the industry during 1914 was 437, of whom 339, or 77.6 per cent, were wage earners; 74, or 16.9 per cent, were proprietors and officials; and 24, or 5.5 per cent, were clerks; the last named class including other subordinate salaried employees.

Wage earners employed, by months.—The largest number of wage earners reported for any month of 1914 was 390 for October, and the smallest number—300, equal to 76.9 per cent of the maximum—was reported for March. In 1909 the largest number reported for any month was 243 for October, and the smallest number—215, equal to 88.5 per cent of the maximum—was reported for both February and March. In 1904 the maximum number, 218, was reported for December, and the minimum number, 182, for January, the latter being equal to 83.5 per cent of the maximum.

Character of ownership.—There were 18 establishments in the industry in 1914 under corporate ownership, with products valued at $1,075,089, or 73.5 per cent of the total for the industry; 7 under individual ownership; and 2 firms.

Size of establishments.—The tendency of the industry to become concentrated in large establishments, is indicated by the statistics given in Table 133.

Table 133 VALUE OF PRODUCTS	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	27	339	$1,463,569	$777,329
	1909	27	228	1,093,494	648,886
Less than $5,000	1914	3	7	12,543	8,397
	1909	3	2	7,114	4,502
$5,000 to $20,000	1914	7	19	88,015	53,995
	1909	7	33	86,163	56,624
$20,000 to $100,000	1914	11	92	447,723	285,308
	1909	13	99	519,114	306,517
$100,000 and over	1914	6	221	915,288	429,629
	1909	4	94	481,103	281,243
Per cent distribution: Less than $5,000	1914	11.1	2.1	0.9	1.1
	1909	11.1	0.9	0.6	0.7
$5,000 to $20,000	1914	25.9	5.6	6.0	6.9
	1909	25.9	14.5	7.9	8.7
$20,000 to $100,000	1914	40.8	27.1	30.6	36.7
	1909	48.2	43.4	47.5	47.2
$100,000 and over	1914	22.2	65.2	62.5	55.3
	1909	14.8	41.2	44.0	43.3

Establishments manufacturing products valued at $100,000 and over in 1914—six in number—reported 62.5 per cent of the products. In 1904 no establishment was reported with products valued at $100,000, but in 1909 there were four, their products constituting 44 per cent of the total value of products. The average value of products per establishment increased from $25,909 in 1904 to $40,500 in 1909, and to $54,206 in 1914.

Expenses.—The census figures representing expenses do not purport to show the total cost of manufacture, but of the expenses reported and which are given in Table 132, aggregating $1,044,586, cost of materials constitutes 65.7 per cent; wages, 22.1 per cent; salaries, 10.1 per cent; and amount paid for contract work and rent and taxes, 2.1 per cent.

Engines and power.—In 1914, 24 establishments reported the use of power, with a total of 1,816 horsepower, comprising steam engines of 502 horsepower, gas engines of 1,211 horsepower, and 103 horsepower rented. The last item includes electric motors of 73 horsepower capacity, operated with purchased current and classed as "electric power, rented."

Fuel consumed.—The industry is a large consumer of natural gas. In 1914, 19,470,270,000 cubic feet of gas, 1,872 tons (of 2,000 pounds) of bituminous coal, and 375 tons (of 2,240 pounds) of anthracite were consumed for all purposes.

Products.—In addition to the output of establishments manufacturing bone, carbon, and lamp black as their chief product, a considerable quantity of lampblack was reported by establishments in the paint industry manufacturing pigments, and of bone black by establishments in the fertilizer industry. Table 134 shows the total production of these blacks for 1914 and 1909 so far as statistics are available.

Table 134	BONE, CARBON, AND LAMP BLACK. 1914	1909
Number of establishments	39	57
Bone, carbon, and lamp black industry	27	27
Paint and varnish industry	7	30
Fertilizer industry	5	
PRODUCTS.		
Total value	$2,971,633	$2,160,552
Bone, carbon, and lamp black industry	1,463,569	1,093,494
Paint and varnish industry	94,898	105,063
Fertilizer industry	1,413,166	961,995
Bone black (animal charcoal):		
Number of establishments	7	7
Pounds	44,509,000	(1)
Value	$1,532,000	$1,070,333
Carbon black:		
Number of establishments	20	18
Pounds	22,869,000	(1)
Value	$918,091	$625,514
Lampblack:		
Number of establishments	12	32
Value	[2] $503,856	439,707
All other products	$17,686	$24,996

[1] Figures not available.
[2] Includes $215,212, the value of 4,786,394 pounds; and $288,644 for which no quantity was reported. Total quantity estimated as 11,200,000 pounds.

The total production of bone, carbon, and lamp black reported for 1914 was valued at $2,953,947, of which amount a little more than one-half was reported by establishments engaged primarily in the manufacture of fertilizers, paints, and varnishes. Approximately one-half of the total represented the value of bone black, one-third that of carbon black, and one-sixth that of lampblack. This production does not include black pigments made and consumed by paint or other manufacturers and marketed in paint or other form. The production of such intermediates was not reported.

DETAIL STATE TABLES.

The principal statistics secured by the census inquiry concerning the manufacture of bone, carbon, and lamp blacks are presented in Tables 135 and 136. Table 135 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for this industry. Table 136 presents for 1914, by states, the more detailed statistics of the industry.

TABLE 135.—BONE, CARBON, AND LAMP BLACK—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	27	339	1,816	$231	$686	$1,464
	1909	27	228	1,023	149	445	1,093
	1904	25	209	1,085	105	203	648
West Virginia	1914	18	161	1,016	106	387	851
	1909	16	101	611	66	249	596
All other states	1914	9	178	800	125	299	613
	1909	11	127	382	83	196	497

TABLE 136.—BONE, CARBON, AND LAMP BLACK—DETAIL STATISTICS, BY STATES: 1914.

	United States.	West Virginia.	All other states.[1]
Number of establishments	27	18	9
Persons engaged	98	68	30
Proprietors and firm members	17	12	5
Salaried officers, superintendents, and managers	57	43	14
Clerks and other subordinate salaried employees	24	13	11
Male	15	9	6
Female	9	4	5
Wage earners (average number)	339	161	178
Number 15th day of month:			
Maximum—			
Month	October.	November.	.....
Number	390	212	.....
Minimum—			
Month	March.	[2] February.	.....
Number	300	127	.....
Wage earners Dec. 15, or nearest representative day	381	195	186
16 years of age or over—			
Male	376	194	182
Female	5	1	4
Capital	$4,095,499	$4,213,139	$782,261
Expenses:			
Salaries and wages	$336,001	$171,021	$164,980
Officials	$84,064	$56,681	$27,383
Clerks, etc	$21,116	$8,767	$12,349
Wage earners	$230,821	$105,573	$125,248
For contract work	$350	$350	.....
Rent and taxes	$21,995	$14,702	$7,293
Rent of factory	$6,419	$5,239	$1,180
Taxes, including internal revenue and corporation income	$15,576	$9,463	$6,113
For materials	$686,240	$386,854	$299,386
Principal materials	$481,039	$201,727	$279,312
Fuel and rent of power	$205,201	$185,127	$20,074
Value of products	$1,463,569	$851,332	$612,237
Value added by manufacture	$777,329	$464,478	$312,851
POWER.			
Primary horsepower	1,816	1,016	800
Steam engines	502	110	392
Internal-combustion engines	[3] 1,241	906	[3] 335
Electric (rented)	73	.....	73
Electric horsepower generated in establishment reporting	8	8	.....

[1] All other states embrace: Massachusetts, 2 establishments; New Jersey, 1; New York, 1; Ohio, 1; Oklahoma, 1; Pennsylvania, 3.
[2] Same number reported for one or more other months.
[3] Includes rented power other than electric.

THE MANUFACTURE OF GAS.

SUMMARY AND ANALYSIS.

Scope of the industry.—This report presents statistics for establishments making gas for sale for light, heat, or power, including those operated by municipal governments. It covers the production of gas by various processes, including the destructive distillation of coal, wood, resins, oils, or other carbonaceous substances; the action of steam upon incandescent carbon; the volatilization of petroleum or the petroleum distillates; and the action of water upon calcium carbide.

Many residences, hotels, and mercantile establishments have plants for making acetylene or other gas for light, heat, or power, and many manufacturing and other industrial concerns make gas—usually "producer gas"—for use as fuel in their own establishments. The increased use of gas engines has led to a marked development in such production of gas by establishments for their own consumption. The production of gas for the exclusive consumption of the concerns in which it is produced is not covered nor is the blast-furnace gas of pig-iron furnaces.

The gas produced in by-product coke plants, except a comparatively small proportion which is sold to gas companies and by them in turn to their customers, does not figure in this report. The quantity manufactured by this process is given in Table 16.

A further class of establishments which is not included in the tables consists of those engaged in selling gas which has been purchased from establishments that manufacture it. The business is merchandising, and the gas they sell has been reported by the establishments in which it was manufactured.

Establishments in the industry produce not only coal gas, water gas, carbureted water gas, mixed coal and water gas, oil gas, and acetylene, but also as by-products, tar, benzol, hydrocarbons, ammonia liquor, ammonium sulphate, coke, cyanides, and other products.

Statistics of this industry were secured at the census of 1849 and at each subsequent census, except that of 1879. In 1889 it was for the first time made the subject of a special report. A brief historical account of the industry is given in the report made at the census of 1899.

Comparative summary for the United States.—Table 1 summarizes the statistics of the industry for each census from 1889 to 1914, inclusive, and gives percentages of increase.

Table 1	Number or amount.					Per cent of increase.[1]			
	1914	1909	1904	1899	1889	1909-1914	1904-1914	1899-1909	1889-1899
Number of establishments	1,284	1,296	1,019	877	742	−0.9	26.0	47.8	18.2
Persons engaged	63,993	51,007	40,043	28,363	(2)	25.5	59.8	79.8	.....
Proprietors and firm members	78	277	71	.....	(2)	−71.8	.....	.....	.....
Salaried employees	20,123	13,515	9,406	5,904	(2)	48.9	113.9	128.9	.....
Wage earners (average number)	43,792	37,215	30,566	22,459	12,996	17.7	43.3	65.7	72.8
Primary horsepower	245,715	128,350	73,101	31,797	26,475	94.2	236.1	303.6	20.1
Capital	$1,252,421,584	$915,536,762	$72,035,204	$567,000,506	$258,771,795	36.8	72.7	61.5	119.1
Salaries and wages	$44,330,684	$33,316,068	$25,521,616	$17,709,796	(2)	33.1	73.7	88.1	.....
Salaries	$17,529,020	$12,385,371	$8,463,699	$5,273,500	(2)	41.5	107.1	134.8	.....
Wages	$26,801,664	$20,930,697	$17,057,917	$12,436,296	$8,499,625	28.0	57.1	68.3	46.3
Paid for contract work	$551,760	$114,570	$288,452	(2)	(2)	381.5	.....	.....	.....
Rent and taxes (including internal revenue)	$13,388,969	$7,836,275	[3] $6,250,790	(2)	(2)	70.8	.....	.....	.....
Cost of materials	$76,779,288	$52,427,844	$37,180,066	$20,605,356	$14,037,087	46.4	106.5	154.4	46.8
Value of products	$220,237,790	$166,814,371	$125,144,945	$75,716,693	$56,987,290	32.0	76.0	120.3	32.9
Value added by manufacture (value of products less cost of materials)	$143,458,502	$114,386,527	$87,964,879	$55,111,337	$42,950,203	25.4	63.1	107.6	28.3
Quantity of gas made (1,000 cubic feet)	203,639,260	150,835,793	112,549,979	67,093,553	36,519,512	35.0	80.9	124.8	83.7

[1] A minus sign (−) denotes decrease. [2] Figures not available. [3] Exclusive of internal revenue.

The value of products of the industry in 1914 was nearly four times as great as in 1889, the period covered being a quarter of a century, and the number of wage earners employed in 1914 was approximately three and a half times the number employed in 1889.

The census of 1914 covered 1,284 establishments, in which 43,792 wage earners were employed, with products valued at $220,237,790. It should be borne in mind that in most cases this value represents that of the product delivered to the consumer, and that a considerable part of the expenses of the industry are connected with distribution. It is partly for this reason that the cost of materials constitutes a relatively smaller proportion of the total value of products in this industry than in most others.

In 1914 the cost of materials was equal to 34.9 per cent of the value of products, in 1909 to 31.4 per cent, in 1904 to 29.7 per cent, in 1899 to 27.2 per cent, and in 1889 to 24.7 per cent, showing a progressive increase in the proportion that the expense for materials bears to the total value of products.

While the census statistics of capital are defective (see "Explanation of terms"), there can be no doubt that the amount of capital invested is much higher

in proportion to value of products in the illuminating gas industry than in most others, because of the large investment in mains and distributing systems.

Although the number of establishments reporting was 12 less in 1914 than in 1909, the chief items show an increase at every census over the preceding census. The increases from census to census, while varying both in amount and per cent, were generally large. The increase in the quantity of gas made and sold is the most accurate indication of the development of the industry. The quantity of gas reported for 1914 was 458 per cent greater than the output in 1889, while the increase in value of products during this period of 25 years was at the rate of 286 per cent. The difference between these percentages indicates a considerable decrease in the average unit value of gas, especially as of late years the value of products includes a considerable amount representing the value of by-products and of lamps and appliances sold.

Summary, by states.—Table 2 summarizes the more important statistics, the states being arranged according to the value of products reported for 1914.

Table 2

STATE.	CENSUS OF 1914.															PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.					Value of products.					Value added by manufacture.					Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Rank. 1904	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Rank. 1904	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Rank. 1904	1909-1914	1904-1909	1899-1904	1909-1914	1904-1909	1899-1904	1909-1914	1904-1909	1899-1904
United States	1,284	43,792	100.0	...	...	...	$220,237,790	100.0	...	...	...	$143,458,502	100.0	...	...	...	17.7	21.8	36.1	32.0	33.3	65.3	25.4	30.0	59.6
New York	131	10,090	23.0	1	1	1	52,815,589	24.0	1	1	1	31,255,803	21.8	1	1	1	57.1	−8.6	30.6	24.7	19.9	68.8	14.4	12.1	61.9
Illinois	75	3,890	8.9	2	2	2	28,170,560	12.8	2	2	2	20,135,071	14.0	2	2	2	−38.3	112.6	25.0	33.8	31.5	82.4	35.7	29.2	69.4
Pennsylvania	99	2,796	6.4	4	3	3	16,745,216	7.6	3	3	3	10,305,081	7.2	3	3	3	−10.4	8.2	−8.3	5.7	46.5	37.3	12.2	53.2	62.4
Massachusetts	61	3,182	7.3	3	4	5	15,751,637	7.1	4	4	4	9,800,244	6.8	6	4	4	38.8	24.1	31.1	23.7	37.8	36.9	34.9	47.1	17.1
New Jersey	43	2,205	5.0	7	5	7	14,020,050	6.4	5	5	5	9,944,588	6.9	5	5	5	14.0	40.2	3.6	42.5	54.4	69.1	42.4	44.0	62.6
California	66	2,317	5.3	6	7	10	13,578,367	6.2	6	6	7	10,156,296	7.1	4	6	6	39.2	96.5	19.9	52.1	64.9	71.2	60.6	49.6	86.6
Michigan	59	2,349	5.4	5	6	8	10,440,641	4.7	7	7	9	7,084,447	4.9	7	7	9	32.6	37.6	95.6	54.7	74.5	162.5	53.3	68.2	133.7
Missouri	35	1,342	3.1	9	9	6	7,196,994	3.3	8	8	6	5,054,085	3.5	8	8	7	42.6	−48.5	118.9	55.2	−17.0	94.1	48.0	−10.3	79.5
Indiana	60	1,668	3.8	8	10	12	6,398,147	2.9	9	12	15	3,787,577	2.6	9	14	15	79.7	49.4	82.6	103.3	71.1	77.9	85.2	61.3	63.0
Wisconsin	47	1,240	2.8	10	8	9	5,294,983	2.4	10	9	10	3,479,336	2.4	10	9	10	16.7	16.7	71.2	32.3	37.4	108.4	33.2	21.9	94.4
Connecticut	27	1,209	2.8	12	11	11	4,745,720	2.2	11	10	11	3,274,687	2.3	11	11	11	30.6	44.7	80.8	37.8	34.7	80.0	34.2	40.9	63.6
Minnesota	47	1,038	2.4	13	12	13	4,158,606	1.9	12	15	12	2,477,336	1.7	13	13	13	22.4	47.5	53.3	44.7	41.4	88.9	20.6	45.8	82.5
Maryland	18	1,234	2.8	11	17	23	4,156,885	1.9	13	11	13	2,751,515	1.9	12	10	12	52.7	109.7	−4.2	29.0	61.6	11.0	6.1	68.9	16.7
Iowa	113	768	1.7	14	13	15	4,065,908	1.8	14	14	16	2,428,077	1.7	14	15	16	−4.7	72.2	107.1	40.5	57.9	126.7	36.3	47.5	100.0
Rhode Island	6	605	1.4	17	21	17	2,462,161	1.1	16	17	17	1,578,605	1.1	17	17	17	44.7	−10.8	7.4	34.3	16.0	63.1	21.1	20.9	48.7
Washington	13	630	1.4	15	18	30	2,369,188	1.1	17	18	26	1,610,118	1.1	16	21	26	35.5	330.6	.....	40.7	179.7	90.5	57.4	125.8	89.5
Texas	27	613	1.4	16	16	25	2,185,114	1.0	18	19	25	1,416,657	1.0	18	18	25	6.6	250.6	.....	32.9	128.6	89.2	28.9	110.5	82.5
Virginia	22	533	1.2	20	24	21	2,149,938	1.0	19	21	19	1,399,681	1.0	19	20	20	41.0	41.0	101.5	46.1	50.2	102.9	34.5	49.8	97.4
Georgia	19	500	1.3	19	19	14	2,020,780	0.9	20	22	18	1,367,791	1.0	20	19	18	22.3	−4.8	77.9	41.8	34.3	60.5	29.4	37.3	48.4
Nebraska	48	354	0.8	25	22	20	1,928,116	0.9	21	23	21	1,322,425	0.9	21	22	21	−11.5	32.4	4.1	36.3	55.2	73.7	36.3	44.3	71.9
Colorado	8	387	0.9	23	25	29	1,587,964	0.7	22	20	23	1,025,712	0.7	24	24	24	26.4	180.7	.....	7.8	82.9	53.9	22.9	52.6	37.0
Tennessee	12	506	1.2	21	20	19	1,571,006	0.7	23	24	22	1,052,703	0.7	23	23	22	20.0	17.9	64.2	22.5	54.5	45.1	13.8	47.8	43.2
Oregon	9	385	0.9	24	27	39	1,528,060	0.7	24	27	29	1,124,032	0.8	22	26	27	48.1	.....	.....	68.1	98.9	161.1	58.5	90.1	205.7
Ohio	25	398	0.9	22	14	4	1,431,826	0.6	26	13	8	952,045	0.7	25	12	8	−40.2	−70.3	61.2	−50.4	−36.0	22.4	−57.7	−35.0	13.8
Alabama	14	214	0.5	31	28	27	1,124,603	0.5	27	28	31	737,842	0.5	27	28	31	173.7	90.4	.....	63.8	93.5	52.4	56.0	76.5	47.3
Florida	14	349	0.8	26	31	33	1,049,132	0.5	28	29	32	710,946	0.5	28	29	32	66.2	.....	.....	79.1	86.3	84.7	76.4	73.0	80.6
New Hampshire	14	244	0.6	28	29	26	841,580	0.4	29	30	28	517,288	0.4	29	30	28	−1.2	73.9	17.4	44.9	19.5	36.5	28.9	26.1	17.8
Maine	17	220	0.5	30	30	32	768,854	0.3	30	31	30	477,157	0.3	30	31	29	1.9	116.0	.....	40.1	23.6	55.8	41.5	7.0	48.6
North Carolina	20	210	0.5	32	33	31	716,379	0.3	31	32	35	464,406	0.3	31	33	35	39.1	45.2	.....	94.1	65.5	71.5	88.6	61.8	.....
Utah	4	208	0.5	33	32	38	616,848	0.3	32	33	37	337,482	0.2	34	35	37	24.6	.....	.....	68.5	128.8	.....	70.2	54.7	.....
Kentucky	13	232	0.5	29	23	18	588,915	0.3	33	26	20	398,747	0.3	32	27	19	−39.8	−7.4	49.5	−41.3	4.5	43.2	−42.1	−1.1	31.0
Delaware	8	125	0.3	35	34	35	570,426	0.3	34	34	33	365,416	0.3	33	32	34	−2.3	.....	.....	56.5	19.3	52.5	43.1	36.4	25.5
South Carolina	12	136	0.3	34	35	30	496,225	0.2	35	35	36	327,052	0.2	35	34	36	7.1	17.6	3.8	48.5	73.1	12.2	48.6	64.2	.....
South Dakota	17	80	0.2	37	36	37	379,543	0.2	36	37	39	243,116	0.2	36	39	38	−25.9	.....	.....	36.6	87.8	.....	53.8	58.0	.....
Vermont	9	59	0.1	39	38	40	337,262	0.2	37	36	40	214,863	0.2	37	36	40	.....	.....	.....	21.2	.....	.....	20.2	.....	.....
Mississippi	8	113	0.3	36	37	36	291,959	0.1	38	38	41	181,314	0.1	38	37	42	11.9	.....	.....	14.1	104.8	.....	6.5	.....	.....
North Dakota	9	52	0.1	40	44	43	273,022	0.1	39	42	43	163,639	0.1	41	42	43	.....	.....	.....	37.2	95.1	.....	35.5	.....	.....
Arizona	9	59	0.1	39	45	44	267,249	0.1	40	44	45	177,569	0.1	39	44	45	.....	.....	.....	94.8	.....	.....	.....	.....	.....
Montana	6	59	0.1	39	40	...	265,686	0.1	41	43	...	171,056	0.1	40	43	...	.....	.....	.....	40.0	.....	.....	.....	.....	.....
Kansas	12	62	0.1	38	42	24	224,502	0.1	42	40	27	158,079	0.1	42	40	30	8.0	−83.5	.....	8.1	−60.2	60.9	4.6	−50.0	38.5
Idaho	4	44	0.1	41	43	...	171,299	0.1	43	46	...	119,351	0.1	43	46	...	.....	.....	.....	99.1	.....	.....	.....	.....	.....
Oklahoma	5	44	0.1	41	41	42	146,795	0.1	44	45	44	94,839	0.1	44	45	44	.....	.....	.....	27.8	.....	.....	.....	.....	.....
West Virginia	5	38	0.1	42	39	34	107,936	(2)	45	41	38	58,718	(2)	45	38	39	.....	.....	.....	−46.7	28.5	4.6	.....	.....	−16.9
Nevada	3	16	(2)	43	47	...	76,712	(2)	46	47	...	52,475	(2)	46	47	...	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	11	929	2.1	...	...	...	4,149,317	1.9	...	...	...	2,703,235	1.9	...	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 26; a minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or is less than $100,000 for value of products or value added by manufacture, or where comparable figures can not be given.
[2] Less than one-tenth of 1 per cent.

In determining the rank of the states, all states are considered, regardless of whether or not they are shown separately in the table; hence some omissions occur in the several series of numbers indicating rank, as certain states included in "all other states" held a higher rank in some items than some of the states for which separate figures are given.

The industry is well distributed throughout the United States, some establishments being reported for every state. New York is the most important state in the manufacture of gas; in 1914 it reported 24 per cent of the total value of products and 23 per cent of the wage earners. Illinois, which ranked second, reported 12.8 per cent of the total value of products

and 8.9 per cent of the wage earners. Pennsylvania, Massachusetts, New Jersey, California, and Michigan were third, fourth, fifth, sixth, and seventh, respectively, in rank in 1914 as to value of products. Together, these seven leading states reported 68.8 per cent of the total value of products, 61.3 per cent of the wage earners in the industry, and 68.8 per cent of the value added by manufacture.

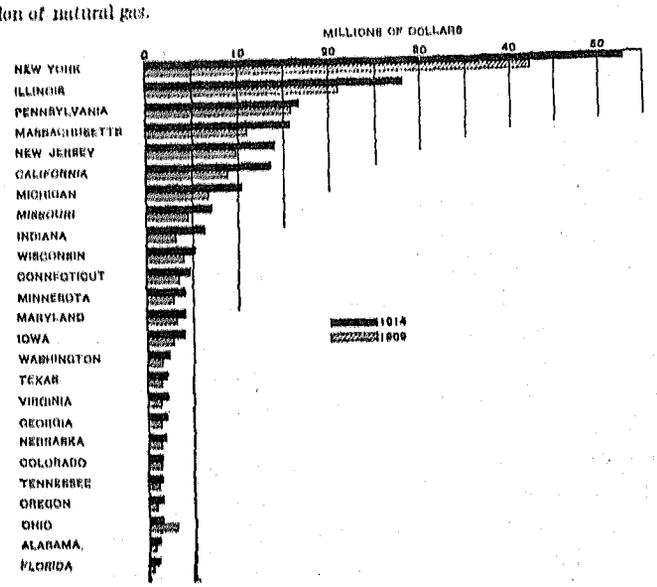
Large increases in value of products between 1904 and 1914 are shown in the following states: Washington, 294 per cent; Utah, 286 per cent; Indiana, 248 per cent; Oregon, 235 per cent; and Florida, 234 per cent. On the other hand, conspicuous decreases occurred during the decade in Ohio, Kansas, and West Virginia, presumably because of the substitution of natural for manufactured gas.

A few of the less important states advanced noticeably in rank, as measured by value of products, from 1904 to 1914—Washington, from twenty-sixth to seventeenth place; Texas, from twenty-fifth to eighteenth; Oregon, from twenty-ninth to twenty-fourth; Utah, from thirty-seventh to thirty-second; and Arizona, from forty-fifth to fortieth. Ohio dropped from eighth place in 1904 to twenty-sixth in 1914; Kentucky, from twentieth to thirty-third; Kansas, from twenty-seventh to forty-second; and West Virginia, from thirty-eighth to forty-fifth.

The accompanying diagram shows graphically the value of products for 1914 and 1909 for states which reported products to the value of $1,000,000 in 1914.

GAS, ILLUMINATING AND HEATING—VALUE OF PRODUCTS FOR LEADING STATES: 1914 AND 1909.

NOTE.—The decrease in Ohio is due to the increase in the domestic consumption of natural gas.



Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, and the average number of wage earners distributed by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 3	Census year.	PERSONS ENGAGED IN THE INDUSTRY.				
CLASS.		Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	63,993	61,156	2,837	95.6	4.4
	1909	51,007	49,231	1,776	96.5	3.5
Proprietors and officials	1914	2,987	2,968	19	99.3	0.7
	1909	2,986	2,967	19	99.3	0.7
Proprietors and firm members	1914	78	76	2	97.4	2.6
	1909	277	273	4	98.6	1.4
Salaried officers of corporations	1914	954	941	13	98.6	1.4
	1909	990	981	9	99.1	0.9
Superintendents and managers	1914	1,955	1,951	4	99.8	0.2
	1909	1,719	1,713	6	99.7	0.3
Clerks and other subordinate salaried employees	1914	17,214	14,593	2,621	84.8	15.2
	1909	10,806	9,121	1,685	84.4	15.6
Wage earners (average number)	1914	43,792	43,595	197	99.6	0.4
	1909	37,215	37,143	72	99.8	0.2
16 years of age and over	1914	43,764	43,567	197	99.5	0.5
	1909	37,198	37,127	71	99.8	0.2
Under 16 years of age	1914	28	28	.....	100.0	.....
	1909	17	16	1	94.1	5.9

Of the 63,993 persons engaged in the industry during 1914, more than two-thirds (68.4 per cent) were wage earners, and 26.9 per cent were clerks and other salaried employees. Proprietors and firm members are few and the reduction in number in 1914, as compared with 1909, is probably due to changes of some establishments to corporate form of ownership, and former proprietors and firm members now figuring as officers of corporations, superintendents, and managers. Except in the class of clerks and other subordinate salaried employees, comparatively few females are employed and the relative importance of females in this class has been maintained, notwithstanding the large increase, actual and proportional, in clerical employees. Females constituted 15.2 per cent of the clerks in 1914 and 15.6 per cent in 1909, while the clerks as a class constituted 26.9 per cent of all persons engaged in the industry in 1914 and 21.2 per cent in 1909. The industry is one in which the wage earners engaged in manufacturing operations are men; only a few women and boys being reported and though classed as wage earners, probably belong in the clerical class.

Figures for employees, by states, will be found in Table 27.

This industry requires in the manufacturing processes only a comparatively small number of wage earners, much the larger number, together with most of the clerks, being employed in the distribution service.

Table 4 gives, for the several classes of persons engaged in the industry, the percentage of increase from 1909 to 1914 and the per cent distribution at the two censuses.

Table 4

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
	Total.	Male.	Female.	Total.		Male.		Female.	
				1914	1909	1914	1909	1914	1909
All classes	25.5	24.2	59.7	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	(2)	(2)	.....	4.7	5.9	4.8	6.0	0.7	1.0
Proprietors and firm members	−71.8	−72.2	.....	0.1	0.6	0.1	0.5	0.1	0.2
Salaried officers of corporations	−3.6	−4.1	.....	1.5	1.9	1.5	2.0	0.5	0.5
Superintendents and managers	13.7	13.9	.....	3.1	3.4	3.2	3.5	0.1	0.3
Clerks and other subordinate salaried employees	59.3	60.0	55.5	26.9	21.2	23.9	18.5	92.4	94.9
Wage earners (average number)	17.7	17.4	.....	68.4	72.9	71.3	75.5	6.9	4.1
16 years of age and over	17.7	17.3	.....	68.4	72.9	71.3	75.5	6.9	4.1
Under 16 years of age	.....	.....	.....	(2)	(2)	(2)	(2)	.....	(2)

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

[2] Less than one-tenth of 1 per cent.

The average number of wage earners, by states, for the censuses of 1914, 1909, and 1904 is given in Table 26. The distribution of the average number by sex and age is not shown for the individual states, but Table 27 gives such a distribution for 1914 for the number employed on December 15, or the nearest representative day.

In order to compare the distribution of persons engaged in the industry according to occupational status in 1914 and 1909 with that in 1904, it is necessary to use the classification employed at the earlier census. Such a comparison is made in Table 5. The table shows that salaried employees increased more than twice as rapidly as wage earners.

Table 5

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.							
	Number.			Per cent distribution.			Per cent of increase.	
	1914	1909	1904	1914	1909	1904	1909–1914	1904–1909
Total	63,993	51,007	40,043	100.0	100.0	100.0	25.4	27.4
Proprietors and firm members	78	277	71	0.1	0.5	0.2	−71.8	290.1
Salaried employees	20,123	13,515	9,406	31.5	26.5	23.5	48.9	43.7
Wage earners (average number)	43,792	37,215	30,566	68.4	73.0	76.3	17.6	21.8

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

The largest number of wage earners reported for any month of 1914 was 47,572, in June, and the smallest number, 40,994, in December, the minimum number being equal to 86.2 per cent of the maximum. In 1909 the maximum number for any month, also in June, was 40,412, and the minimum, in February, 32,562, the latter forming 80.6 per cent of the former. In 1904 the maximum number, 32,449, was in July, and the minimum, 28,115, in February, formed 86.6 per cent of the maximum.

Table 6

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	41,603	33,115	28,794	87.4	81.9	88.7
February	41,017	32,562	28,115	86.2	80.6	86.6
March	41,488	34,314	28,797	87.2	84.9	88.7
April	44,276	37,422	30,921	93.1	92.6	95.3
May	47,204	39,456	31,906	99.2	97.6	98.3
June	47,572	40,412	32,298	100.0	100.0	99.5
July	46,962	40,225	32,449	98.7	99.5	100.0
August	45,772	38,486	31,677	96.2	95.2	97.6
September	44,213	37,800	31,188	92.9	93.5	96.1
October	42,999	38,065	30,674	90.4	94.2	94.5
November	41,404	37,566	30,325	87.0	93.0	93.5
December	40,994	37,122	29,648	86.2	91.8	91.4

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Although more gas is usually consumed in winter than in summer, most of the work connected with the distributing system is subject to seasonal and weather conditions, and the maximum of employment for outside workers, and as a consequence for all wage earners, occurs during the summer months, when the works and mains are put in repair and extended.

Table 7 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which 500 or more wage earners were employed during the year—20 in number. The District of Columbia, in which an average of more than 500 wage earners was employed in 1914, is omitted from the table, as its inclusion would disclose individual operations.

The months of maximum and minimum employment for 1914, and the number of wage earners reported for these months, are given, by states, in Table 27.

Table 7

WAGE EARNERS IN THE INDUSTRY: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	43,792	41,603	41,017	41,488	44,276	47,204	**47,572**	46,962	45,772	44,213	42,999	41,404	*40,994*	86.2
California	2,317	2,327	2,264	2,350	2,365	**2,412**	2,370	2,375	2,285	2,347	2,263	2,234	*2,212*	91.7
Connecticut	1,209	1,034	1,040	*1,023*	1,233	1,277	1,326	**1,428**	1,311	1,259	1,231	1,186	1,160	71.6
Georgia	560	471	*468*	496	576	629	**668**	633	621	564	543	530	521	70.1
Illinois	3,890	*3,353*	3,410	3,462	4,310	**4,507**	4,286	4,046	4,488	3,916	3,977	3,450	3,475	75.7
Indiana	1,668	*1,435*	1,532	1,551	1,645	1,843	1,931	**1,979**	1,920	1,689	1,548	1,487	1,456	72.5
Iowa	768	705	*693*	711	781	797	**844**	**844**	795	792	771	744	739	82.1
Maryland	1,234	1,164	1,068	1,247	1,323	**1,459**	1,419	1,241	*1,066*	1,138	1,300	1,240	1,143	73.1
Massachusetts	3,182	2,939	2,934	*2,930*	2,986	3,323	**3,509**	3,462	3,359	3,264	3,211	3,200	3,067	83.5
Michigan	2,349	2,275	2,234	2,244	2,339	2,584	**2,591**	2,529	2,459	2,350	2,222	*2,157*	2,204	83.2
Minnesota	1,038	880	878	*869*	1,052	**1,236**	1,170	1,144	1,162	1,105	1,054	995	911	70.3
Missouri	1,342	1,359	1,279	*1,261*	1,390	1,374	**1,454**	1,404	1,276	1,311	1,365	1,365	1,266	86.7
New Jersey	2,205	2,237	2,141	2,267	2,260	2,376	**2,414**	2,401	2,296	2,132	2,021	*1,938*	1,977	80.3
New York	10,090	9,867	9,718	*9,589*	10,051	10,655	**10,744**	10,541	10,378	10,092	10,018	9,786	9,641	89.3
Pennsylvania	2,796	2,620	*2,551*	2,561	2,711	2,771	2,934	3,155	3,084	**3,263**	2,660	2,594	2,648	78.2
Rhode Island	605	544	*539*	541	603	651	**703**	677	651	597	610	583	561	76.7
Tennessee	506	480	412	*394*	410	**595**	593	563	569	575	484	460	537	64.5
Texas	613	559	*516*	549	550	591	569	626	620	582	685	718	**791**	65.2
Virginia	533	489	482	490	546	638	**680**	620	521	502	*467*	472	489	68.7
Washington	630	586	634	634	702	694	619	644	568	694	649	576	*560*	79.8
Wisconsin	1,240	1,110	1,069	1,193	1,258	1,330	1,396	**1,455**	1,395	1,239	1,250	1,149	*1,036*	71.2

Prevailing hours of labor.—In Table 8 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment is classified as a total, even though a few employees worked a greater or less number of hours.

Table 8

AVERAGE NUMBER OF WAGE EARNERS.

STATE.	Census year.	Total.	In establishments where the prevailing hours of labor per week were—							
			48 and under.	Between 48 and 54.	54	Between 54 and 60.	60	Between 60 and 72.	72	Over 72.
United States	1914	43,792	2,914	133	9,213	8,548	9,248	9,692	994	3,050
	1909	37,215	474	21	1,049	2,716	5,806	5,786	2,890	18,473
California	1914	2,317	1,530	3	397	34	42	306	.....	5
	1909	1,666	127	7	.....	965	4	533	8	22
Connecticut	1914	1,209	94	....	50	53	214	693	3	102
	1909	926	11	....	1	57	173	264	.....	420
Georgia	1914	560	.....	....	2	.....	181	3	41	333
	1909	459	.....	....	2	5	.....	.....	36	416
Illinois	1914	3,890	15	....	100	2,801	125	307	.....	542
	1909	6,301	7	....	3	138	562	144	8	5,439
Indiana	1914	1,668	12	....	53	636	503	294	76	94
	1909	928	5	....	.....	55	161	248	3	456
Iowa	1914	768	27	....	14	126	322	148	67	64
	1909	806	43	5	67	143	46	101	24	377
Maryland	1914	1,234	3	....	.....	1,124	46	33	28	.....
	1909	476	1	....	.....	6	16	8	4	441
Massachusetts	1914	3,182	329	....	22	749	437	1,323	.....	322
	1909	2,292	23	....	735	314	12	195	14	999
Michigan	1914	2,349	.....	....	109	967	270	783	87	133
	1909	1,771	1	....	22	49	779	353	46	521
Minnesota	1914	1,038	13	....	18	633	43	287	17	27
	1909	848	15	....	4	.....	9	7	813	.....
Missouri	1914	1,342	19	....	11	6	1,126	150	10	20
	1909	941	4	....	1	6	13	71	33	813
New Jersey	1914	2,205	7	3	102	46	233	1,731	26	57
	1909	1,917	9	....	15	.....	47	247	4	1,595
New York	1914	10,090	267	3	7,527	305	886	516	496	110
	1909	6,422	22	....	2	100	400	888	1,661	3,349
Pennsylvania	1914	2,796	6	6	114	41	2,170	200	1	258
	1909	3,119	16	3	.....	24	1,780	705	15	576
Rhode Island	1914	605	64	....	.....	47	492	2	.....	.....
	1909	412	.....	....	.....	1	282	83	.....	46
Tennessee	1914	506	1	....	.....	.....	202	265	16	22
	1909	422	.....	....	.....	.....	1	81	103	237
Texas	1914	613	6	....	141	7	89	318	.....	52
	1909	575	10	....	33	65	186	134	45	102
Virginia	1914	533	2	....	.....	33	69	132	.....	297
	1909	378	2	....	.....	.....	3	39	.....	334
Washington	1914	630	63	76	18	84	383	.....	.....	6
	1909	465	.....	2	.....	99	267	84	13	.....
Wisconsin	1914	1,240	38	....	27	44	350	671	.....	110
	1909	1,063	9	....	14	49	703	35	.....	253

The statistics reflect the tendency toward a shortening of the hours of employment, but the change has not been as great as the figures would indicate. In some cases, in 1909, the hours of labor per week chargeable to the men employed directly in gas manufacture, even though they were a minority of the total number reported for shops and manufacturing plants, were credited to all wage earners. As a result, the number of wage earners in the over-72-hours per week group, 1909, includes a large number that belong in lower groups, and comparisons between the several groups for the two years are futile. This condition, though existing to some extent in 1914, is apparently not as pronounced as in 1909.

The most important single group in 1914 was that for establishments where the prevailing hours of labor were between 60 and 72 per week, showing 9,692 wage earners, or 22.1 per cent of the total number em-

ployed. This proportion was closely approached by the three immediately lower groups—the 60-hour, 54 and 60, and 54-hour groups—which cover 21.1 per cent, 19.5 per cent, and 21 per cent, respectively. Only two states, Georgia and Virginia, reported the greatest number in the over-72-hour group in 1914.

Character of ownership.—Table 9 presents data with respect to the character of ownership, or legal organization, of establishments in the industry, for 1914, 1909, and 1904.

Table 9

CHARACTER OF OWNERSHIP.	NUMBER OF ESTABLISHMENTS.			VALUE OF PRODUCTS.		
	1914	1909	1904	1914	1909	1904
Total	1,284	1,296	1,019	$220,237,790	$166,814,371	$125,144,945
Individual	34	48	24	99,016	114,851	134,713
Corporation	1,101	1,091	931	218,306,024	165,108,539	123,788,392
Other (chiefly municipal)	149	157	64	1,832,750	1,590,981	1,221,840
Per cent of total	100.0	100.0	100.0	100.0	100.0	100.0
Individual	2.6	3.7	2.4	(1)	0.1	0.1
Corporation	85.8	84.2	91.4	99.1	99.0	98.9
Other	11.6	12.1	6.3	0.8	1.0	1.0

[1] Less than one-tenth of 1 per cent.

The most important distinction shown is that between corporate and all other forms of ownership. In 1914, of the total number of establishments reported for the industry, 85.8 per cent were under corporate ownership, as compared with 84.2 per cent in 1909 and 91.4 per cent in 1904. In 1914 these establishments reported 99.1 per cent of the total value of products. In this industry municipal operation is of greater importance than in any other branch of manufacture. In 1914, 138 of the establishments, and in 1909, 119, were municipally owned, an increase of 19 during the five-year period. The gas works of Philadelphia, although owned by the city, are operated by a private corporation and have been classed with corporate enterprises in this table.

Table 10 gives comparative statistics concerning the number of establishments operated under the different forms of ownership, by states and geographic divisions, for 1914 and 1909. Except for Minnesota, where gas works operated by municipalities outnumbered all others, corporate ownership predominated over all other forms.

Table 10

DIVISION AND STATE.	NUMBER OF ESTABLISHMENTS.		NUMBER OWNED BY— Individuals.		Corporations.		All others.		NUMBER OWNED BY MUNICIPALITIES.	
	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909
UNITED STATES	1,284	1,296	34	48	1,101	1,091	149	157	138	119
GEOGRAPHIC DIVISIONS:										
New England	134	142	3	3	125	130	6	9	5	5
Middle Atlantic	273	287	6	9	258	268	9	10	5	4
East North Central	266	273	3	5	237	245	26	23	26	17
West North Central	281	271	17	21	177	156	87	94	81	75
South Atlantic	121	104	3	5	101	83	17	16	17	15
East South Central	47	47	.....	.....	44	43	3	4	3	2
West South Central	37	43	1	4	36	39	.....	.....	.....	.....
Mountain	37	35	.....	.....	37	35	.....	.....	.....	.....
Pacific	88	94	1	1	86	92	1	1	1	1
NEW ENGLAND:										
Maine	17	19	1	2	15	16	1	1	.....	.....
New Hampshire	14	14	.....	.....	14	13	.....	1	.....	.....
Vermont	9	9	.....	.....	9	9	.....	.....	.....	.....
Massachusetts	61	64	1	1	56	57	4	6	4	4
Rhode Island	6	8	.....	.....	6	8	.....	.....	.....	.....
Connecticut	27	28	1	.....	25	27	1	1	1	1
MIDDLE ATLANTIC:										
New York	131	141	6	8	120	128	5	5	3	3
New Jersey	43	47	.....	.....	41	45	2	2	1	1
Pennsylvania	99	99	.....	1	97	95	2	3	1	.....
EAST NORTH CENTRAL:										
Ohio	25	38	2	2	21	36	2	.....	2	.....
Indiana	60	53	.....	1	51	48	9	4	7	1
Illinois	75	78	1	2	72	73	2	3	4	3
Michigan	59	55	.....	.....	57	53	2	2	1	1
Wisconsin	47	49	.....	.....	36	35	11	14	12	12
WEST NORTH CENTRAL:										
Minnesota	47	42	1	1	19	15	27	26	28	26
Iowa	113	117	3	4	74	71	36	42	34	35
Missouri	35	29	2	1	31	23	2	5	.....	1
North Dakota	9	6	2	1	5	4	2	1	1	1
South Dakota	17	17	1	.....	10	13	6	4	5	4
Nebraska	48	48	7	12	28	23	13	13	11	7
Kansas	12	12	1	2	10	7	1	3	2	1
SOUTH ATLANTIC:										
Delaware	8	5	1	1	7	4	.....	.....	.....	.....
Maryland	18	18	1	2	15	15	2	1	1	.....
Dist. of Columbia	3	3	.....	.....	3	3	.....	.....	.....	.....
Virginia	22	21	1	1	14	14	7	6	7	6
West Virginia	5	4	.....	.....	4	3	1	1	1	1
North Carolina	20	14	.....	.....	20	14	.....	.....	.....	.....
South Carolina	12	12	.....	1	11	7	1	4	1	4
Georgia	19	15	.....	.....	14	12	5	3	5	3
Florida	14	12	.....	.....	13	11	1	1	2	1
EAST SOUTH CENTRAL:										
Kentucky	13	15	.....	.....	12	15	1	.....	1	.....
Tennessee	12	11	.....	.....	12	10	.....	1	.....	.....
Alabama	14	13	.....	.....	12	10	2	3	2	2
Mississippi	8	8	.....	.....	8	8	.....	.....	.....	.....
WEST SOUTH CENTRAL:										
Arkansas	1	5	.....	.....	1	5	.....	.....	.....	.....
Louisiana	4	5	.....	.....	4	5	.....	.....	.....	.....
Oklahoma	5	6	.....	1	5	5	.....	.....	.....	.....
Texas	27	27	1	3	26	24	.....	.....	.....	.....
MOUNTAIN:										
Montana	6	5	.....	.....	6	5	.....	.....	.....	.....
Idaho	4	3	.....	.....	4	3	.....	.....	.....	.....
Wyoming	1	1	.....	.....	1	1	.....	.....	.....	.....
Colorado	8	10	.....	.....	8	10	.....	.....	.....	.....
New Mexico	2	2	.....	.....	2	2	.....	.....	.....	.....
Arizona	9	8	.....	.....	9	8	.....	.....	.....	.....
Utah	4	3	.....	.....	4	3	.....	.....	.....	.....
Nevada	3	3	.....	.....	3	3	.....	.....	.....	.....
PACIFIC:										
Washington	13	12	.....	.....	13	12	.....	.....	.....	.....
Oregon	9	8	.....	.....	9	8	.....	.....	.....	.....
California	66	74	1	1	64	72	1	1	1	1

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 11.

Gas manufacture, except as to the few establishments selling it compressed in containers, is distinctly an urban industry with local market for its products. Therefore the size of the establishment is largely governed by the population of the community served. The greater part of the value of products of the industry was reported by establishments having products valued at $100,000 or more. The value of products for these establishments in 1914 formed 88.9 per cent of the total, as compared with 86.8 per cent in 1909 and 85 per cent in 1904. The establishments having products

valued at $1,000,000 or more reported approximately three-fifths of the total value of products at each year.

The total number of gas plants increased by 265, or 26 per cent, during the decade 1904 to 1914, notwithstanding a considerable decrease in the number of establishments with products valued at less than $20,000.

Table 11

VALUE OF PRODUCT.	NUMBER OF ESTABLISHMENTS.			AVERAGE NUMBER OF WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904	1914	1909	1904
All classes	1,284	1,296	1,049	43,792	37,215	30,566	$220,237,790	$166,814,371	$125,144,945	$143,458,502	$114,386,527	$91,032,850
Less than $5,000	285	356	193	271	297	(1)	582,774	764,347	503,016	229,051	324,348	(1)
$5,000 to $20,000	320	371	362	1,151	1,364	(1)	3,817,647	4,445,249	4,094,009	2,228,239	2,732,484	(1)
$20,000 to $100,000	436	369	316	5,145	4,930	(1)	20,032,768	16,863,851	14,087,898	12,850,279	10,933,845	(1)
$100,000 to $1,000,000	204	172	124	14,468	13,274	(1)	60,411,452	48,345,467	32,561,811	40,117,718	33,709,342	(1)
$1,000,000 and over	39	28	24	22,757	17,350	(1)	135,393,149	90,395,457	73,898,211	88,033,215	66,686,508	(1)
Average per establishment	.....	.....	.....	34	29	30	171,525	128,715	122,812	111,728	88,261	86,325
	PER CENT DISTRIBUTION.											
All classes	100.0	100.0	100.0	100.0	100.0	.....	100.0	100.0	100.0	100.0	100.0	.....
Less than $5,000	22.2	27.5	18.9	0.6	0.8	.....	0.3	0.5	0.4	0.2	0.3	.....
$5,000 to $20,000	24.9	28.6	35.5	2.6	3.7	.....	1.7	2.7	3.3	1.5	2.4	.....
$20,000 to $100,000	34.0	28.5	31.0	11.8	13.2	.....	9.1	10.1	11.3	9.0	9.5	.....
$100,000 to $1,000,000	15.9	13.3	12.2	33.0	35.7	.....	27.4	29.0	26.0	28.0	29.5	.....
$1,000,000 and over	3.0	2.2	2.4	52.0	46.6	.....	61.5	57.8	59.0	61.3	58.3	.....

[1] Figures not available.

Table 12 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole and for the leading states.

Table 12

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING— No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	1,284	43,792	50	620	1,529	341	3,803	127	4,155	69	4,857	44	7,258	18	6,109	9	5,897	6	10,184
	1909	1,296	37,215	108	631	1,525	308	3,286	110	3,521	70	4,856	45	7,105	13	4,424	7	4,188	4	8,310
California	1914	66	2,317	.....	28	74	24	232	7	224	2	155	1	101	3	930	1	601	.....	.....
	1909	74	1,660	.....	38	106	27	209	3	87	3	252	1	171	2	751	.....	.....	.....	.....
Connecticut	1914	27	1,209	2	6	16	8	107	3	94	5	379	2	285	1	328	.....	.....	.....	.....
	1909	28	926	.....	8	17	10	116	3	72	5	287	1	105	1	320	.....	.....	.....	.....
Georgia [1]	1914	19	500	1	7	21	6	62	1	38	3	208	1	231	.....	.....	.....	.....	.....	.....
Illinois	1914	75	3,890	2	33	84	19	213	13	436	7	493	.....	.....	.....	.....	.....	.....	1	2,664
	1909	78	6,301	.....	34	81	20	214	9	272	10	727	4	537	.....	.....	.....	.....	1	4,470
Indiana	1914	60	1,668	2	28	62	17	220	6	208	4	264	2	278	.....	.....	1	636	.....	.....
	1909	53	928	.....	20	85	13	144	6	198	4	293	1	208	.....	.....	.....	.....	.....	.....
Iowa	1914	113	708	4	86	130	14	157	6	204	2	123	1	145	.....	.....	.....	.....	.....	.....
	1909	117	806	22	74	107	10	97	7	234	3	228	1	140	.....	.....	.....	.....	.....	.....
Maryland [1]	1914	18	1,234	1	10	24	5	66	1	23	.....	.....	.....	.....	.....	.....	.....	.....	1	1,121
Massachusetts	1914	61	3,182	1	15	42	19	211	8	267	7	497	8	1,336	3	820	.....	.....	.....	.....
	1909	64	2,292	2	21	49	18	200	7	200	8	525	7	1,048	1	270	.....	.....	.....	.....
Michigan	1914	59	2,340	.....	16	41	27	279	7	271	7	580	1	242	.....	.....	1	936	.....	.....
	1909	55	1,771	.....	17	61	22	243	9	330	5	388	1	235	.....	.....	1	514	.....	.....
Minnesota	1914	47	1,038	3	33	50	9	130	.....	.....	.....	.....	1	250	.....	.....	1	608	.....	.....
	1909	42	848	3	33	53	4	54	.....	.....	.....	.....	1	235	.....	.....	1	506	.....	.....
Missouri	1914	35	1,342	3	19	58	10	105	1	36	1	84	.....	.....	.....	.....	.....	.....	1	1,059
	1909	29	941	3	19	47	5	62	1	50	.....	.....	.....	.....	.....	.....	1	782	.....	.....
New Jersey	1914	43	2,205	.....	19	51	10	101	7	222	2	139	2	288	2	788	1	616	.....	.....
	1909	47	1,017	.....	23	69	17	175	2	81	.....	.....	3	492	1	484	1	616	.....	.....
New York	1914	131	10,090	9	57	136	22	243	20	682	5	353	12	2,134	3	1,202	.....	.....	3	5,340
	1909	141	6,422	27	56	156	27	285	12	383	5	313	8	1,145	4	1,367	.....	.....	2	2,779
Pennsylvania	1914	99	2,796	3	54	148	22	236	9	281	8	557	1	135	.....	.....	2	1,439	.....	.....
	1909	99	3,119	7	50	124	22	238	12	455	4	243	2	310	.....	.....	1	698	1	1,061

[1] Less than 500 wage earners in 1909.

Table 12—Con.

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—																	
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
Rhode Island [1]	1914	6	605	.....	2	7	1	11	1	42	1	64	.....	.....	1	481	.....	.....	.....	.....
Tennessee [1]	1914	12	506	.....	4	8	4	38	.....	.....	2	131	2	329	.....	.....	.....	.....	.....	.....
Texas	1914	27	613	.....	13	41	10	111	.....	.....	2	124	2	337	.....	.....	.....	.....	.....	.....
	1909	27	575	3	9	32	7	67	4	115	3	206	1	155	.....	.....	.....	.....	.....	.....
Virginia [1]	1914	22	533	2	6	20	6	70	4	125	3	179	1	139	.....	.....	.....	.....	.....	.....
Washington [1]	1914	13	630	.....	4	11	4	61	3	109	1	76	.....	.....	1	373	.....	.....	.....	.....
Wisconsin	1914	47	1,240	.....	25	57	14	173	5	168	1	52	.....	.....	1	255	1	535	.....	.....
	1909	49	1,063	.....	27	48	13	159	5	141	3	191	.....	.....	.....	.....	1	524	.....	.....

[1] Less than 500 wage earners in 1909.

The gas industry is characterized by the relatively small number of wage earners required to carry on the business, particularly the manufacturing processes. Of the total number of establishments reported, 3.9 per cent in 1914 and 8.3 per cent in 1909 employed no wage earners; 48.3 per cent in 1914 and 48.7 per cent in 1909 employed only from 1 to 5 wage earners, and 26.6 per cent and 23.8 per cent, respectively, from 6 to 20.

The establishments employing 21 wage earners and over, however, amounting to 21.3 per cent of the total number in 1914 and 19.2 per cent in 1909, reported 87.8 per cent of the total number of wage earners in 1914 and 87.1 per cent in 1909. There were only 6 establishments in 1914 and 1 in 1909 reporting over 1,000 wage earners each, but these establishments employed 23.3 per cent of the total number in 1914 and 22.3 per cent in 1909.

The establishments with no wage earners are in the main acetylene and gas machine plants that require only periodic charging and attention. These are small establishments in which the work is done by the proprietors or firm members, or village plants with a superintendent or manager who does all the work. In some cases they may employ one or two wage earners for short periods, but the number is so small and the time employed so short that in computing the average number of wage earners, no wage earners could be shown for the establishments.

Expenses.—As stated in the "Explanation of terms," the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of depreciation and miscellaneous expenses. Consequently they can not be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses reported.

In the United States as a whole, 56.8 per cent of the expenses reported for the gas industry in 1914 were incurred for materials, as compared with 56 per cent in 1909; 19.8 per cent for wages in 1914, as compared with 22.3 per cent in 1909; 12.9 per cent for salaries in 1914 and 13.2 per cent in 1909; and 10.5 per cent for rent, taxes, and contract work in 1914 and 8.5 per cent in 1909. For all manufacturing industries the corresponding proportions were 70, 19.9, 6.2, and 3.8 per cent, respectively, in 1914, and 70.8, 20, 5.5, and 3.7 per cent, respectively, in 1909.

Engines and power.—The amount of power used in the industry was first reported at the census of 1869, 2,768 horsepower. Table 1, which gives data for the industry as a whole, shows that the horsepower used increased from 26,475 in 1889 to 245,715 in 1914. Table 13 shows the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower, as reported at the censuses of 1914, 1909, and 1904. It also shows separately the number and horsepower of all electric motors, including those operated by current generated in the establishments. Detail statistics, by states, for 1914, are given in Table 27.

The total primary power used in gas-manufacturing establishments increased from 73,101 horsepower in 1904 to 245,715 in 1914. The horsepower of internal-combustion engines and of rented electric power increased several fold during the decade, so that steam power formed a smaller proportion of the total primary power in 1914 than in the prior years; 86.4 per cent in 1914 as compared with 90 per cent in 1909 and 92.5 per cent in 1904. The use of electric power has grown from an aggregate motor equipment of 3,978 horsepower in 1904 to 38,826 horsepower in 1914. In 1914, 15.8 per cent of the primary power was utilized in the form of electric power, rented and generated, as compared with 13.5 per cent in 1909 and 5.4 per cent in 1904.

Table 13

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	4,975	3,521	2,366	245,715	128,350	73,101	100.0	100.0	100.0
Owned	3,634	3,285	2,307	226,377	125,456	71,222	92.1	97.7	97.4
Steam engines and turbines [1]	3,352	2,969	2,142	212,223	115,514	67,652	86.4	90.0	92.5
Internal-combustion engines	268	281	146	13,729	7,128	3,211	5.6	5.6	4.4
Water wheels, turbines, and motors	14	35	19	425	2,814	359	0.2	2.1	0.5
Rented	1,341	236	59	19,338	2,894	1,879	7.9	2.3	2.6
Electric	1,341	236	59	19,271	2,723	1,454	7.8	2.1	2.0
Other	.....	.....	.....	67	171	425	(2)	0.1	0.6
Electric	2,349	935	232	38,826	17,336	3,978	100.0	100.0	100.0
Rented	1,341	236	59	19,271	2,723	1,454	49.6	15.7	36.6
Generated by establishments reporting	1,008	699	173	19,555	14,613	2,524	50.4	84.3	63.4

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power. [2] Less than one-tenth of 1 per cent.

Fuel.—Table 14 shows, by states, for 1914, the quantity of each kind of fuel used for which data were obtained.

The statistics include fuel for all purposes, both as material for gas making and for boilers and retorts. The figures for the fuels used as materials in gas making are shown separately in Table 15 and by states in Table 17.

New York leads the other states in the consumption of anthracite and bituminous coal, and of oil, and is second only to Illinois and Pennsylvania in the quantity of coke used. Pennsylvania was second in the quantity of coal consumed, anthracite and bituminous together; but Illinois used considerably more coke and oil than Pennsylvania. In California the fuel used is essentially all oil and natural gas.

Table 14

STATE.	COAL.		Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).			
United States	947,261	6,078,299	1,084,217	13,482,655	3,372,563
California	41	255	.....	2,667,663	1,886,765
Connecticut	47,342	128,693	5,273	213,866	6,461
Georgia	24	81,131	6,300	66,341	.....
Illinois	8,601	445,792	355,214	1,939,987	12,167
Indiana	132	657,483	22,903	152,170	.....
Iowa	894	108,992	35,229	172,719	2,705
Maryland	63,009	27,414	895	286,911	.....
Massachusetts	16,801	546,118	81,595	557,485	450
Michigan	407	622,240	9,851	116,564	.....
Minnesota	90	130,552	26,564	267,451	5,618
Missouri	208	330,095	92,826	286,489	40,494
New Jersey	159,480	115,988	27,543	876,820	.....
New York	481,047	1,145,803	112,988	3,987,246	.....
Pennsylvania	87,443	412,849	115,817	287,712	51,117
Rhode Island	11,646	109,341	.....	110,872	.....
Tennessee	.....	63,275	13,386	45,767	790
Texas	2,021	15,983	21,136	142,051	170,912
Virginia	417	147,841	1,629	82,432	661,987
Washington	28	116,493	14,563	74,633	.....
Wisconsin	425	242,174	12,870	41,559	.....

SPECIAL STATISTICS OF MATERIALS AND PRODUCTS.

The United States as a whole.—The special schedule used in collecting the statistics for the gas industry required a detailed statement of the quantity and cost of the different kinds of fuel used as material and of the quantity and value of the different products manufactured. Table 15 shows these statistics for the United States for 1914, 1909, 1904, and 1899.

The statistics for the gas industry presented in this table cover only those establishments which made gas as their main product. The coal, oil, and coke reported represent only those materials used in gas making and do not include those used for power purposes or for heating retorts, the cost of which is shown separately.

The cost of all materials aggregated $76,779,288 in 1914, the increase as compared with 1909 being 46.4 per cent and as compared with 1904, 86.4 per cent. Oil is the principal material used in respect to value, with coal second in importance.

The value of products aggregated $220,237,790 in 1914 as compared with $166,814,371 in 1909, $125,144,945 in 1904, and $75,716,693 in 1899, an increase of 32 per cent as compared with 1909 and of 76 per cent with 1904.

The amount of gas produced was in round numbers, 204,000,000,000 cubic feet in 1914, as compared with 151,000,000,000 in 1909, 113,000,000,000 in 1904, and 67,000,000,000 in 1899; the production in 1914 being an increase of 35.1 per cent as compared with 1909, and an increase of 80.8 per cent as compared with 1904. Carbureted water gas was the kind most largely manufactured. It constituted 44.2 per cent of the total production in 1914, 52.7 per cent in 1909, and 48.6 per cent in 1904. Mixed coal and water gas was next in importance, it constituting 42.4 per cent of the total in 1914, 27 per cent in 1909, and 36.4 per cent in 1904. Oil gas was third, the production having increased from 8,688,860,000 cubic feet in 1909 to 16,512,274,000 cubic feet in 1914, a gain of 90 per cent, due chiefly to the increased production in the Pacific Coast states. Straight coal gas, on the other hand, decreased from nearly 20,000,000,000 cubic feet in 1909 to 10,500,000,000 cubic feet in 1914, or 47.4 per cent, owing to the fact that during the period between the two censuses many of the companies changed from the manufacture of straight coal gas to mixed coal and water, or carbureted water gas.

Table 15	1914	1909	1904	1899
MATERIALS.				
Total cost	$76,779,288	$52,427,844	$41,193,951	$20,605,356
Coal used for gas making:				
Tons (2,000 pounds)	6,116,672	4,940,598	4,431,774	2,487,287
Cost	$20,872,517	$16,304,832	$14,607,485	$7,164,472
Average cost per ton	$3.41	$3.30	$3.30	$2.88
Oil used for gas making:				
Gallons	715,418,623	578,309,411		
Cost	$24,720,998	$17,105,981		
Average cost per gallon	$0.034	$0.029		
Benzene or benzol:				
Purchased—				
Gallons	388,146	253,837		
Cost	$54,653	$27,543	410,989,564	194,857,296
Average cost per gallon	$0.14	$0.108	$15,015,602	$8,168,657
Made and consumed, gallons	99,238	302,994	$0.04	$0.04
Benzine, gasoline, or naphtha:				
Gallons	998,353	1,093,874		
Cost	$169,020	$212,226		
Average cost per gallon	$0.169	$0.194		
Coke used for gas making:				
Tons (2,000 pounds)	964,851	591,919	435,534	217,354
Cost	$4,500,289	$2,667,706	$1,602,762	$726,736
Average cost per ton	$4.66	$4.51	$3.68	$3.34
Calcium carbide:				
Pounds	31,749,491	6,080,465	(1)	(1)
Cost	$887,937	$195,836	(1)	(1)
Average cost per pound	$0.027	$0.032	.....	.....
Gas purchased:				
Cubic feet, thousands	28,351,074	16,769,705	2,696,571	(1)
Cost	$8,883,016	$5,416,601	$937,252	(1)
Average cost per thousand cubic feet	$0.31	$0.32	$0.35	.....
Fuel for boilers and retorts, cost	$3,784,911	$2,369,131	$2,298,168	$1,082,844
All other materials, cost	$5,512,723	$2,785,888	$2,718,797	
Amount paid for lamps and appliances purchased for sale	$7,393,224	$5,537,936	$4,013,885	$3,462,647
PRODUCTS.				
Total value	[2] $220,237,790	[2] $166,814,371	$125,144,945	$75,716,693
Gas:				
For sale—				
Cubic feet, thousands	203,639,260	150,835,793	112,549,979	67,093,553
Value	$175,065,920	$138,615,309	$112,662,568	$69,432,582
Average value, 1,000 cubic feet	$0.86	$0.92	$1.00	$1.03
Made and consumed, 1,000 cubic feet	1,121,108	1,730,563	1,363,757	(1)
Straight coal—				
Cubic feet, thousands	10,509,946	19,985,253	12,693,034	(1)
Value	$10,726,514	$18,065,841	$12,868,604	(1)
Average value, 1,000 cubic feet	$1.02	$0.90	$1.01	.....
Carbureted water—				
Cubic feet, thousands	90,017,725	[3] 81,144,568	[3] 55,402,968	(1)
Value	$74,516,534	$70,802,780	$48,903,620	(1)
Average value, 1,000 cubic feet	$0.827	$0.873	$0.883	.....

	1914	1909	1904	1899
PRODUCTS—continued.				
Gas—Continued.				
Mixed coal and water—				
Cubic feet, thousands	86,281,339	40,775,283	40,980,414	(1)
Value	$72,012,021	$36,953,543	$45,605,263	(1)
Average value, 1,000 cubic feet	$0.83	$0.91	$1.11	.....
Oil—				
Cubic feet, thousands	16,512,274	8,688,860	3,441,352	(1)
Value	$15,044,509	$12,111,458	$5,141,460	(1)
Average value, 1,000 cubic feet	$0.91	$1.39	$1.49	.....
Acetylene—				
Distributed through mains—				
Cubic feet, thousands	14,868			
Value	$194,019			
Average value, 1,000 cubic feet	$13.05	25,186	7,881	(1)
Delivered in containers (compressed)—		$361,348	$104,267	(1)
Cubic feet, thousands	121,696	$14.35	$13.23	.....
Value	$2,317,605			
Average value, 1,000 cubic feet	$19.04			
All other gas (gasoline, cold process)—				
Cubic feet, thousands	181,412	216,643	24,330	(1)
Value	$254,718	$320,339	$39,354	(1)
Average value, 1,000 cubic feet	$1.40	$1.48	$1.62	.....
Coke:				
Production, bushels	179,128,257	131,599,836	135,707,619	.....
For sale—				
Bushels	114,091,753	82,049,683	89,146,434	
Value	$8,719,920	$5,723,215	$5,195,461	
Average value per bushel	$0.076	$0.07	$0.06	
Made and consumed, bushels	65,036,504	49,550,153	46,561,185	
Tar:				
Production, gallons	153,311,196	109,930,058	82,288,299	
For sale—				
Gallons	125,938,607	[4] 78,339,880	67,515,421	
Value	$3,252,765	$1,875,549	$2,064,343	$4,283,204
Average value per gallon	$0.025	$0.02	$0.03	
Made and consumed, gallons	27,372,589	31,590,178	14,772,878	
Ammonia liquors (16-ounce strength):				
Gallons	50,737,762	37,277,864		
Value	$1,235,442	725,702		
Average value per gallon	$0.024	$0.019		
Ammonium sulphate:				
Pounds	6,216,618	(1)	$972,992	
Value	$134,196	(1)		
Average value per pound	$0.02	.....		
Hydrocarbons, value	$35,902	$44,509		
All other products, value	$20,815,871	$12,786,697		
Receipts from rents and sales of lamps and appliances	$10,977,774	$7,043,390	$4,249,581	$2,000,907

[1] Figures not available.
[2] In addition, the following products of gas manufacture were produced commercially by six establishments in 1914 and four in 1909, engaged primarily in other lines of manufacture:

	1914		1909	
	Quantity.	*Value.*	*Quantity.*	*Value.*
Products, total value	.....	$158,743	.....	$261,802
Gas, cubic feet, thousands	56,939	131,979	40,628	254,037
Straight coal	41,744	.....	27,558	.....
Carbureted water	10,154	.....	.....	.....
Acetylene (compressed)	5,041	.....	13,070	.....

	1914		1909	
	Quantity.	*Value.*	*Quantity.*	*Value.*
Coke, bushels	114,371	$9,356	44,347	$3,399
Tar, gallons	35,100	2,076	38,370	1,372
Receipts from rents and sale of lamps and appliances	.....	15,332	.....	2,994

[3] Includes for 1909, 1,726,082 thousand cubic feet of straight water gas valued at $1,289,031; and for 1904, 715,550 thousand cubic feet valued at $832,440.
[4] In addition, 13,813,058 gallons were produced for which no value was reported.

The largest relative growth is in acetylene gas, although the quantity is still comparatively small. The growth in the output of this gas is attributable to the increased distribution of the gas in containers, the 1914 figures including 121,696,000 cubic feet, valued at $2,317,605, or 88.2 per cent of the total production of acetylene gas, distributed in this manner. Of the 165 establishments reporting acetylene, 40 (representing 9 companies) distributed the gas in containers.

In addition to the products of establishments classified as engaged in the gas industry, certain establishments engaged primarily in other lines of manufacture did some commercial gas business in 1914. If their output be added, not including the output of coke ovens, the figures for carbureted water gas become 90,027,879,000 cubic feet, valued at $74,532,545; for straight coal gas, 10,551,690,000 cubic feet, valued at $10,771,908; for acetylene, 141,605,000 cubic feet, valued at $2,582,198; for coke, 114,206,124

bushels, valued at $8,729,276; and for tar, 125,973,707 gallons, valued at $3,254,841.

The large production of gas by establishments in other industries which consume the product themselves is not here included.

In addition, there is a large amount of gas made in coke establishments and used for illuminating gas and for domestic fuel. The gas purchased by the gas companies is largely retort coke-oven gas. Table 16 gives the by-products obtained in the manufacture of coke in retort ovens in 1914 and 1909, as reported by the Geological Survey.

Table 16 BY-PRODUCTS OBTAINED IN MANUFACTURE OF COKE IN RETORT OVENS.	1914	1909
Gas:		
Cubic feet (thousands)	61,364,375	15,791,220
Value	$6,009,583	$2,009,211
Tar:		
Gallons	100,901,315	60,120,006
Value	$2,807,274	$1,408,611
Ammonia, sulphate or reduced to equivalent in sulphate:		
Pounds	170,763,906	123,111,197
Value	$4,096,590	$3,227,316
Ammonia liquors:		
Gallons	5,938,233	.....
Value	$658,497	.....
Anhydrous ammonia:		
Pounds	[1] 25,370,509	4,871,014
Value	$2,390,137	$448,455
Other by-products, value	[2] $997,007	$380,355

[1] Mainly ammoniacal liquor sold on pound basis of NH_3. [2] Mainly benzol.

Certain products were made in establishments in the gas industry proper and consumed by them in their own operations. These products, included in Table 15, are shown in the following statement:

PRODUCTS MADE AND CONSUMED IN THE WORKS WHERE PRODUCED.	1914	1909
Coke.....bushels..	65,036,504	49,550,153
Tar.....gallons..	27,372,680	31,590,178
Gas.....cubic feet (thousands)..	1,121,108	1,730,563
Benzene and benzol.....gallons..	99,238	302,994

In Table 15 there is also given data in regard to unit costs and values derived from the quantity and cost or value of the respective items.

The average cost of coal used for gas making was the same in 1904 and 1909, but increased from $3.30 to $3.41 per ton in 1914. The average cost of oil consumed also increased slightly during the last census period, from $1.45 to $1.70 per barrel of 50 gallons. Of the oil used for gas making in the United States (see Table 17) 28 per cent was used in New York, 17.7 per cent in California, and 13.6 per cent in Illinois, three-fifths of the total being reported by these three states.

In the United States as a whole there was in 1914 no very great difference in the average value per thousand cubic feet of carbureted water gas, mixed coal and water gas, and oil gas, the three most important classes, although the value of the last named is somewhat higher. The value of acetylene, of which much the greater part was sold in containers, ranges of course much higher, and the average value per thousand cubic feet increased from $14.35 in 1909 to $18.39 in 1914. This increase is due to growth in the output of the companies that market the gas in containers for automobile lighting, welding, etc.

In the United States as a whole the average value per thousand cubic feet of all gas made by establishments in the gas industry was $1 in 1904, 92 cents in 1909, and 86 cents in 1914. This decrease in average value can not be attributed to changes in the relative importance of different classes of gas. It is a composite resultant that includes gas of various kinds and a diversity of values. Some companies charge a lower rate for gas used for cooking, heating, or power than for that used for lighting. In such cases a more marked increase in the consumption of gas for heating, cooking, or power, than for lighting makes a reduction in the average price or value without any change in rates. There are wide variations among individual companies with respect to the method of fixing rates for gas. In some cases a single company has a variety of different rates and in some the price is based on a sliding scale according to quantity consumed.

Materials and products, by states.—Table 17 shows, by states, the quantity and cost of the different materials used in gas making in 1914.

The data here given relate to the gas industry and do not include materials consumed in gas manufacture by establishments in other industries. The quantities of fuel represent only that used for gas making and do not include that used for power or for heating retorts. The expense for fuel for boilers and retorts is given separately in Table 15. The table also shows the quantity of coke, benzol, tar, and gas made and consumed in the works where produced.

Marked differences appear among the states with respect to the relative importance of coal, coke, and oil in gas making. In Illinois the amount spent for oil was slightly less than that spent for coal and coke combined; in New York, Pennsylvania, and New Jersey it was considerably greater, while in California there was virtually no expenditure for coal and coke for gas making. On the other hand, in Massachusetts the expenditure for coal and coke combined was very much greater than that for oil, and in Michigan it was over six times as great. The greatest increase was in calcium carbide, of which 31,749,491 pounds, valued at $887,937, were consumed in the manufacture of acetylene in 1914. Nearly nine-tenths of the calcium carbide reported was consumed in establishments which distributed this product in containers, but these statistics can not be shown by states without disclosing the operations of individual companies.

GAS, ILLUMINATING AND HEATING—MATERIALS USED, BY STATES: 1914.

Table 17

MATERIAL AND STATE.	Quantity.	Cost.
PURCHASED MATERIALS.	*Tons (2,000 lbs.).*	
Coal (for gas making)	6,116,672	$20,872,517
Alabama	77,445	207,681
Colorado	113,943	363,815
Connecticut	165,865	654,825
Delaware	10,484	47,880
Florida	31,020	117,547
Georgia	74,461	205,403
Illinois	257,670	912,281
Indiana	595,890	1,631,601
Iowa	88,025	394,328
Kentucky	30,851	83,865
Maine	33,179	130,158
Maryland	73,893	320,695
Massachusetts	568,923	2,199,154
Michigan	556,506	1,726,982
Minnesota	98,076	419,927
Mississippi	14,127	46,928
Missouri	230,500	815,058
Montana	8,496	54,950
New Hampshire	24,702	133,692
New Jersey	232,774	895,555
New York	1,521,359	5,299,805
North Carolina	30,529	108,823
Ohio	83,250	206,689
Oklahoma	5,588	18,972
Oregon	3,261	18,559
Pennsylvania	407,817	1,227,712
Rhode Island	113,682	365,620
South Dakota	1,671	9,666
Tennessee	71,200	162,400
Texas	11,795	57,585
Vermont	10,056	50,750
Virginia	96,211	329,955
Washington	104,518	398,007
Wisconsin	218,513	670,338
All other states	141,892	585,311
Coke (for gas making)	964,851	4,500,289
Florida	4,074	23,914
Georgia	6,300	33,071
Illinois	340,060	1,643,150
Indiana	20,996	98,219
Iowa	38,221	244,036
Kentucky	3,008	10,122
Massachusetts	70,271	262,593
Michigan	1,803	9,097
Minnesota	23,243	139,318
Missouri	61,185	251,173
Nebraska	19,929	147,390
New Jersey	20,507	77,172
New York	91,343	314,703
North Carolina	3,749	18,580
Ohio	6,376	25,791
Pennsylvania	154,816	615,256
South Carolina	6,763	32,666
South Dakota	4,472	32,115
Texas	21,204	163,942
Washington	7,999	40,552
Wisconsin	10,475	62,132
All other states	48,057	255,297
	Gallons.	
Oil (for gas making)	715,418,623	24,720,998
Alabama	713,334	45,343
California	126,747,307	2,210,214
Colorado	994,719	49,865
Connecticut	12,267,021	514,801
Delaware	1,938,237	90,845
Florida	2,065,572	85,357
Georgia	3,317,064	180,555
Illinois	97,536,391	2,422,833
Indiana	7,115,767	272,921
Iowa	9,555,261	353,405
Kansas	561,309	19,203
Kentucky	734,940	30,040
Maine	939,273	47,933
Maryland	14,439,156	675,366
Massachusetts	29,190,201	1,470,769
Michigan	5,996,166	261,281
PURCHASED MATERIALS—continued.		
Oil (for gas making)—Continued.	*Gallons.*	
Minnesota	13,361,535	608,230
Missouri	14,284,339	451,324
Montana	208,947	$10,950
Nebraska	4,971,143	185,957
Nevada	487,309	15,812
New Hampshire	1,653,939	75,200
New Jersey	43,835,786	1,505,859
New York	200,239,532	8,267,469
North Carolina	853,372	50,225
Ohio	1,938,610	68,547
Oregon	14,201,789	262,521
Pennsylvania	58,025,889	2,423,299
Rhode Island	5,543,693	361,769
South Carolina	1,402,723	71,473
South Dakota	802,230	38,817
Tennessee	2,290,875	108,627
Texas	5,807,966	197,283
Vermont	708,556	38,076
Virginia	4,108,013	269,885
Washington	3,731,700	122,228
Wisconsin	2,545,748	105,614
All other states	20,303,211	751,102
Benzene or benzol	388,146	54,653
Massachusetts	106,010	15,898
Michigan	7,527	1,129
New York	18,150	2,672
All other states	256,459	34,954
	Pounds.	
Calcium carbide	31,749,491	887,937
Consumed by establishments distributing through:		
Containers	27,454,408	771,925
Mains	4,295,083	116,012
Consumed by establishments distributing through mains:		
Connecticut	231,500	6,813
Illinois	158,150	4,870
Indiana	392,167	11,744
Iowa	237,975	7,205
Kansas	104,000	3,440
Maine	241,866	7,569
Maryland	85,000	2,650
Massachusetts	170,860	4,527
Minnesota	260,000	8,564
Missouri	95,300	2,939
Nebraska	275,600	9,388
New York	1,280,708	21,444
North Dakota	79,000	2,592
Pennsylvania	168,160	4,902
Virginia	118,872	3,578
All other states	395,925	13,787
	Gallons.	
Benzine, gasoline, or naphtha	998,353	169,020
Illinois	36,080	6,604
Iowa	369,989	61,945
Minnesota	174,458	31,280
Nebraska	148,291	23,502
New York	35,663	8,606
South Dakota	35,919	6,687
Wisconsin	132,169	24,186
All other states	65,784	6,210
	Bushels.	
Lime	106,857	24,327
California	15,342	3,955
Connecticut	13,689	2,793
Illinois	2,821	721
Indiana	13,203	2,379
Maine	3,736	560
Massachusetts	27,774	6,340
Michigan	2,016	858
New York	4,539	758
Pennsylvania	9,398	2,181
All other states	14,339	3,782
PRODUCTS MADE AND CONSUMED AS MATERIALS IN ESTABLISHMENTS WHERE PRODUCED.		
	Bushels.	
Coke	65,036,704	
Alabama	745,325	
Colorado	1,852,072	
Connecticut	2,067,826	
Georgia	1,449,857	
Illinois	1,885,338	
Indiana	2,824,291	
Iowa	1,146,172	
Kentucky	278,295	
Maine	346,143	
Maryland	147,737	
Massachusetts	8,178,289	
Michigan	6,533,638	
Minnesota	2,579,718	
Mississippi	169,064	
Missouri	1,854,331	
Montana	154,336	
New Hampshire	369,608	
New Jersey	2,774,755	
New York	15,870,422	
North Carolina	467,420	
Ohio	604,477	
Pennsylvania	2,102,794	
Rhode Island	1,938,655	
Tennessee	650,958	
Virginia	1,340,688	
Washington	2,707,072	
Wisconsin	2,143,733	
All other states	1,853,470	
	Gallons.	
Benzene or benzol	99,238	
California	1,300	
Connecticut	95,272	
Massachusetts	2,666	
Tar	27,372,589	
California	3,430,248	
Colorado	254,497	
Connecticut	874,623	
Illinois	444,075	
Indiana	26,968	
Maryland	54,618	
Massachusetts	1,866,550	
New Jersey	255,825	
New York	16,135,423	
Pennsylvania	373,047	
Texas	239,876	
Virginia	148,289	
Wisconsin	73,380	
All other states	3,195,170	
	Thousand cubic feet.	
Gas	1,121,108	
California	201,707	
Connecticut	26,946	
Illinois	406,192	
Indiana	11,311	
Iowa	4,305	
Massachusetts	47,584	
Michigan	12,432	
New Hampshire	2,695	
New Jersey	4,158	
New York	117,629	
Oregon	1,488	
Pennsylvania	80,307	
Texas	47,234	
Virginia	7,723	
Washington	10,672	
Wisconsin	41,694	
All other states	97,031	

Table 18 shows the quantity and value of all gas and of the different kinds of gas manufactured in 1914, by states, and also the quantity and value of coke, tar, and other by-products manufactured for sale, together with the amounts received from rents and sales of lamps and appliances.

The gas production of New York in 1914 amounted to nearly 55,000,000,000 cubic feet, or 26.9 per cent of the total for the United States. The production in Illinois constituted 13.2 per cent of the total, that in California, 7.5 per cent, Pennsylvania, 7.2 per cent, Massachusetts, 6.6 per cent, and New Jersey, 6.3 per cent, while no other state contributed as much as one-twentieth of the total output.

GAS, ILLUMINATING AND HEATING—PRODUCTS, BY STATES: 1914.

Table 18

PRODUCT AND STATE.	Quantity.	Value.
	Thousand cubic feet.	
Gas, total	203,639,260	$175,065,920
Alabama	925,271	885,383
Arizona	168,856	250,943
California	15,192,904	12,280,625
Colorado	1,733,441	1,234,807
Connecticut	4,439,924	4,215,308
Delaware	564,696	477,659
Florida	714,361	937,832
Georgia	1,567,179	1,719,916
Illinois	27,066,585	21,523,356
Indiana	5,602,717	4,333,578
Iowa	3,310,866	3,431,971
Kansas	94,311	204,819
Kentucky	502,464	502,929
Maine	546,309	603,991
Maryland	4,083,192	3,358,004
Massachusetts	13,431,185	11,449,260
Michigan	6,986,926	5,789,913
Minnesota	4,400,936	3,735,886
Mississippi	202,990	238,141
Missouri	6,432,786	5,567,969
Montana	156,193	207,670
Nebraska	1,305,335	1,766,253
Nevada	45,581	72,858
New Hampshire	580,749	690,800
New Jersey	12,774,402	11,068,433
New York	54,776,737	43,169,529
North Carolina	493,006	589,304
North Dakota	182,260	218,570
Ohio	1,147,150	1,025,141
Oklahoma	113,809	125,320
Oregon	1,739,624	1,398,510
Pennsylvania	14,718,834	14,882,857
Rhode Island	2,415,708	2,148,421
South Carolina	380,804	443,653
South Dakota	232,745	338,650
Tennessee	1,169,659	1,225,259
Texas	1,597,882	1,907,652
Vermont	227,214	291,085
Virginia	1,878,773	1,826,284
Washington	1,947,292	1,984,634
West Virginia	135,679	92,277
Wisconsin	2,884,187	2,567,808
All other states	4,767,729	4,282,592
Straight coal gas	10,509,946	10,726,514
Alabama	123,232	141,178
Georgia	148,267	149,309
Illinois	876,185	867,344
Indiana	482,220	460,611
Iowa	387,125	408,891
Kentucky	126,061	127,365
Maine	112,961	153,901
Maryland	72,323	97,739
Massachusetts	761,087	752,381
Michigan	1,514,418	1,558,652
Minnesota	259,814	303,464
Mississippi	129,280	137,036
Missouri	157,536	178,092
New Jersey	162,547	173,346
New York	1,822,078	1,701,335
North Carolina	176,017	210,692
Ohio	197,150	198,242
Pennsylvania	729,695	677,563
Tennessee	227,256	218,407
Virginia	221,068	214,638
Washington	168,887	239,267
Wisconsin	1,019,536	962,134
All other states	635,203	794,927
Carbureted water gas	90,017,725	74,516,534
California	1,264,199	1,020,095
Connecticut	1,592,552	1,635,271
Florida	412,440	546,450
Georgia	370,423	415,695
Illinois	24,038,259	18,298,039
Indiana	1,173,224	1,004,189
Iowa	1,730,540	1,779,943
Maryland	4,005,066	3,175,023
Massachusetts	711,761	720,968
Michigan	49,457	59,035
Minnesota	68,610	95,567
Missouri	625,809	620,939
Nebraska	1,264,451	1,531,899
New Hampshire	180,018	230,249
New Jersey	8,222,442	6,929,148
New York	34,593,594	26,445,859
North Carolina	80,093	106,955
Ohio	262,891	200,322
Pennsylvania	3,896,311	3,986,063
South Carolina	357,500	390,651
South Dakota	194,187	277,255
Texas	1,244,171	1,303,865
Vermont	164,204	211,058
Virginia	76,293	89,262
Wisconsin	471,177	542,816
All other states	2,968,053	2,849,918

PRODUCT AND STATE.	Quantity.	Value.
	Thousand cubic feet.	
Mixed coal and water gas	86,281,339	$72,012,021
Alabama	790,225	712,976
Colorado	1,581,433	1,130,359
Connecticut	2,818,153	2,525,912
Illinois	2,080,287	1,967,933
Indiana	3,926,280	2,461,420
Iowa	1,106,466	974,436
Massachusetts	11,888,076	9,598,706
Michigan	5,407,222	4,097,526
New York	18,289,899	14,670,483
North Carolina	229,664	240,060
Pennsylvania	10,053,404	9,984,203
Rhode Island	2,352,355	2,036,423
Virginia	1,572,249	1,472,465
Washington	1,694,906	1,602,469
Wisconsin	1,360,350	990,194
All other states	21,130,370	17,546,456
Oil gas	16,512,274	15,044,509
Sold by establishments distributing through:		
Containers	548,856	2,272,357
Mains	15,963,418	12,772,152
Sold by establishments distributing through mains:		
Arizona	163,864	243,430
California	13,881,676	10,990,829
Nevada	45,581	72,858
Oregon	1,670,193	1,280,257
All other states	202,104	184,778
Acetylene	136,564	2,511,624
Sold by establishments distributing through:		
Containers	121,696	2,317,605
Mains	14,868	194,019
Sold by establishments distributing through mains:		
Connecticut	669	10,055
Illinois	632	8,992
Indiana	1,736	22,218
Iowa	788	9,148
Kansas	370	4,960
Maine	895	12,541
Maryland	681	7,350
Massachusetts	570	8,818
Minnesota	1,054	11,263
Missouri	284	4,456
Nebraska	1,031	13,964
New York	3,129	39,012
North Dakota	378	5,018
Pennsylvania	689	9,044
Virginia	493	5,892
All other states	1,469	21,288
All other gas (chiefly gasoline)	181,412	254,718
Illinois	9,871	12,407
Iowa	67,925	96,792
Nebraska	24,237	34,781
New York	8,722	11,870
South Dakota	8,570	13,721
Wisconsin	25,257	34,012
All other states	36,830	51,135
	Bushels.	
Coke (for sale)	114,091,753	8,719,920
Alabama	1,485,451	102,450
Colorado	2,411,936	129,002
Connecticut	2,633,206	214,894
Georgia	993,869	61,031
Illinois	6,647,518	539,748
Indiana	19,105,858	1,350,099
Iowa	3,319,842	179,245
Kentucky	771,708	46,504
Maine	606,305	51,040
Maryland	122,012	10,303
Massachusetts	10,687,646	825,407
Michigan	12,838,581	1,136,862
Minnesota	716,239	69,515
Mississippi	320,362	21,852
Missouri	7,595,815	627,055
Montana	208,834	26,152
New Hampshire	526,339	47,599
New Jersey	503,745	42,792
New York	16,327,388	1,197,018
North Carolina	736,119	63,835
Ohio	2,282,855	160,245
Pennsylvania	9,153,004	660,614
Rhode Island	1,543,741	148,612
Tennessee	1,710,168	106,015
Virginia	1,685,620	135,233
Washington	1,192,988	99,332
Wisconsin	5,287,078	442,184
All other states	2,677,526	225,282

PRODUCT AND STATE.	Quantity.	Value.
	Gallons.	
Tar (for sale)	125,938,607	$3,252,765
Alabama	768,630	21,414
California	58,609	4,784
Colorado	1,416,784	50,817
Connecticut	3,174,636	64,733
Florida	542,798	11,378
Georgia	1,501,712	30,317
Illinois	22,729,696	362,256
Indiana	6,454,751	204,659
Iowa	1,868,804	52,222
Kansas	110,450	2,648
Kentucky	426,567	12,940
Maine	415,970	12,944
Maryland	2,410,171	72,029
Massachusetts	9,589,967	309,069
Michigan	7,494,502	198,951
Minnesota	3,209,329	84,032
Mississippi	161,489	5,168
Missouri	3,949,777	118,159
Montana	138,687	9,225
Nebraska	595,208	19,608
New Hampshire	414,585	13,700
New Jersey	5,920,906	145,924
New York	27,249,634	736,044
North Carolina	262,269	9,173
Ohio	1,081,071	35,702
Pennsylvania	12,955,555	272,530
Tennessee	1,169,024	31,985
Texas	450,789	14,115
Virginia	1,482,892	61,482
Washington	1,758,189	81,143
Wisconsin	2,864,915	83,414
All other states	3,310,231	120,200
Ammonia liquors (16-ounce strength)	50,737,762	1,235,442
Colorado	1,152,193	24,572
Connecticut	1,494,240	48,392
Illinois	2,518,108	66,001
Indiana	7,624,784	217,857
Massachusetts	5,323,950	107,204
Michigan	5,480,826	174,179
New York	10,440,791	167,493
Pennsylvania	4,199,492	120,111
Tennessee	624,856	12,542
Virginia	297,929	5,060
Washington	1,573,947	19,167
Wisconsin	1,501,987	46,179
All other states	8,504,569	226,685
Ammonia, sulphate (United States)	*Pounds.* 6,216,618	134,196
Receipts from rents and sales of lamps and appliances		10,977,774
Alabama		98,884
California		128,707
Colorado		82,338
Connecticut		131,080
Delaware		84,892
Florida		41,335
Georgia		100,390
Illinois		2,001,618
Indiana		251,985
Iowa		392,480
Kentucky		8,446
Maine		98,233
Maryland		439,966
Massachusetts		587,209
Michigan		751,210
Minnesota		255,343
Mississippi		26,798
Missouri		259,908
Nebraska		133,859
New Hampshire		80,766
New Jersey		1,219,061
New York		1,236,326
North Carolina		52,846
Ohio		10,709
Oregon		65,876
Pennsylvania		545,008
Rhode Island		78,607
South Carolina		41,542
South Dakota		33,071
Tennessee		194,386
Texas		242,991
Vermont		22,460
Virginia		109,890
Washington		184,912
Wisconsin		417,216
All other states		567,466

Marked differences appear among the states with respect to the relative importance of the different kinds of gas made. For example, in New York 63.1 per cent of all gas made in 1914 was carbureted water gas and 33.4 per cent mixed coal and water gas, while in California more than nine-tenths of the total was oil gas. Of the total quantity of oil gas reported for the United States in 1914, 3.3 per cent, representing 15.1 per cent of the total value, was distributed in containers. Most of this was Pintsch gas.

Although the manufacture of 121,696,000 cubic feet of acetylene, valued at $2,317,605, distributed in containers, represented the greatest proportional increase in any branch of the gas industry for the United States as a whole, these statistics can not be shown for the different states without disclosing the operations of individual companies. The manufacture of acetylene to be distributed through mains amounts to only 11.8 per cent of the quantity produced. With respect to the total production, irrespective of distribution, the four most important states were Indiana, Massachusetts, Missouri, and California, in the order named.

Table 19 shows, by geographic divisions and by states, the distribution of the establishments according to kind of gas manufactured—carbureted water gas, straight coal gas, mixed coal and water gas, oil gas, acetylene, and other gas (gasoline, cold-process or gas-machine gas).

Table 19

Geographic division and state.	Number of establishments.	Classified by kind of gas.					
		Carbureted water gas.	Straight coal gas.	Mixed coal and water gas.	Oil gas.	Acetylene.	Other (gasoline, cold process).
United States	1 284	430	277	147	[1] 153	[2] 165	112
Geographic divisions:							
New England	134	47	22	36	8	18	3
Middle Atlantic	273	145	40	21	18	34	15
East North Central	266	62	103	42	8	33	18
West North Central	281	98	28	13	12	54	76
South Atlantic	121	50	31	15	10	15	.....
East South Central	47	5	28	7	5	2	.....
West South Central	37	16	4	4	9	4	.....
Mountain	37	4	11	6	15	1	.....
Pacific	88	3	10	3	68	4	.....
New England:							
Maine	17	4	6	1	1	5	.....
New Hampshire	14	5	2	2	2	1	2
Vermont	9	7	1	1	.....	.....	.....
Massachusetts	61	15	12	22	3	8	1
Rhode Island	6	2	.....	3	.....	1	.....
Connecticut	27	4	1	7	2	3	.....
Middle Atlantic:							
New York	131	52	25	15	5	20	14
New Jersey	43	24	5	2	6	5	1
Pennsylvania	99	69	10	4	7	9	.....
East North Central:							
Ohio	25	7	9	2	3	4	.....
Indiana	60	11	20	10	.....	19	.....
Illinois	75	25	20	14	3	8	5
Michigan	59	6	39	12	1	.....	1
Wisconsin	47	13	15	4	1	2	12
West North Central:							
Minnesota	47	8	7	2	3	10	17
Iowa	113	43	9	7	1	10	43
Missouri	35	14	8	1	3	9	.....
North Dakota	9	3	1	1	.....	4	.....
South Dakota	17	7	1	1	2	2	4
Nebraska	48	20	1	.....	1	14	12
Kansas	12	3	1	1	2	5	.....
South Atlantic:							
Delaware	8	4	2	1	.....	1	.....
Maryland	18	8	5	.....	1	4	.....
District of Columbia	3	.....	.....	2	1	.....	.....
Virginia	22	4	6	6	2	4	.....
West Virginia	5	3	2	.....	.....	.....	.....
North Carolina	20	9	6	3	2	.....	.....
South Carolina	12	7	1	.....	2	2	.....
Georgia	19	4	8	2	1	4	.....
Florida	14	11	1	1	1	.....	.....
East South Central:							
Kentucky	13	1	9	2	1	.....	.....
Tennessee	12	1	5	2	3	1	.....
Alabama	14	1	8	3	1	1	.....
Mississippi	8	2	6	.....	.....	.....	.....
West South Central:							
Arkansas	1	.....	.....	1	.....	.....	.....
Louisiana	4	1	1	.....	2	.....	.....
Oklahoma	5	1	2	1	1	.....	.....
Texas	27	14	1	2	6	4	.....
Mountain:							
Montana	6	2	2	1	1	.....	.....
Idaho	4	.....	3	.....	1	.....	.....
Wyoming	1	.....	1	.....	.....	.....	.....
Colorado	8	1	2	4	.....	1	.....
New Mexico	2	.....	1	.....	1	.....	.....
Arizona	9	1	.....	.....	8	.....	.....
Utah	4	.....	2	1	1	.....	.....
Nevada	3	.....	.....	.....	3	.....	.....
Pacific:							
Washington	13	2	6	3	.....	2	.....
Oregon	9	1	3	.....	5	.....	.....
California	66	.....	1	.....	63	2	.....

[1] Includes 61 Pintsch gas distributed among 31 states; and 4 blau gas located 1 each in Minnesota, Missouri, Nebraska, and New York.
[2] Includes 40 without distributing mains, gas sold compressed in cylinders: Located 5 in Missouri; 4 in Massachusetts; 4 in Texas; 3 in Georgia; 3 in New Jersey; 2 each in California, Illinois, Indiana, Iowa, Minnesota, New York, and Ohio; and 1 each in Maryland, Nebraska, Pennsylvania, Rhode Island, Tennessee, Washington, and Wisconsin.

In 1914, 430, or 33.5 per cent, of the establishments produced carbureted water gas, whereas in 1909, 325 establishments and in 1904, 237, or 23.3 per cent of the total number in each of these years, produced carbureted water gas. The straight coal gas establishments were in the lead in 1909 and 1904, with 397, or 39 per cent of the total number, in 1904, and 343, or 26.5 per cent, in 1909, but in 1914, the number was 277, or but 21.6 per cent of the total number of establishments. The mixed coal and water gas establishments numbered 147 in 1914, 154 in 1909, and 140 in 1904, and they formed 11.4 per cent, 11.9 per cent, and 13.7 per cent, respectively, of all companies in these years; and the oil-gas companies numbered 153 in 1914, 179 in 1909, and 125 in 1904, and formed 11.9 per cent, 13.8 per cent, and 12.3 per cent of the respective totals, neither of these two classes showing marked proportionate changes at successive censuses.

There has been a considerable increase in the number of acetylene establishments. In 1904 these numbered 53, or 6.6 per cent of all companies, in 1909, 137, or 7.2 per cent, and in 1914, 165, or 12.9 per cent.

Establishments manufacturing carbureted water gas constituted a majority of all establishments in the Middle Atlantic states and in Connecticut, West Virginia, and South Carolina, and one-half of those in

Delaware, while the straight coal gas establishments exceeded all others in Michigan, Kentucky, Alabama, Mississippi, Idaho and Wyoming, and formed one-half of those in New Mexico and Utah. Mixed coal and water gas establishments are relatively numerous in the New England states and oil gas in the Mountain and Pacific states, all but three of the California establishments reporting oil gas. The largest number of acetylene establishments are located in the West North Central states, though they are quite numerous in Illinois and Indiana; and the gasoline or cold-process establishments are chiefly located in the contiguous states of Iowa, Minnesota, Nebraska, and Wisconsin, and in New York.

Illuminating and heating values.—The majority of the establishments reported the average candlepower for the year on the basis of 5 cubic feet of gas per hour and the heating value in terms of British thermal units per cubic foot. Table 20 shows the number of establishments, by geographic divisions and states, classified, first, according to candlepower, and, second, according to heating values, 1914. The table also shows the distribution of establishments according to candlepower for the United States in 1909.

Table 20

Geographic division and state.	Number of establishments.	Illuminating values: Number of establishments: 1914. Candlepower per 5 cubic feet per hour.														Heating values: Number of establishments: 1914. British thermal units per cubic foot.					
		Not reporting.	Less than 15.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	Over 25.	Not reporting.	Less than 550.	550 to 574.	575 to 625.	626 to 650.	More than 650.
United States:																					
1914	1,284	229	24	26	104	96	226	54	151	51	86	16	16	15	100	473	10	61	538	116	86
1909	1,296	105	23	15	146	91	207	48	170	53	101	31	36	29	241	.....	.....	.....	.....	.....	.....
Geographic divisions, 1914:																					
New England	134	18	.....	1	15	20	32	7	19	4	5	3	2	1	7	46	.....	3	63	17	5
Middle Atlantic	273	51	5	5	25	7	23	10	43	26	47	3	7	6	15	123	2	8	99	25	16
East North Central	266	43	10	3	59	30	45	13	28	4	7	.....	2	2	20	80	3	10	138	20	15
West North Central	281	90	1	4	43	15	43	4	20	3	13	6	5	6	28	159	1	11	83	12	15
South Atlantic	121	11	2	2	17	6	27	10	18	6	6	3	.....	.....	13	34	1	9	47	16	14
East South Central	47	3	2	5	15	5	11	.....	.....	.....	2	.....	.....	.....	4	10	1	8	19	1	8
West South Central	37	5	.....	.....	4	1	7	1	9	2	2	.....	.....	.....	6	7	.....	2	14	9	5
Mountain	37	3	2	4	5	2	7	2	6	.....	3	.....	.....	.....	3	2	1	8	22	1	3
Pacific	88	5	2	2	11	10	31	7	8	6	1	1	.....	.....	4	12	1	2	53	15	5
New England:																					
Maine	17	3	.....	.....	4	.....	5	.....	3	.....	.....	.....	.....	.....	2	9	.....	.....	5	2	1
New Hampshire	14	3	.....	.....	1	.....	2	1	.....	1	3	1	.....	1	1	3	.....	.....	8	2	1
Vermont	9	.....	.....	.....	2	.....	5	2	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	6	2	.....
Massachusetts	61	8	.....	.....	5	18	11	3	11	1	.....	.....	1	.....	3	27	.....	.....	24	8	2
Rhode Island	6	1	.....	.....	1	.....	3	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	5	.....	.....
Connecticut	27	3	.....	1	2	2	6	.....	5	2	2	2	1	.....	1	5	.....	3	15	3	1
Middle Atlantic:																					
New York	131	31	5	3	16	3	7	4	22	14	13	2	5	4	2	77	2	5	34	10	3
New Jersey	43	9	.....	1	2	2	3	1	1	4	14	.....	1	.....	5	17	.....	.....	18	3	5
Pennsylvania	99	11	.....	1	7	2	13	5	20	8	20	1	1	2	8	29	.....	3	47	12	8
East North Central:																					
Ohio	25	2	.....	.....	5	5	3	3	2	.....	2	.....	.....	.....	3	14	.....	.....	6	3	2
Indiana	60	15	9	1	9	2	11	.....	7	1	1	.....	.....	2	2	25	.....	2	25	6	2
Illinois	75	13	1	.....	18	5	14	2	13	.....	3	.....	.....	.....	6	18	1	4	42	2	8
Michigan	59	.....	.....	2	16	15	13	6	4	2	.....	.....	.....	.....	1	9	1	4	38	5	2
Wisconsin	47	13	.....	.....	11	3	4	2	2	1	1	.....	2	.....	8	14	1	.....	27	4	1
West North Central:																					
Minnesota	47	7	1	.....	13	2	8	.....	3	.....	1	.....	.....	2	10	31	.....	.....	13	.....	3
Iowa	113	43	.....	3	16	9	17	2	5	.....	6	2	3	1	6	61	.....	2	41	5	4
Missouri	35	7	.....	.....	6	3	7	.....	2	1	2	2	1	1	3	15	.....	5	8	3	4
North Dakota	9	4	.....	.....	2	.....	2	.....	1	.....	.....	.....	.....	.....	.....	5	.....	2	2	.....	.....
South Dakota	17	3	.....	.....	2	.....	4	.....	3	.....	1	1	.....	.....	3	10	.....	1	5	1	.....
Nebraska	48	23	.....	.....	3	1	4	1	5	2	3	1	1	2	2	32	1	1	9	3	2
Kansas	12	3	.....	1	1	.....	1	1	1	.....	.....	.....	.....	.....	4	5	.....	.....	5	.....	2
South Atlantic:																					
Delaware	8	.....	.....	.....	1	1	.....	1	2	.....	.....	2	.....	.....	1	3	.....	.....	3	1	1
Maryland	18	4	.....	1	3	1	.....	.....	6	1	1	.....	.....	.....	1	10	.....	.....	6	1	1
District of Columbia	3	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	1	.....	.....	.....	.....	2	1
Virginia	22	3	1	.....	6	1	3	3	.....	1	1	.....	.....	.....	3	9	.....	2	5	4	2
West Virginia	5	.....	.....	.....	.....	.....	2	2	.....	.....	.....	1	.....	.....	.....	1	.....	.....	3	.....	1
North Carolina	20	.....	1	.....	5	.....	7	2	3	.....	.....	.....	.....	.....	2	1	.....	4	8	5	2
South Carolina	12	1	.....	.....	1	.....	5	.....	1	2	.....	.....	.....	.....	2	2	.....	2	6	.....	2
Georgia	19	3	.....	1	.....	3	6	2	1	1	.....	.....	.....	.....	2	6	.....	.....	8	2	3
Florida	14	.....	.....	.....	1	.....	4	.....	5	.....	3	.....	.....	.....	1	2	1	1	8	1	1
East South Central:																					
Kentucky	13	.....	1	4	3	1	3	.....	.....	.....	.....	.....	.....	.....	1	2	.....	1	5	1	4
Tennessee	12	2	.....	1	3	2	1	.....	.....	.....	1	.....	.....	.....	2	4	.....	3	3	.....	2
Alabama	14	1	1	.....	6	2	3	.....	.....	.....	.....	.....	.....	.....	1	2	1	3	6	.....	2
Mississippi	8	.....	.....	.....	3	.....	4	.....	.....	.....	1	.....	.....	.....	.....	2	.....	1	5	.....	.....
West South Central:																					
Arkansas	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Louisiana	4	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	2	1	1
Oklahoma	5	.....	.....	.....	2	.....	1	.....	1	.....	.....	.....	.....	.....	1	1	.....	.....	1	2	1
Texas	27	4	.....	.....	1	1	6	1	7	2	1	.....	.....	.....	4	6	.....	2	10	6	3
Mountain:																					
Montana	6	1	1	1	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	1	.....	.....	2	3	.....	1
Idaho	4	.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	3	.....	1
Wyoming	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Colorado	8	1	.....	1	1	.....	3	.....	1	.....	1	.....	.....	.....	.....	1	.....	3	4	.....	.....
New Mexico	2	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Arizona	9	1	.....	.....	1	1	2	.....	3	.....	1	.....	.....	.....	.....	1	.....	2	5	1	.....
Utah	4	.....	.....	1	.....	1	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	3	.....	1
Nevada	3	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....
Pacific:																					
Washington	13	4	.....	2	3	.....	2	1	.....	1	.....	.....	.....	.....	.....	2	.....	.....	9	1	1
Oregon	9	.....	1	.....	1	2	3	.....	1	.....	.....	.....	.....	.....	1	.....	.....	1	6	1	1
California	66	1	1	.....	7	8	26	6	7	5	1	1	.....	.....	3	10	1	1	38	13	3

Candlepower.—Candlepower was reported by 1,055 establishments in 1914 and by 1,191 in 1909. Candlepower was formerly the standard for illuminating gas, but with the development of incandescent gas lighting and the general use of mantle burners, heating power has become of prime importance and in many cities is now the basis of control. As a result 229, or 17.9 per cent of all establishments, did not report candlepower in 1914, as compared with 105, or 8.1 per cent, in 1909. The table shows the number of establishments for each unit from 15 to 25, inclusive, and for all less than 15, and for all more than 25. It will be seen that the numbers for the even candlepowers range high and those for the odd candlepowers range low. The explanation is that requirements in regard to the maintenance of gas of standard quality are generally expressed in even figures, 18, 20, or 22 candlepower, as the case may be, and consequently the even units predominate. The "over 25 candlepower" group includes, among others, those engaged in the manufacture of Pintsch gas and acetylene, which have high illuminating values, the former approximately 55 candlepower and the latter from 200 to 300 candlepower on a 5 foot per hour basis.

The comparative statistics for 1909 and 1914 show a drop in candlepower standards. In 1909, 492 establishments, or 41.3 per cent of the number reporting candlepower, were covered by the 16 to 19 candlepower groups, inclusive, while in 1914, 570, or 54 per cent, are included within this range. In general, the 19 candlepower and lower groups have increased and the 20 candlepower and higher groups have decreased.

British thermal units.—Statistics in regard to heating values were collected for the first time at the present census. They were reported by 811 establishments, or 63.2 per cent of the total number. The prevailing standard is approximately 600 B. t. u., the returns from 538 establishments, or two-thirds of the number (66.3 per cent) reporting heat values ranging from 575 to 625, and nearly nine-tenths of the number (88.2 per cent) are included within the range 550 to 650. Included in the "more than 650" group are some of the establishments manufacturing Pintsch gas, approximately 1,300 B. t. u.; acetylene, 1,440 to 1,750 B. t. u., and blau gas, 1,800 to 2,000 B. t. u.

Gas and electric light and power.—In many cases gas and electric plants are operated in conjunction, and Table 21 shows the total number of establishments and the number that gave both lines of service in 1914 and 1909.

Table 21

Geographic division and state.	Number of establishments.		Number operating gas and electric plants in conjunction.	
	1914	1909	1914	1909
United States	1,284	1,296	[1] 385	392
Geographic divisions:				
New England	134	142	52	54
Middle Atlantic	273	287	73	70
East North Central	266	273	84	91
West North Central	281	271	52	48
South Atlantic	121	104	30	27
East South Central	47	47	23	23
West South Central	37	43	11	12
Mountain	37	35	14	12
Pacific	88	94	46	55
New England:				
Maine	17	19	6	5
New Hampshire	14	14	5	6
Vermont	9	9	4	3
Massachusetts	61	64	21	24
Rhode Island	6	8	2	1
Connecticut	27	28	14	15
Middle Atlantic:				
New York	131	141	46	51
New Jersey	43	47	4	5
Pennsylvania	99	99	23	14
East North Central:				
Ohio	25	38	5	12
Indiana	60	53	16	17
Illinois	75	78	38	38
Michigan	59	55	8	9
Wisconsin	47	49	17	15
West North Central:				
Minnesota	47	42	8	8
Iowa	113	117	19	14
Missouri	35	29	14	15
North Dakota	9	6	2	2
South Dakota	17	17	3	3
Nebraska	48	48	5	4
Kansas	12	12	1	2
South Atlantic:				
Delaware	8	5	.....	.....
Maryland	18	18	6	8
District of Columbia	3	3	.....	.....
Virginia	22	21	3	2
West Virginia	5	4	1	1
North Carolina	20	14	6	4
South Carolina	12	12	4	3
Georgia	19	15	5	4
Florida	14	12	5	5
East South Central:				
Kentucky	13	15	7	8
Tennessee	12	11	5	4
Alabama	14	13	6	6
Mississippi	8	8	5	5
West South Central:				
Arkansas	1	5	1	2
Louisiana	4	5	2	1
Oklahoma	5	6	3	3
Texas	27	27	5	6
Mountain:				
Montana	6	5	.....	1
Idaho	4	3	.....	.....
Wyoming	1	1	1	1
Colorado	8	10	3	3
New Mexico	2	2	2	1
Arizona	9	8	6	4
Utah	4	3	1	1
Nevada	3	3	1	1
Pacific:				
Washington	13	12	4	3
Oregon	9	8	6	5
California	66	74	36	47

[1] Includes eight establishments under different names.

In the Pacific division more than half of the gas establishments operate electric light and power departments, and the same is true of Illinois, Connecticut, Kentucky, and some of the minor states.

Miles of mains.—Table 22 shows, by geographic divisions and states, the mileage of gas mains employed in the distribution of manufactured gas in 1914 and 1909.

Table 22

GEOGRAPHIC DIVISION AND STATE.	MILES OF MAINS. 1914	MILES OF MAINS. 1909
UNITED STATES	58,727	45,119
GEOGRAPHIC DIVISIONS:		
New England	7,228	5,567
Middle Atlantic	15,553	13,219
East North Central	14,468	11,767
West North Central	5,695	4,025
South Atlantic	3,739	2,652
East South Central	1,778	1,210
West South Central	1,393	1,156
Mountain	1,131	904
Pacific	7,742	4,619
NEW ENGLAND:		
Maine	290	199
New Hampshire	298	251
Vermont	136	126
Massachusetts	4,401	3,301
Rhode Island	698	616
Connecticut	1,405	1,074
MIDDLE ATLANTIC:		
New York	7,031	6,687
New Jersey	4,227	3,003
Pennsylvania	4,295	3,529
EAST NORTH CENTRAL:		
Ohio[1]	1,150	2,048
Indiana	1,995	1,518
Illinois	7,355	5,187
Michigan	2,489	1,837
Wisconsin	1,479	1,177
WEST NORTH CENTRAL:		
Minnesota	1,196	793
Iowa	1,847	1,390
Missouri	1,619	1,100
North Dakota	111	69
South Dakota	162	144
Nebraska	664	491
Kansas	94	38
SOUTH ATLANTIC:		
Delaware	178	119
Maryland	894	756
District of Columbia	584	452
Virginia	592	395
West Virginia	96	49
North Carolina	357	153
South Carolina	197	136
Georgia	517	395
Florida	324	197
EAST SOUTH CENTRAL:		
Kentucky	613	360
Tennessee	519	418
Alabama	456	298
Mississippi	190	134
WEST SOUTH CENTRAL:		
Arkansas[2]	8	90
Louisiana	419	344
Oklahoma	38	60
Texas	878	662
MOUNTAIN:		
Montana	90	61
Idaho	59	33
Wyoming	9	6
Colorado	557	553
New Mexico	34	22
Arizona	153	90
Utah	184	108
Nevada	45	31
PACIFIC:		
Washington	1,196	669
Oregon	927	337
California	5,619	3,613

[1] Only 25 establishments distributed manufactured gas in 1914; 38 in 1909.
[2] Only 1 establishment distributed manufactured gas in 1914; 5 in 1909.

The length of mains required to distribute a given quantity of gas depends upon the density of population and the consumption per capita. Where there is a large consumption of gas for heat and power the length of mains is likely to be less in proportion to gas output than where the gas is chiefly consumed for lighting. The returns do not take into consideration size or carrying capacity. Illinois ranked first in miles of mains and New York second, though in gas production New York exceeded Illinois. California ranked third, in 1914, in gas production and in length of mains. Pennsylvania, with a greater production of gas than Massachusetts, reported less mileage for its mains.

For the United States the output of gas was equal to 3,468,000 cubic feet of gas per mile of mains in 1914, and 3,343,000 cubic feet in 1909. In New York the ratios were 7,790,000 cubic feet per mile in 1914 and 6,820,000 cubic feet in 1909; in Illinois, Pennsylvania, Massachusetts, and New Jersey the ratios for 1914 range from 3,680,000 cubic feet per mile of mains in the former state to 3,022,000 in the latter, and in California the ratio was 2,704,000.

Stoves and heaters.—Table 23 shows the number of gas stoves and heaters connected with the mains at the close of the years 1914 and 1909. These figures, however, are not to be taken as complete, as they include only those installed by the companies or known to be attached for service.

Table 23

GEOGRAPHIC DIVISION AND STATE.	NUMBER OF GAS STOVES AND HEATERS CONNECTED WITH MAINS. 1914	NUMBER OF GAS STOVES AND HEATERS CONNECTED WITH MAINS. 1909
UNITED STATES	5,168,924	3,603,435
GEOGRAPHIC DIVISIONS:		
New England	439,658	291,516
Middle Atlantic	1,831,558	1,553,921
East North Central	1,227,975	827,822
West North Central	412,894	284,645
South Atlantic	333,456	177,384
East South Central	161,847	73,667
West South Central	114,092	74,761
Mountain	137,038	79,148
Pacific	510,406	240,571
NEW ENGLAND:		
Maine	28,172	6,002
New Hampshire	31,722	21,965
Vermont	11,677	8,943
Massachusetts	245,417	168,442
Rhode Island	19,301	17,228
Connecticut	103,369	68,936
MIDDLE ATLANTIC:		
New York	984,590	1,114,126
New Jersey	346,551	29,552
Pennsylvania	500,417	410,243
EAST NORTH CENTRAL:		
Ohio[1]	19,184	15,951
Indiana	169,507	97,998
Illinois	620,911	437,447
Michigan	276,653	185,218
Wisconsin	141,720	91,208
WEST NORTH CENTRAL:		
Minnesota	42,779	22,736
Iowa	136,482	82,282
Missouri	139,422	119,592
North Dakota	8,588	3,752
South Dakota	11,286	6,635
Nebraska	71,317	49,199
Kansas	3,020	449
SOUTH ATLANTIC:		
Delaware	15,244	7,104
Maryland	129,251	71,825
District of Columbia	3,462	2,900
Virginia	47,985	27,065
West Virginia	2,928	465
North Carolina	21,711	5,230
South Carolina	18,629	6,024
Georgia	53,744	36,221
Florida	40,502	20,550
EAST SOUTH CENTRAL:		
Kentucky	68,393	19,085
Tennessee	50,063	29,567
Alabama	32,531	17,354
Mississippi	10,860	7,661
WEST SOUTH CENTRAL:		
Arkansas[2]	1,255	6,077
Louisiana	55,375	20,432
Oklahoma	4,484	3,062
Texas	52,978	45,190
MOUNTAIN:		
Montana	8,604	2,766
Idaho	4,048	1,607
Wyoming	1,042	188
Colorado	92,789	60,459
New Mexico	1,883	651
Arizona	8,127	3,237
Utah	18,725	9,376
Nevada	1,820	864
PACIFIC:		
Washington	91,504	33,750
Oregon	47,231	22,924
California	371,671	183,897

[1] Only 25 establishments distributed manufactured gas in 1914; 38 in 1909.
[2] Only 1 establishment distributed manufactured gas in 1914; 5 in 1909.

MUNICIPAL ESTABLISHMENTS.

The establishments owned by municipalities are operated under conditions somewhat different from the commercial companies and the statistics therefor are presented separately. A large number are in small towns and villages, in districts too thinly populated for commercial operations. Three-fourths of the total number had products valued at less than $5,000 and more than one-third at less than $2,000. Table 24 gives for the United States, the number and value of products of the municipal establishments in 1914 and 1909 by geographic divisions and also by size groups, according to value of products.

Table 24

GEOGRAPHIC DIVISION AND SIZE.	MUNICIPAL ESTABLISHMENTS.			
	Number.		Value of products.	
	1914	1909	1914	1909
UNITED STATES	138	119	$1,757,017	$1,471,097
GEOGRAPHIC DIVISIONS:				
New England	5	5	473,620	352,147
Middle Atlantic	5	4	24,103	8,436
East North Central	26	17	101,004	51,881
West North Central	81	75	217,230	188,382
South Atlantic	17	15	887,736	844,075
East South Central	3	2	38,829	8,951
Pacific (California)	1	1	14,495	17,225
Classified according to value of products:				
Less than $5,000	103	97	215,572	218,615
$5,000 to $20,000	24	13	212,285	119,574
$20,000 to $100,000	9	6	464,034	324,400
$100,000 and over	2	3	865,126	808,508
Per cent distribution:				
Less than $5,000	74.6	81.5	12.3	14.9
$5,000 to $20,000	17.4	10.9	12.1	8.1
$20,000 to $100,000	6.5	5.1	26.4	22.0
$100,000 and over	1.5	2.5	49.2	55.0

The municipal establishments, though they constituted 10.7 per cent of the total number in 1914 and 9.2 per cent in 1909, furnished less than 1 per cent of the products in each year. They are most numerous in the West North Central division, where in 1914 they constituted 28.8 per cent of all establishments. The statistics show an increase of 16 per cent in number of establishments and 19.4 per cent in value of products for the five-year period.

The gas works of Philadelphia, although owned by the city, are operated by a private corporation and are not here included. The two establishments with products exceeding $100,000 are the gas works of Richmond, Va., and Holyoke, Mass. Included in the "$20,000 to $100,000" group, 1914, are five with products in excess of $50,000—those of Norwich, Conn., Westfield and Wakefield, Mass., and Danville and Alexandria, Va. These seven establishments had products valued at $1,199,886 and the remaining 131 establishments had products valued at $557,131.

Table 25 gives in detail the statistics for 1914 for all municipal establishments, by geographic divisions. It shows the distribution of the establishments, by kind of gas manufactured, the general statistics with respect to persons employed, primary horsepower, capital, salaries and wages, the general and special statistics for materials and products, and the miles of mains.

Table 25

	MUNICIPAL ESTABLISHMENTS: 1914.							
	United States.	Geographic division.						
		New England.	Middle Atlantic.	East North Central.	West North Central.	South Atlantic.	East South Central.	Pacific (California).
Number of establishments	138	[1] 5	[2] 5	[3] 26	[4] 81	[5] 17	[6] 3	1
Number manufacturing:								
Straight coal gas	11	1	.....	.....	.....	7	3	.....
Carbureted water gas	18	2	1	3	8	4	.....	.....
Mixed coal and water gas	3	2	.....	.....	.....	1	.....	.....
Oil gas	4	.....	.....	.....	3	.....	.....	1
Acetylene	31	.....	3	9	14	5	.....	.....
Gasoline (gas machine, cold process) gas	71	.....	1	14	56	.....	.....	.....
Number operating gas and electric light and power plants in conjunction	16	5	.....	2	2	5	1	1
Persons engaged	542	193	8	42	88	184	23	4
Salaried employees	112	45	2	10	12	35	6	2
Wage earners (average number)	430	148	6	32	76	149	17	2
Primary horsepower	2,224	174	13	272	975	746	14	30
Capital	$5,554,187	$1,353,060	$84,280	$273,137	$481,042	$3,089,083	$223,948	$49,637
Salaries and wages	337,659	124,222	4,017	19,668	38,531	134,009	13,804	3,408
Salaries	65,918	24,539	315	2,381	3,928	29,514	4,233	1,008
Wages	271,741	99,683	3,702	17,287	34,603	104,495	9,571	2,400
Cost of materials	717,371	167,021	10,831	70,625	150,584	300,399	13,796	4,115
Value of products	1,757,017	473,620	24,103	101,004	217,230	887,736	38,829	14,495
Value added by manufacture (value of products less cost of materials)	1,039,646	306,599	13,272	30,379	66,646	587,337	25,033	10,380
MATERIALS.								
Total cost	$717,371	$167,021	$10,831	$70,625	$150,584	$300,399	$13,796	$4,115
Coal used for gas making:								
Tons (2,000 lbs)	74,944	27,124	377	.....	.....	43,805	3,638	.....
Cost	$256,579	$119,165	$2,020	.....	.....	$123,621	$11,773	.....
Oil used for gas making:								
Gallons	3,790,220	537,414	62,928	383,657	229,618	2,429,057	.....	147,546
Cost	$182,559	$27,277	$2,517	$14,109	$9,773	$125,939	.....	$2,944
Gasoline for gas making:								
Gallons	746,371	.....	1,430	151,949	592,992	.....	.....	.....
Cost	$130,000	.....	$429	$27,758	$101,813	.....	.....	.....

[1] Massachusetts, 4; Connecticut, 1.
[2] New York, 3; New Jersey, 1; Pennsylvania, 1.
[3] Ohio 2; Indiana, 7; Illinois, 4; Michigan, 1; Wisconsin, 12.
[4] Minnesota, 28; Iowa, 34; North Dakota, 1; South Dakota, 5; Nebraska, 11; Kansas, 2.
[5] Maryland, 1; Virginia, 7; West Virginia, 1; South Carolina, 1; Georgia, 5; Florida, 2.
[6] Kentucky, 1; Alabama, 2.

Table 25—Continued.

	MUNICIPAL ESTABLISHMENTS: 1914.							
	United States.	Geographic division.						
		New England.	Middle Atlantic.	East North Central.	West North Central.	South Atlantic.	East South Central.	Pacific (California).
MATERIALS—continued.								
Coke used for gas making:								
Tons (2,000 lbs.)	5,709	610	.....	1,809	1,155	2,135	.....	.....
Cost	$28,085	$2,709	.....	$8,503	$6,583	$10,890	.....	.....
Calcium carbide:								
Pounds	1,612,275	.....	736,000	207,400	476,875	192,000	.....	.....
Cost	$33,508	.....	$5,060	$7,022	$15,260	$6,166	.....	.....
Fuel for boilers and retorts, cost	30,270	722	389	5,637	8,066	15,406	50	.....
Amount paid for lamps and appliances purchased for sale	16,634	8,031	140	146	791	7,104	422	.....
All other materials, cost	39,136	9,117	276	7,450	8,298	11,273	1,551	1,171
PRODUCTS.								
Total value	1,757,017	473,620	24,103	101,004	217,230	887,736	38,820	14,495
Gas:								
Cubic feet, thousands	1,636,371	383,813	13,093	100,749	142,017	941,338	41,137	13,624
Value	$1,579,886	$390,201	$23,932	$98,548	$215,173	$806,335	$31,743	$13,864
Straight coal—								
Cubic feet, thousands	252,438	44,600	.....	.....	.....	166,701	41,137	.....
Value	$237,377	$44,600	.....	.....	.....	$161,034	$31,743	.....
Carbureted water—								
Cubic feet, thousands	227,926	4,746	12,158	70,261	29,205	111,556	.....	.....
Value	$173,384	$6,317	$15,198	$49,092	$41,047	$61,730	.....	.....
Mixed coal and water—								
Cubic feet, thousands	996,452	334,467	.....	.....	.....	661,985	.....	.....
Value	$910,861	$339,374	.....	.....	.....	$571,487	.....	.....
Oil—								
Cubic feet, thousands	22,195	.....	.....	.....	8,571	.....	.....	13,624
Value	$28,123	.....	.....	.....	$14,259	.....	.....	$13,864
Acetylene—								
Cubic feet, thousands	4,477	.....	700	898	1,783	1,096	.....	.....
Value	$50,321	.....	$8,204	$10,516	$19,517	$12,084	.....	.....
Gasoline (gas machine, cold process)—								
Cubic feet, thousands	132,883	.....	235	20,590	103,058	.....	.....	.....
Value	$179,820	.....	$530	$38,040	$140,350	.....	.....	.....
Coke:								
Bushels	1,149,810	444,700	.....	.....	.....	631,270	73,840	.....
Value	$82,536	$32,939	.....	.....	.....	$45,275	$4,322	.....
Tar:								
Gallons	1,170,843	335,051	.....	14,667	.....	788,025	42,100	.....
Value	$33,117	$7,992	.....	$440	.....	$22,751	$1,934	.....
All other products, value	37,404	31,548	.....	1,516	151	3,829	.....	360
Receipts from rents and sales of lamps and appliances, value	24,074	10,850	171	500	1,006	9,546	830	271
MAINS.								
Miles of mains	927	147	21	125	250	334	27	14

The majority of the municipal establishments are gas-machine plants, either gasoline or calcium carbide. Only 36 establishments in 1914 manufactured gas by distillation from bituminous coal and oil, or from coal and coke by the water-gas process, while 71 made gasoline (cold process) gas, and 31 acetylene. In many of the gas-machine plants, which only require periodic charging and inspection, a superintendent or manager does all the work, and in some cases, although one or two wage earners are employed, the time of employment is so short that in computing the average number of wage earners none could be shown for the establishment.

The total production of gasoline gas by all establishments in 1914 was 181,412,000 cubic feet, reported by 112 establishments, and of acetylene gas by producers distributing through mains, 14,868,000 cubic feet, the product of 125 establishments. Of the former, 132,883,000 cubic feet, or 73.2 per cent, was the product of 71 municipal plants, or 63.4 per cent of the total number making gasoline gas; and of the latter, 4,477,000 cubic feet, or 30.1 per cent, was the product of 31 municipal plants, or 24.8 per cent of the total number of establishments supplying acetylene gas through mains.

DETAIL STATE TABLES.

The principal statistics secured by the census inquiry concerning gas manufacture are presented, by states, in Tables 26 and 27. Table 26 shows, for 1914, 1909, and 1904, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products for the industry. Table 27 gives more detailed statistics for 1914.

TABLE 26.—COMPARATIVE SUMMARY FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	1,284	43,792	245,715	$26,802	$76,779	$220,238
	1909	1,296	37,215	128,350	20,931	52,428	166,814
	1904	1,019	30,566	73,101	17,058	37,180	125,145
Alabama	1914	14	214	461	129	387	1,125
	1909	13	259	599	133	214	687
	1904	13	136	1,379	52	87	355
Arizona	1914	9	59	646	41	90	267
	1909	8	20	153	20	47	137
	1904	3	7	14	6	8	31
California	1914	66	2,317	22,054	2,023	3,422	13,578
	1909	74	1,666	7,502	1,408	2,604	8,927
	1904	53	848	3,606	650	1,184	5,412
Colorado	1914	8	387	1,379	303	562	1,588
	1909	10	306	646	191	636	1,472
	1904	8	109	333	98	257	805
Connecticut	1914	27	1,209	5,089	827	1,471	4,746
	1909	28	926	4,100	557	1,005	3,446
	1904	26	640	2,237	330	826	2,558
Delaware	1914	8	125	158	75	205	570
	1909	5	128	333	76	109	364
	1904	4	76	105	52	118	305
Florida	1914	14	349	968	183	338	1,049
	1909	12	210	746	113	182	585
	1904	11	95	522	35	81	314
Georgia	1914	19	560	1,999	279	653	2,021
	1909	15	459	689	206	368	1,425
	1904	12	482	587	164	291	1,061
Idaho	1914	4	44	224	32	52	171
	1909	3	35	27	27	52	113
	[1]1904	.....	.....	.....	.....	.....	.....
Illinois	1914	75	3,890	31,058	2,659	8,035	28,171
	1909	78	6,301	18,385	2,967	6,210	21,052
	1904	64	2,964	5,700	1,695	4,519	16,008
Indiana	1914	60	1,668	3,707	958	2,611	6,398
	1909	53	928	5,845	508	1,102	3,147
	1904	43	621	1,855	289	571	1,839
Iowa	1914	113	768	5,394	497	1,638	4,066
	1909	117	806	2,043	380	1,111	2,893
	1904	60	468	970	254	624	1,832
Kansas	1914	12	62	1,544	37	66	225
	1909	12	36	275	22	57	208
	1904	22	218	1,727	95	221	523
Kentucky	1914	13	232	1,178	131	190	589
	1909	15	386	991	206	315	1,004
	1904	17	417	792	192	264	961
Maine	1914	17	220	490	152	292	769
	1909	19	216	349	120	212	549
	1904	15	100	171	63	129	444
Maryland	1914	18	1,234	1,677	398	1,405	4,157
	1909	18	476	1,555	220	629	3,223
	1904	12	227	1,361	128	458	1,994
Massachusetts	1014	61	3,182	11,462	2,141	5,951	15,752
	1909	64	2,292	7,371	1,250	3,810	11,074
	1904	64	1,847	5,444	1,091	3,097	8,036
Michigan	1914	59	2,349	34,935	1,584	3,356	10,441
	1909	55	1,771	6,055	1,096	2,129	6,748
	1904	46	1,287	2,379	575	1,120	3,866
Minnesota	1914	47	1,038	4,670	646	1,681	4,159
	1909	42	848	3,538	292	820	2,874
	1904	16	575	1,238	268	624	2,033
Mississippi	1914	8	113	196	$56	$111	$292
	1909	8	101	148	39	86	256
	1904	5	55	111	24	39	125
Missouri	1914	35	1,342	16,351	844	2,143	7,197
	1909	29	941	3,635	636	1,223	4,638
	1904	28	1,826	3,050	898	1,778	5,585
Montana	1914	6	59	172	58	95	266
	1909	5	48	129	41	77	190
	[1]1904	.....	.....	.....	.....	.....	.....
Nebraska	1914	48	354	1,620	227	606	1,928
	1909	43	400	1,015	209	445	1,415
	1904	25	302	1,461	142	240	912
Nevada	1914	3	16	130	16	24	77
	1909	3	6	83	8	36	67
	[1]1904	.....	.....	.....	.....	.....	.....
New Hampshire	1914	14	244	513	147	324	842
	1909	14	247	220	106	180	581
	1904	13	142	265	73	168	486
New Jersey	1914	43	2,205	10,397	761	4,075	14,020
	1909	47	1,917	6,717	853	2,855	9,837
	1904	38	1,367	2,835	728	1,524	6,372
New York	1914	131	10,090	44,637	5,927	21,560	52,816
	1909	141	6,422	30,089	4,364	15,018	42,347
	1904	100	7,029	15,997	4,636	10,940	35,316
North Carolina	1914	20	210	705	102	252	716
	1909	14	151	308	62	123	369
	1904	12	104	309	38	71	223
North Dakota	1914	9	52	65	29	109	273
	1909	6	28	52	13	78	199
	1904	4	10	1,825	6	34	102
Ohio	1914	25	398	1,353	262	480	1,432
	1909	38	666	2,165	431	827	3,580
	1904	58	2,239	2,052	1,083	1,347	4,812
Oklahoma	1914	5	44	352	23	52	147
	1909	6	38	181	21	44	115
	[2]1904	5	15	18	8	14	40
Oregon	1914	9	385	2,482	310	404	1,528
	1909	8	260	1,483	194	200	900
	1904	5	32	202	31	84	457
Pennsylvania	1914	99	2,796	12,552	1,420	6,440	16,745
	1909	99	3,119	9,374	1,501	4,099	15,840
	1904	90	2,882	6,582	1,478	3,143	10,800
Rhode Island	1914	6	605	1,731	477	884	2,402
	1909	8	412	719	303	530	1,833
	1904	6	462	652	303	502	1,580
South Carolina	1914	12	136	509	68	169	496
	1909	12	127	207	52	114	334
	1904	4	108	43	31	59	103
South Dakota	1914	17	80	651	57	136	380
	1909	17	108	318	64	120	278
	1904	7	47	115	26	48	148
Tennessee	1914	12	506	655	292	518	1,571
	1909	11	422	613	164	357	1,282
	1904	11	358	624	127	204	830
Texas	1914	27	613	1,759	354	768	2,185
	1909	27	575	1,090	288	545	1,644
	1904	19	164	325	103	197	710
Utah	1914	4	208	720	141	279	617
	1909	3	167	291	108	168	360
	1904	3	41	217	22	32	160

[1] Figures can not be shown without disclosing individual operations.

[2] Excluding statistics for one establishment in Indian Territory.

TABLE 26.—COMPARATIVE SUMMARY FOR 1914, 1909, AND 1904—Continued.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
Vermont	1914	9	59	1,543	$32	$122	$337
	1909	9	70	153	43	100	278
	1904	6	29	187	13	38	129
Virginia	1914	22	533	1,488	306	750	2,150
	1909	21	378	1,116	217	431	1,472
	1904	19	268	357	136	285	980
Washington	1914	13	630	2,568	487	759	2,369
	1909	12	465	1,479	273	661	1,684
	1904	7	108	454	78	149	602
West Virginia	1914	5	38	167	$21	$49	$108
	1909	4	61	45	47	36	203
	1904	7	86	58	44	60	158
Wisconsin	1914	47	1,240	11,159	722	1,816	5,295
	1909	49	1,063	3,278	583	1,389	4,001
	1909	33	911	2,859	464	819	2,911
All other states	1914	11	929	2,147	568	1,449	4,147
	1909	16	954	2,240	519	1,074	3,068
	1904	25	864	2,083	529	926	3,120

TABLE 27.—GAS, ILLUMINATING AND HEATING—

	STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male.	Under 16. Female.	Capital.
1	UNITED STATES	1,284	63,993	78	2,909	14,593	2,621	43,792	Je 47,572	De 40,994	42,284	42,067	190	27	.....	$1,252,421,584
2	Alabama	14	323	.....	25	74	10	214	Ja 224	My [3] 207	217	217	.....	.....	.....	6,577,105
3	Arizona	9	118	.....	27	30	2	59	Mh 75	Se 51	59	59	.....	.....	.....	1,071,662
4	California	66	3,977	1	174	1,250	235	2,317	My 2,412	De 2,212	2,246	2,244	.....	2	.....	96,147,128
5	Colorado	8	565	.....	21	132	25	387	Je 441	De 327	330	329	1	.....	.....	12,433,769
6	Connecticut	27	1,592	1	85	197	100	1,209	Jy 1,428	Mh 1,023	1,194	1,189	.....	5	.....	22,174,341
7	Delaware	8	168	1	8	26	8	125	Je 148	De 96	98	98	.....	.....	.....	7,193,896
8	Florida	14	462	.....	27	75	11	349	Ap [3] 493	No 269	296	296	.....	.....	.....	8,906,623
9	Georgia	19	769	.....	42	151	16	560	Je 668	Fe 468	521	479	42	.....	.....	9,985,826
10	Idaho	4	54	.....	4	2	4	44	Jy 49	Se 37	40	39	1	.....	.....	1,440,917
11	Illinois	75	6,256	.....	254	1,999	113	3,890	My 4,507	Ja 3,353	3,464	3,464	.....	.....	.....	169,528,184
12	Indiana	60	2,228	9	95	352	104	1,668	Jy 1,979	Ja 1,435	1,548	1,545	3	.....	.....	27,703,233
13	Iowa	113	1,084	12	88	162	54	768	Jy [3] 844	Fe 693	756	756	.....	.....	.....	20,286,524
14	Kansas	12	94	3	12	12	5	62	Je 65	Ja 59	62	62	.....	.....	.....	782,255
15	Kentucky	13	307	.....	24	40	11	232	Fe 618	De 96	561	556	.....	5	.....	7,044,693
16	Maine	17	313	3	30	48	12	220	Se 265	Mh 182	194	194	.....	.....	.....	4,084,525
17	Maryland	18	1,786	3	73	391	85	1,234	My 1,459	Au 1,066	1,237	1,230	1	6	.....	20,663,210
18	Massachusetts	61	3,933	1	204	325	221	3,182	Je 3,509	Mh 2,930	3,045	2,980	65	.....	.....	67,696,765
19	Michigan	59	3,300	2	161	498	290	2,349	Je 2,591	No 2,157	2,237	2,233	4	.....	.....	49,188,848
20	Minnesota	47	1,339	1	54	207	39	1,038	My 1,236	Mh 869	984	984	.....	.....	.....	17,932,037
21	Mississippi	8	162	.....	17	25	7	113	Je 134	Ja [3] 102	102	102	.....	.....	.....	1,372,099
22	Missouri	35	2,143	2	75	515	209	1,342	Je 1,454	Mh 1,261	1,346	1,346	.....	.....	.....	44,307,311
23	Montana	6	81	.....	9	10	3	59	Je 85	No 45	52	51	1	.....	.....	1,546,364
24	Nebraska	48	527	13	38	99	23	354	Je 412	No 312	317	316	1	.....	.....	11,077,327
25	Nevada	3	38	.....	6	11	5	16	My [3] 20	De [3] 12	14	13	1	.....	.....	268,446
26	New Hampshire	14	319	.....	23	35	17	244	Se 303	De 208	208	208	.....	.....	.....	3,307,319
27	New Jersey	43	3,750	3	179	1,249	114	2,205	Je 2,414	No 1,938	1,990	1,988	2	.....	.....	94,619,320
28	New York	131	14,805	7	502	3,943	353	10,090	Je 10,744	Mh 9,589	9,812	9,802	10	.....	.....	313,702,040
29	North Carolina	20	290	.....	36	26	18	210	My 229	Fe 191	214	207	.....	7	.....	4,164,102
30	North Dakota	9	74	2	7	11	2	52	Jy 76	Mh 40	50	49	1	.....	.....	832,894
31	Ohio	25	512	2	38	61	13	398	My 427	Ja 362	427	425	1	1	.....	8,570,222
32	Oklahoma	5	60	.....	6	8	2	44	Je 47	Oc 39	46	46	.....	.....	.....	1,478,718
33	Oregon	9	570	.....	18	149	18	385	Ap 503	Au 306	357	357	.....	.....	.....	12,930,138
34	Pennsylvania	99	4,556	6	163	1,420	171	2,796	Se 3,263	Fe 2,551	2,636	2,630	6	.....	.....	70,800,220
35	Rhode Island	6	685	.....	26	41	13	605	Je 703	Fe 539	561	521	40	.....	.....	10,030,355
36	South Carolina	12	214	.....	19	48	11	136	Au 151	Fe 115	148	148	.....	.....	.....	1,736,143
37	South Dakota	17	120	4	14	14	8	80	Ap 102	Ja [3] 69	72	71	1	.....	.....	2,034,648
38	Tennessee	12	646	.....	22	103	15	506	My 595	Mh 394	539	539	.....	.....	.....	13,634,170
39	Texas	27	849	1	60	146	29	613	De 791	Fe 516	791	788	2	1	.....	12,396,727
40	Utah	4	280	.....	11	45	16	208	Jy 383	Fe 130	136	136	.....	.....	.....	5,676,953
41	Vermont	9	99	.....	22	9	9	59	Se 63	Ap [3] 57	57	57	.....	.....	.....	2,443,740
42	Virginia	22	650	1	34	56	26	533	Je 680	Oc 467	488	488	.....	.....	.....	7,407,783
43	Washington	13	894	.....	43	190	31	630	Ap 702	De 560	560	560	.....	.....	.....	23,639,196
44	West Virginia	5	57	.....	4	15	.....	38	Je 47	Ja [3] 32	32	31	1	.....	.....	833,437
45	Wisconsin	47	1,769	.....	90	298	141	1,240	Jy 1,455	De 1,036	1,243	1,243	.....	.....	.....	29,539,492
46	All other states [4]	11	1,085	.....	39	95	22	929	.....	.....	997	991	6	.....	.....	23,230,939

[1] Owned power only. [2] Includes rented power, other than electric. [3] Same number reported for one or more other months.

DETAIL STATEMENT, BY STATES: 1914.

EXPENSES.										POWER.						
Salaries and wages.				Rent and taxes.		For materials.				Primary horsepower.						
Officials.	Clerks, etc.	Wage earners.	For contract work.	Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.	Value of products.	Value added by manufacture.	Total.	Steam engines.[1]	Internal-combustion engines.[2]	Water wheels and motors.[1]	Electric (rented).	Electric horsepower generated in establishments reporting.	
$5,772,900	$11,756,120	$26,801,664	$551,760	$2,489,978	$10,898,991	$22,885,095	$53,894,193	$220,237,790	$143,458,502	245,715	212,223	13,796	425	19,271	19,555	1
28,614	40,513	128,694	.....	8	37,877	127,978	258,873	1,124,693	737,842	461	461	.....	.....	.....	72	2
16,406	16,696	40,602	.....	.....	17,958	15,487	74,193	267,249	177,569	646	560	.....	.....	86	15	3
342,625	909,515	2,022,851	140,505	4,626	608,478	656,698	2,765,373	13,578,367	10,156,296	22,054	11,648	797	.....	9,609	18	4
40,845	123,419	302,925	463	.....	113,328	135,791	426,461	1,587,964	1,025,712	1,379	985	57	.....	337	.....	5
160,103	222,892	827,494	17,536	30,884	214,586	186,707	1,284,326	4,745,720	3,274,687	5,039	4,331	30	300	428	1,413	6
22,030	34,423	75,314	210	.....	11,200	55,189	149,821	570,426	365,416	158	153	5	.....	.....	.....	7
47,485	56,426	182,607	.....	1,931	31,774	80,623	257,503	1,049,132	710,946	968	958	.....	.....	10	.....	8
67,728	145,925	278,822	922	1,450	114,726	206,344	446,645	2,020,780	1,367,791	1,999	1,534	.....	.....	465	17	9
8,925	6,376	31,885	.....	.....	4,780	7,332	44,616	171,299	119,351	224	220	.....	.....	4	.....	10
676,968	1,723,491	2,658,835	46,241	3,071	1,264,238	2,619,670	5,415,819	28,170,560	20,135,071	31,058	25,420	5,165	.....	473	600	11
164,023	291,611	958,258	2,933	365,449	152,143	430,798	2,179,772	6,398,147	3,787,577	3,707	3,051	54	.....	602	1,293	12
140,761	144,429	497,439	1,793	3,325	188,229	573,557	1,064,274	4,065,908	2,428,077	5,294	4,770	351	17	256	953	13
16,628	12,365	36,881	.....	90	6,804	16,611	49,812	224,502	158,079	1,544	1,467	35	.....	42	.....	14
22,233	28,769	130,581	.....	30	51,048	38,944	151,224	588,915	398,747	1,178	1,065	44	.....	69	.....	15
31,524	36,522	152,443	77,223	.....	31,465	103,050	188,647	768,854	477,157	490	466	19	.....	5	.....	16
85,010	192,502	397,754	92	.....	303,997	353,753	1,051,617	4,156,885	2,751,515	1,677	1,615	18	.....	44	13	17
386,027	446,331	2,141,492	77,120	4,895	1,222,701	1,875,346	4,076,047	15,751,637	9,800,244	11,462	9,807	54	12	1,589	1,627	18
282,790	512,846	1,584,126	19,424	2,004	462,449	1,029,680	2,326,514	10,440,641	7,084,447	34,935	34,000	308	.....	627	.....	19
124,352	204,965	646,370	1,347	175	235,033	395,705	1,285,565	4,158,606	2,477,336	4,670	4,147	339	.....	184	108	20
18,059	19,547	55,594	.....	5,787	13,124	31,423	79,222	291,959	181,314	196	181	.....	.....	15	.....	21
166,818	491,023	844,073	13,495	37,115	382,175	380,065	1,762,844	7,196,994	5,054,085	16,351	15,020	1,163	.....	168	3,315	22
14,031	9,006	58,034	2,500	.....	17,746	12,140	82,490	265,686	171,056	172	162	.....	.....	10	.....	23
63,761	99,593	226,732	450	3,754	153,529	450,174	155,517	1,928,116	1,322,425	1,620	1,030	459	.....	131	38	24
4,290	4,734	15,895	.....	.....	4,220	5,936	18,301	76,712	52,475	130	76	.....	.....	54	.....	25
25,209	35,397	146,699	.....	480	53,103	93,250	231,042	841,580	517,288	513	460	.....	.....	53	.....	26
333,733	892,943	761,482	2,354	5,273	616,614	1,396,975	2,678,487	14,020,050	9,944,588	10,397	8,498	1,830	.....	69	144	27
1,349,596	2,497,003	5,926,803	107,844	53,405	2,981,539	7,116,578	14,443,208	52,815,589	31,255,803	44,637	42,778	359	20	1,480	3,797	28
37,761	22,432	102,351	.....	.....	19,704	47,936	204,037	716,379	464,406	705	621	5	.....	79	.....	29
9,371	9,286	28,591	4,950	220	8,939	26,296	83,087	273,022	163,639	65	40	25	.....	.....	.....	30
57,026	52,379	261,720	300	6,870	125,280	115,366	364,415	1,431,826	952,045	1,353	1,079	197	.....	77	14	31
6,632	6,689	23,088	.....	.....	7,405	8,688	43,268	146,795	94,839	352	306	.....	.....	46	40	32
40,990	128,207	309,895	.....	.....	102,307	60,113	343,915	1,528,060	1,124,032	2,482	2,449	8	.....	25	1,112	33
232,732	1,295,301	1,420,142	6,631	1,950,783	96,632	1,996,284	4,443,851	16,745,216	10,305,081	12,552	11,094	1,219	73	166	2,503	34
78,580	57,438	477,342	.....	.....	112,997	120,465	763,091	2,462,161	1,578,605	1,731	1,535	35	.....	161	678	35
32,354	30,835	67,867	.....	.....	15,771	43,272	125,901	496,225	327,052	509	494	.....	.....	15	.....	36
23,520	19,832	57,076	.....	1,600	9,431	31,703	104,724	379,543	243,116	651	523	55	.....	73	.....	37
46,125	97,851	292,127	.....	180	94,414	170,060	348,243	1,571,006	1,052,703	655	645	.....	.....	10	.....	38
95,165	112,206	353,922	.....	5,697	128,120	273,964	494,493	2,185,114	1,416,657	1,759	1,694	.....	.....	65	53	39
22,679	38,400	140,766	.....	420	18,229	139,526	139,840	616,348	337,482	720	533	.....	.....	187	.....	40
23,460	10,902	32,406	200	.....	10,832	25,984	96,415	337,262	214,863	1,543	1,480	.....	.....	63	.....	41
57,584	61,971	305,892	.....	30	29,432	102,157	648,100	2,149,938	1,399,681	1,488	1,421	.....	.....	67	22	42
83,822	189,227	487,309	.....	126	171,411	124,816	634,254	2,369,188	1,610,118	2,568	2,027	256	.....	285	189	43
6,100	10,089	20,929	.....	.....	2,304	8,723	40,495	107,936	58,718	167	97	40	.....	30	.....	44
171,573	302,045	721,898	27,157	300	360,181	855,237	960,410	5,294,983	3,479,336	11,159	9,242	869	3	1,045	797	45
106,852	111,768	567,658	70	.....	290,678	338,701	1,107,381	4,149,317	2,703,235	2,147	2,080	.....	.....	67	724	46

[1] Includes: Arkansas, 1 establishment; District of Columbia, 3; Louisiana, 4; New Mexico, 2; Wyoming, 1.

PATENT AND PROPRIETARY MEDICINES AND COMPOUNDS AND DRUGGISTS' PREPARATIONS.

SUMMARY AND ANALYSIS.

Scope of the industry.—Separate statistics have been compiled for three branches of this industry. "Patent and proprietary medicines and compounds" are those sold under the protection of a patent, copyright, or trade-mark, or prepared according to a secret formula. "Druggists' preparations" include articles of manufacture for use by druggists in compounding medicines to be dispensed upon physicians' prescriptions or orders. These comprise alkaloids and derivatives (codein, cocaine, morphine, quinine, strychnine, etc.); tinctures, fluid extracts, medicinal sirups, and other liquid preparations; pills, tablets, powders, etc.; biological products (serums, vaccines, toxins, etc.); synthetic preparations (acetanilid, acetphenetidin, phenolphthalein, saccharin, methylsalicylicylate, etc.); and metals and their salts (bromides, acetates, citrates, bismuth, etc.). "Perfumery and cosmetics" embrace cologne, toilet waters, face powders, cold cream, etc., and perfumes.

For the purposes of this report each establishment is classed, according to its principal products, in one of the three branches of the industry, but in many cases an establishment manufactures products pertaining to more than one branch, and there is also a considerable production or these commodities by establishments classified in other industries.

"Drug grinding" is not included in this industry, but the general statistics for concerns engaged in grinding drugs as their principal business are presented in Table 18.

Comparison with earlier censuses.—Table 1 summarizes the statistics for the industry as a whole and for each of its three branches separately from 1889 to 1914, inclusive, and gives percentages of increase.

In 1810, 8 "manufactories" in Pennsylvania and New Jersey reported "drugs" to the value of $156,950, but the industry did not assume commercial importance until 1849, when there were reported 182 establishments, with a capital of $1,624,925, 1,015 wage earners, and a total value of products of $3,863,815. In 1859, 206 establishments were reported, with a capital of $2,574,385, 1,594 wage earners, and products valued at $4,687,994; in 1869, there were 383 establishments with a capital of $7,840,584, 3,163 wage earners, and products valued at $18,287,302; and in 1879, 630 establishments with a capital of $11,434,707, employed 2,856 wage earners and manufactured products to the value of $16,885,498.

Table 1

	NUMBER OR AMOUNT.					PER CENT OF INCREASE.[1]			
	1914	1909	1904	1899	1889	1909–1914	1904–1914	1899–1909	1889–1899
TOTAL FOR THE INDUSTRY.									
Number of establishments	3,815	3,642	2,777	2,154	[2] 3,089	4.8	37.4	69.1	−30.3
Persons engaged	45,856	41,101	32,248	(3)	(3)	11.6	42.2		
Proprietors and firm members	2,725	2,802	2,293	(3)	(3)	−2.7	18.8		
Salaried employees	17,629	15,404	9,483	8,094	4,600	14.4	85.9	90.3	76.0
Wage earners (average number)	25,502	22,895	20,472	19,028	10,485	11.4	24.6	20.3	81.5
Primary horsepower	28,872	25,659	17,008	12,707	3,439	12.5	69.8	101.9	269.5
Capital	$127,721,551	$99,942,150	$75,607,029	$56,172,646	$25,460,538	27.8	68.9	77.9	120.6
Salaries and wages	35,587,443	26,904,013	17,888,264	15,175,024	7,910,581	32.3	98.9	77.3	91.8
Salaries	22,877,868	17,007,339	9,974,946	8,265,413	3,613,992	34.5	129.4	105.8	128.7
Wages	12,709,575	9,896,674	7,913,318	6,909,611	4,296,589	28.4	60.6	43.2	60.8
Paid for contract work	222,925	364,723	254,171	(3)	(3)	−38.9	−12.3		
Rent and taxes (including internal revenue)	3,109,070	2,050,454	[4] 1,442,351	(3)	(3)	51.6			
Cost of materials	66,339,943	50,375,665	39,494,289	31,949,890	15,571,187	31.7	68.0	57.7	105.2
Value of products	167,372,129	141,941,602	117,435,874	88,790,774	43,910,120	17.9	42.5	59.9	102.2
Value added by manufacture (value of products less cost of materials)	101,032,186	91,565,937	77,941,585	56,840,884	28,338,933	10.3	29.6	61.1	100.6
PATENT MEDICINES AND COMPOUNDS.									
Number of establishments	2,903	2,838	2,245	1,719	1,127	2.3	29.3	65.1	52.5
Persons engaged	25,927	22,476	18,770	(3)	(3)	15.4	38.1		
Proprietors and firm members	2,112	2,219	1,862	(3)	(3)	−4.8	13.4		
Salaried employees	10,487	9,227	5,928	5,304	2,332	13.7	76.9	74.0	127.4
Wage earners (average number)	13,328	11,030	10,980	11,606	7,058	20.8	21.4	−5.0	64.4
Primary horsepower	18,542	14,704	10,092	8,223	2,928	26.1	83.7	78.8	180.8
Capital	$71,436,840	$55,386,674	$45,611,640	$36,677,833	$18,596,823	29.0	56.6	51.0	97.2
Salaries and wages	20,039,539	14,233,422	10,275,541	9,619,559	5,094,202	40.8	95.0	48.0	88.8
Salaries	13,364,371	9,489,401	5,923,674	5,285,134	2,138,819	40.8	125.6	79.5	147.1
Wages	6,675,168	4,744,021	4,351,867	4,334,425	2,955,383	40.7	53.4	9.4	46.7
Paid for contract work	175,617	274,978	244,820	(3)	(3)	−36.1	−28.3		
Rent and taxes (including internal revenue)	1,867,077	1,245,011	[4] 905,908	(3)	(3)	50.0			
Cost of materials	35,940,434	26,894,628	21,293,051	18,000,441	11,030,916	33.6	68.8	49.4	63.2
Value of products	102,463,374	83,771,154	74,520,765	58,988,181	32,620,182	22.3	37.5	42.0	80.8
Value added by manufacture (value of products less cost of material)	66,522,940	56,876,526	53,227,714	40,987,740	21,589,266	17.0	25.0	38.8	89.9

[1] A minus sign (−) denotes decrease.
[2] Includes custom and neighborhood shops.
[3] Figures not available.
[4] Exclusive of internal revenue.

Table 1—Continued.

	Number or amount.					Per cent of increase.[1]			
	1914	1909	1904	1899	1889	1909-1914	1904-1914	1899-1909	1889-1899
DRUGGISTS' PREPARATIONS.									
Number of establishments	416	375	240	173	[2] 1,805	10.9	73.3	116.8	.....
Persons engaged	14,508	14,408	10,304	(3)	(3)	0.7	40.8	.....	.....
Proprietors and firm members	229	225	155	(3)	(3)	1.8	47.7	.....	.....
Salaried employees	5,002	4,693	2,739	1,982	1,909	6.6	82.6	136.8	3.8
Wage earners (average number)	9,277	9,490	7,410	5,658	2,031	−2.2	25.2	67.7	178.6
Primary horsepower	8,417	9,580	6,102	3,813	51	−12.1	37.9	151.2	.....
Capital	$46,638,098	$37,767,112	$25,152,303	$16,004,640	$4,624,814	23.5	85.4	136.0	246.1
Salaries and wages	11,799,490	10,028,713	5,967,095	4,229,124	1,938,700	17.7	97.7	137.1	118.1
Salaries	7,044,982	5,870,281	3,174,181	2,222,584	1,099,014	20.0	121.9	164.1	102.2
Wages	4,754,508	4,158,432	2,792,914	2,006,540	839,686	14.3	70.2	107.2	139.0
Paid for contract work	27,901	66,575	5,321	(3)	(3)	−58.1	424.4	.....	.....
Rent and taxes (including internal revenue)	739,139	487,876	[4] 352,065	(3)	(3)	51.5	.....	.....	.....
Cost of materials	22,934,723	17,847,066	13,419,635	10,814,432	2,411,851	28.5	70.9	65.0	348.4
Value of products	48,009,654	43,958,479	31,782,250	22,714,889	6,659,797	9.2	51.1	93.5	241.1
Value added by manufacture (value of products less cost of materials)	25,074,931	26,111,473	18,362,615	11,900,457	4,247,946	−4.0	36.6	119.4	180.1
PERFUMERY AND COSMETICS.									
Number of establishments	496	429	292	262	157	15.6	69.9	63.7	66.9
Persons engaged	5,421	4,217	3,174	(3)	(3)	28.6	70.8	.....	.....
Proprietors and firm members	384	358	276	(3)	(3)	7.3	39.1	.....	.....
Salaried employees	2,140	1,484	816	808	359	44.2	162.3	83.7	125.1
Wage earners (average number)	2,897	2,375	2,082	1,764	1,396	22.0	39.1	34.6	26.4
Primary horsepower	1,913	1,375	814	671	460	39.1	135.0	104.9	45.9
Capital	$9,646,613	$6,788,364	$4,843,026	$3,490,173	$2,238,901	42.1	99.2	94.5	55.9
Salaries and wages	3,748,414	2,641,878	1,645,628	1,326,341	877,679	41.9	127.8	99.2	51.1
Salaries	2,468,515	1,647,657	877,091	757,695	376,159	49.8	181.4	117.5	101.4
Wages	1,279,899	994,221	768,537	568,646	501,520	28.7	66.5	74.8	13.4
Paid for contract work	19,407	23,170	4,030	(3)	(3)	−16.2	381.6	.....	.....
Rent and taxes (including internal revenue)	502,854	317,567	[4] 184,378	(3)	(3)	58.3	.....	.....	.....
Cost of materials	7,464,786	5,634,031	4,781,603	3,135,017	2,128,420	32.5	56.1	79.7	47.3
Value of products	16,899,101	14,211,969	11,132,859	7,087,704	4,630,141	18.9	51.8	100.5	53.1
Value added by manufacture (value of products less cost of materials)	9,434,315	8,577,938	6,351,256	3,952,687	2,501,721	10.0	48.5	117.0	58.0

[1] A minus sign (—) denotes decrease.
[2] Includes custom and neighborhood shops.
[3] Figures not available.
[4] Exclusive of internal revenue.

The financial statistics for 1869 are given in currency, which at that time was worth only about 80 cents gold to the dollar. For strict comparability, therefore, the figures for that year should be reduced about 20 per cent.

Owing to the inclusion at the census of 1889 of a large number of retail drug stores in which small quantities were manufactured, the number of establishments reporting druggists' preparations in 1914 was 1,389 less than at the earlier census, but during the 15 years for which figures are comparable, 1899–1914, the number of establishments for the combined industry increased by 1,661. During the 25 years for which statistics are given in the table, the number of wage earners increased 143.2 per cent, capital invested 401.6 per cent, and value of products 281.2 per cent.

Rapid and consistent growth is indicated in every significant item shown in the table. The decrease of 38.9 per cent from 1909 to 1914, for contract work in the industry as a whole, is no indication of a depression in any branch of the industry, because the expenditure for such work depends upon the methods followed in carrying on the various operations, and not on their magnitude. The decrease of 2.7 per cent in the number of proprietors and firm members was doubtless, in some degree, due to changes in the character of ownership. During the period between the censuses the form of ownership of some establishments changed from "individual" or "firm" to "corporation," and proprietors and firm members reported at one census were classed as officers of corporations at a later date. The increase in value added by manufacture, although considerable at each successive census, has not kept pace with the increase in value of products.

By far the most important branch of the industry is that engaged in the manufacture of patent medicines and compounds, which reported products to the value of $102,463,374 for 1914, representing an increase of 214.1 per cent over the amount reported for 1889.

In addition to the 3,815 establishments constituting the classified industry in 1914, 277 establishments engaged primarily in the manufacture of other products reported patent medicines and compounds, druggists' preparations, and perfumery and cosmetics to the value of $9,375,151.

Summary, by states.—Table 2 summarizes the more important statistics for the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states for which data can not be shown separately without disclosing the operations of individual establishments ranked higher than some of those named in the table. The industry is well distributed throughout the country, one or more establishments being reported in every state except Arizona, Idaho, Nevada, New Mexico, and Wyoming.

Table 2

STATE.	CENSUS OF 1914.													PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.				Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909-1914	1904-1909	1899-1904	1909-1914	1904-1909	1899-1904	1909-1914	1904-1909	1899-1904
United States	3,815	25,502	100.0	....	....	$167,372,129	100.0	....	....	$101,032,186	100.0	....	....	11.4	11.8	7.6	17.9	20.9	32.3	10.3	17.5	37.1
New York	806	5,699	22.3	1	1	41,796,235	25.0	1	1	24,884,490	24.6	1	1	20.5	9.1	−5.9	11.9	30.4	7.9	0.5	24.8	21.0
Michigan	142	3,369	13.2	2	2	16,433,772	9.8	2	2	9,431,216	9.3	3	3	3.7	28.1	12.1	22.0	28.7	43.7	10.5	27.9	51.7
Illinois	363	1,844	7.2	4	4	15,031,507	9.0	3	3	9,934,728	9.8	2	2	−1.3	0.1	43.3	14.6	−1.5	103.6	14.2	−12.0	118.8
Pennsylvania	324	2,833	11.1	3	3	14,721,331	8.8	4	4	8,247,755	8.2	4	4	2.6	18.8	0.3	16.3	33.8	5.8	12.3	36.7	3.9
Missouri	212	1,090	4.3	7	8	9,010,409	5.4	5	5	6,084,042	6.0	5	5	11.2	6.1	−2.8	17.9	38.6	10.8	19.2	44.7	1.0
Massachusetts	162	1,381	5.4	5	6	8,262,960	4.9	6	6	4,939,822	4.9	6	6	16.7	−1.1	−16.2	11.2	−7.5	21.9	5.0	−1.3	8.1
Ohio	252	1,032	4.0	9	9	7,734,181	4.6	7	7	4,715,814	4.7	7	7	14.0	−13.5	20.4	32.0	−20.5	52.2	18.8	−24.4	54.6
New Jersey	129	1,271	5.0	6	7	7,672,961	4.6	8	9	4,525,682	4.5	8	9	26.5	7.9	194.6	41.8	45.8	135.7	36.3	38.7	132.5
Maryland	83	1,053	4.1	8	5	5,970,480	3.6	9	8	3,581,657	3.5	10	8	−11.7	22.9	0.8	7.6	14.7	49.1	5.9	12.7	50.5
Indiana	156	864	3.4	10	10	5,739,545	3.4	10	11	3,644,583	3.6	9	10	7.9	−1.5	34.8	32.1	−1.5	83.5	26.4	−2.4	73.7
Tennessee	82	648	2.5	11	12	4,942,445	3.0	11	12	3,118,377	3.1	12	13	49.7	−11.5	22.6	40.6	26.1	85.4	43.4	15.1	92.8
Minnesota	99	613	2.4	12	11	4,879,026	2.9	12	10	2,537,951	2.5	13	11	29.1	38.1	83.0	10.6	40.7	236.5	−6.8	51.6	195.9
Iowa	94	418	1.6	13	13	4,828,035	2.9	13	13	3,161,333	3.1	11	12	16.8	37.7	17.6	42.0	66.3	40.3	35.3	88.5	10.8
California	126	328	1.3	16	14	2,495,911	1.5	14	16	1,308,667	1.3	15	18	5.8	−9.9	−5.5	61.1	7.2	−7.5	43.8	−0.2	12.9
Kentucky	45	376	1.5	14	15	2,162,942	1.3	15	14	1,408,337	1.4	14	14	34.3	34.6	8.9	1.9	19.9	64.3	3.0	10.2	63.7
Connecticut	43	327	1.3	17	17	2,062,727	1.2	16	18	1,298,804	1.3	16	19	38.0	62.3	−49.0	53.7	.....	.....	52.1	16.5	−24.2
Wisconsin	62	278	1.1	18	16	1,442,342	0.9	17	15	932,334	0.9	18	15	3.3	2.7	−11.8	−15.5	38.4	82.9	−26.1	44.9	95.3
Kansas	54	241	0.9	19	27	1,431,829	0.9	18	25	715,851	0.7	19	25	.....	.....	.....	131.3	116.4	111.9	91.4	74.0	.....
Georgia	45	155	0.6	22	19	1,219,358	0.7	19	17	627,088	0.6	22	17	−26.2	25.0	−5.1	−14.2	−7.8	34.4	−36.0	−19.9	84.9
Vermont	12	119	0.5	24	21	1,018,651	0.6	22	20	691,828	0.7	20	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas	61	116	0.5	25	22	739,891	0.4	25	21	452,004	0.4	25	21	−20.0	40.8	.....	−27.0	44.9	85.4	−25.0	31.4	90.5
District of Columbia	20	169	0.7	20	26	612,645	0.4	26	27	394,244	0.4	26	26	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Carolina	26	74	0.3	27	28	511,568	0.3	27	26	251,311	0.2	29	27	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maine	30	113	0.4	26	23	467,742	0.3	28	23	266,208	0.3	28	22	−21.5	−2.0	.....	−38.1	29.2	.....	−52.4	30.9	.....
Louisiana	25	65	0.3	28	24	400,683	0.2	29	28	268,600	0.3	27	28	−41.4	−28.8	−1.9	10.5	−23.1	−37.2	17.5	−16.7	−43.5
Washington	32	45	0.2	30	32	272,786	0.2	30	30	130,961	0.1	31	30	.....	.....	.....	5.8	.....	.....	−13.8	.....	.....
Alabama	30	48	0.2	29	33	225,671	0.1	32	35	153,785	0.2	30	35	.....	.....	.....	83.7	−6.1	.....	.....	.....	.....
Colorado	26	48	0.2	29	30	192,983	0.1	33	33	97,589	0.1	34	33	.....	.....	.....	14.9	.....	49.2	−5.8	.....	.....
Mississippi	6	5	(2)	40	43	25,685	(2)	42	41	10,258	(2)	42	42	.....	.....	.....	.....	.....	.....	.....	.....	.....
Delaware	3	.....	.....	....	34	2,077	(2)	43	36	1,088	(2)	43	37	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states	265	880	3.5	....	....	5,063,751	3.0	....	....	3,215,779	3.2	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 16; a minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than $100,000 for value of products or value added by manufacture, or where comparable figures can not be given.
[2] Less than one-tenth of 1 per cent.

In 1914, New York, the most important state in this industry, reported 22.3 per cent of the wage earners, 25 per cent of the value of products, and 24.6 per cent of the value added by manufacture.

From 1909 to 1914 there were no changes in rank, as measured by the value of products reported, in the seven most important states, New York, Michigan, Illinois, Pennsylvania, Missouri, Massachusetts, and Ohio, in the order named, but in value added by manufacture, Illinois ranked higher than Michigan at both censuses. When determined by average number of wage earners, the rank of some of the states varies to a marked degree from that which they held according to value of products. Illinois, which ranked third in value of products, and second in value added by manufacture, was fourth in number of wage earners employed at both censuses. Pennsylvania, fourth in value of products and value added by manufacture, was third in number of wage earners, while Missouri, Massachusetts, and Ohio, which ranked fifth, sixth, and seventh, respectively, in value of products and value added by manufacture, were seventh, fifth, and ninth, respectively, in the number of wage earners employed in 1914.

The states included under "all other states," statistics for which are not shown separately to avoid disclosing the operations of individual establishments, are Virginia, West Virginia, Nebraska, Rhode Island, Oregon, Arkansas, New Hampshire, Oklahoma, Florida, South Dakota, Utah, South Carolina, Montana, and North Dakota.

Considerable increases are shown in the value of products for all the states mentioned in the table, with the exception of Georgia and Texas, which showed decreases amounting to 14.2 per cent and 27 per cent, respectively.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the combined industry and in the three branches separately, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 3.

Industry and class.	Census year.	Persons engaged in the industry. Total.	Male.	Female.	Per cent of total. Male.	Female.
Total for the Industry	1914	45,856	27,561	18,295	60.1	39.9
	1909	41,101	23,676	17,425	57.6	42.4
Proprietors and officials	1914	5,969	5,470	499	91.6	8.4
	1909	5,647	5,187	460	91.9	8.1
Proprietors and firm members	1914	2,725	2,428	297	89.1	10.9
	1909	2,802	2,489	313	88.8	11.2
Salaried officers of corporations	1914	1,679	1,563	116	93.1	6.9
	1909	1,427	1,362	65	95.4	4.6
Superintendents and managers	1914	1,565	1,479	86	94.5	5.5
	1909	1,418	1,336	82	94.2	5.8
Clerks and other subordinate salaried employees.	1914	14,385	9,093	5,292	63.2	36.8
	1909	12,559	7,631	4,928	60.8	39.2
Wage earners (average number)	1914	25,502	12,998	12,504	51.0	49.0
	1909	22,895	10,858	12,037	47.4	52.6
16 years of age and over	1914	25,096	12,825	12,271	51.1	48.9
	1909	22,425	10,681	11,744	47.6	52.4
Under 16 years of age	1914	406	173	233	42.6	57.4
	1909	470	177	293	37.7	62.3
Patent medicines and compounds.	1914	25,927	16,376	9,551	63.2	36.8
	1909	22,476	13,624	8,852	60.6	39.4
Proprietors and officials	1914	4,333	3,979	354	91.8	8.2
	1909	4,077	3,738	339	91.7	8.3
Proprietors and firm members	1914	2,112	1,897	215	89.8	10.2
	1909	2,219	1,976	243	89.0	11.0
Salaried officers of corporations	1914	1,201	1,121	80	93.3	6.7
	1909	972	935	37	96.2	3.8
Superintendents and managers	1914	1,020	961	59	94.2	5.8
	1909	886	827	59	93.3	6.7
Clerks and other subordinate salaried employees.	1914	8,266	5,151	3,115	62.3	37.7
	1909	7,369	4,400	2,969	59.7	40.3
Wage earners (average number)	1914	13,328	7,246	6,082	54.4	45.6
	1909	11,030	5,486	5,544	49.7	50.3
16 years of age and over	1914	13,089	7,137	5,952	54.5	45.5
	1909	10,776	5,405	5,371	50.2	49.8
Under 16 years of age	1914	239	109	130	45.6	54.4
	1909	254	81	173	31.9	68.1
Druggists' preparations	1914	14,508	8,636	5,872	59.5	40.5
	1909	14,408	8,044	6,364	55.8	44.2
Proprietors and officials	1914	864	834	30	96.5	3.5
	1909	903	877	26	97.1	2.9
Proprietors and firm members	1914	229	225	4	98.3	1.7
	1909	225	214	11	95.1	4.9
Salaried officers of corporations	1914	268	258	10	96.3	3.7
	1909	290	282	8	97.2	2.8
Superintendents and managers	1914	367	351	16	95.6	4.4
	1909	388	381	7	98.2	1.8
Clerks and other subordinate salaried employees.	1914	4,367	3,067	1,300	70.2	29.8
	1909	4,015	2,640	1,375	65.8	34.2
Wage earners (average number)	1914	9,277	4,735	4,542	51.0	49.0
	1909	9,490	4,527	4,963	47.7	52.3
16 years of age and over	1914	9,164	4,688	4,476	51.2	48.8
	1909	9,320	4,455	4,865	47.8	52.2
Under 16 years of age	1914	113	47	66	41.6	58.4
	1909	170	72	98	42.4	57.6
Perfumery and cosmetics	1914	5,421	2,549	2,872	47.0	53.0
	1909	4,217	2,008	2,209	47.6	52.4
Proprietors and officials	1914	772	657	115	85.1	14.9
	1909	667	572	95	85.8	14.2
Proprietors and firm members	1914	384	306	78	79.7	20.3
	1909	358	299	59	83.5	16.5
Salaried officers of corporations	1914	210	184	26	87.6	12.4
	1909	165	145	20	87.9	12.1
Superintendents and managers	1914	178	167	11	93.8	6.2
	1909	144	128	16	88.9	11.1
Clerks and other subordinate salaried employees.	1914	1,752	875	877	49.9	50.1
	1909	1,175	591	584	50.3	49.7
Wage earners (average number)	1914	2,897	1,017	1,880	35.1	64.9
	1909	2,375	845	1,530	35.6	64.4
16 years of age and over	1914	2,843	1,000	1,843	35.2	64.8
	1909	2,329	821	1,508	35.3	64.7
Under 16 years of age	1914	54	17	37	31.5	68.5
	1909	46	24	22	52.2	47.8

The total number of persons engaged in the industry as a whole in 1914 was 45,856, of whom 60.1 per cent were males. Males predominated in all classes, but females, though relatively few in number, represented an increased proportion of salaried officers of corporations in 1914 as compared with 1909. The distribution by sex of the persons employed varied little in the two main branches of the industry. The number of males employed in 1914 in the preparation of patent medicines and compounds represented 63.2 per cent of the total, and in the manufacture of druggists' preparations, 59.5 per cent. In the manufacture of perfumery and cosmetics, however, more than one-half, 53 per cent, of the persons engaged were females, and these formed an increased proportion of the total reported for each class of employees, except superintendents and managers. In the latter industry in 1914 only 35.1 per cent of the total number of wage earners were males.

In the industry as a whole decreases took place between 1909 and 1914 in the number of wage earners under 16 years of age, although in the preparation of patent medicines more boys, and in perfumery and cosmetics more girls, were reported for the later year.

The number of persons engaged in the industry as a whole increased by 4,755, or 11.6 per cent, between 1909 and 1914. In the patent medicine branch of the industry the increase was 3,451, or 15.4 per cent, and in perfumery and cosmetics, 1,204, or 28.6 per cent, while in druggists' preparations, in spite of a considerable decrease in the number of women wage earners, there was a net increase of 100, or seven-tenths of 1 per cent, in the total number of persons engaged.

Table 4 presents percentages of increase and per cent distribution based on the figures in Table 3 for the industry as a whole.

With the exception of proprietors and firm members and wage earners under 16 years of age, there was an increase in the number reported for each class shown in Table 3. The largest ratio of increase, 14.5 per cent, is shown for clerks and other subordinate salaried employees, and of the three main classes of employees this is the only one that shows also an increased proportion of the total, 31.4 per cent in 1914 as compared with 30.6 per cent in 1909. For all classes combined and for each class separately, except proprietors and officials, a greater rate of increase during the five-year period is shown for males than for females.

Table 4

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase [1] 1909–1914.			Per cent distribution.					
				Total.		Male.		Female.	
	Total.	Male.	Female.	1914	1909	1914	1909	1914	1909
All classes	11.6	16.4	5.0	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	5.7	5.5	8.5	13.0	13.7	19.8	21.9	2.7	2.6
Proprietors and firm members	−2.7	−2.5	−5.1	5.9	6.8	8.8	10.5	1.6	1.8
Salaried officers of corporations	17.7	14.8	.....	3.7	3.5	5.7	5.8	0.6	0.4
Superintendents and managers	10.4	10.7	.....	3.4	3.5	5.4	5.6	0.5	0.5
Clerks and other subordinate salaried employees	14.5	19.2	7.4	31.4	30.6	33.0	32.2	28.9	28.3
Wage earners (average number)	11.4	19.7	3.9	55.6	55.7	47.2	45.9	68.3	69.1
16 years of age and over	11.9	20.1	4.5	54.7	54.6	46.5	45.1	67.1	67.4
Under 16 years of age	−13.6	−2.3	−20.5	0.9	1.1	0.6	0.7	1.3	1.7

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

Wage earners employed, by months.—The following table gives, for the industry, the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 5

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	26,073	22,526	20,529	97.7	92.5	95.7
February	26,453	22,898	20,777	99.2	94.0	96.9
March	26,674	23,337	21,095	100.0	95.8	98.3
April	26,363	23,138	21,166	98.8	95.0	98.7
May	25,808	22,672	20,587	96.8	93.1	96.0
June	24,804	21,942	19,903	93.0	90.1	92.8
July	24,626	21,406	18,870	92.3	87.9	88.0
August	24,184	21,540	18,924	90.7	88.4	88.2
September	25,111	22,829	20,054	94.1	93.7	93.5
October	25,446	23,865	21,090	95.4	98.0	98.3
November	25,329	24,363	21,450	95.0	100.0	100.0
December	25,153	24,202	21,219	94.3	99.3	98.9

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

The largest number of wage earners employed during any month of 1914 was 26,674 in March. In the years 1904 and 1909 the greatest number of wage earners was employed in November and the smallest number in July. The figures indicate a greater degree of stability of employment during 1914 than at prior censuses. The proportion which the minimum formed of the maximum in 1914 was 90.7 per cent, while in 1909 and 1904 it was 87.9 and 88 per cent, respectively.

Table 6 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more in 1914.

In 3 of the 12 states shown in the table, March was the month of maximum employment; in 3, January; in 2, February; in 2, April; in 1, May; and in 1, October. Michigan shows the least variation in the employment of wage earners, and Minnesota the greatest. The maximum employment in any state, 5,982, was reported for New York for April, and the minimum, 531, for Minnesota, for November.

Table 6

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by boldface figures and that of minimum employment by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	25,505	26,073	26,453	**26,674**	26,363	25,808	24,804	24,626	*24,184*	25,111	25,446	25,329	25,153	90.7
Illinois	1,844	1,861	1,910	1,950	1,894	1,893	1,897	1,823	*1,747*	1,777	1,807	1,797	1,772	89.6
Indiana	864	**928**	898	879	850	821	827	862	855	911	872	850	*815*	87.8
Maryland	1,053	1,142	1,116	1,094	1,056	1,053	1,023	1,010	997	1,062	1,064	1,043	*976*	85.5
Massachusetts	1,381	1,511	1,488	1,484	1,438	1,418	1,269	*1,234*	1,288	1,389	1,373	1,392	1,288	81.7
Michigan	3,369	3,424	3,440	**3,504**	3,481	3,393	3,252	*3,244*	3,292	3,330	3,371	3,372	3,324	92.6
Minnesota	613	686	691	676	654	622	560	579	585	584	543	*531*	645	76.8
Missouri	1,090	1,090	1,097	1,129	**1,147**	1,125	1,074	1,064	1,078	1,078	1,064	*1,060*	1,074	92.4
New Jersey	1,271	1,255	1,293	1,289	1,286	1,287	1,233	1,181	*1,104*	1,244	1,375	1,369	1,336	80.3
New York	5,699	5,792	5,897	5,951	**5,982**	5,787	5,455	5,450	*5,262*	5,608	5,779	5,699	5,726	88.0
Ohio	1,032	1,090	1,093	1,130	1,034	988	1,012	*956*	958	1,010	1,030	1,036	1,047	84.6
Pennsylvania	2,833	2,974	3,026	3,009	2,922	2,844	2,757	2,751	*2,664*	2,765	2,762	2,779	2,743	88.0
Tennessee	648	627	649	665	690	703	679	698	674	650	598	578	*565*	80.4

Prevailing hours of labor.—In Table 7 the average number of wage earners reported for the combined industry for 1914 and 1909 has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment is classified as a total, even though a few employees worked a greater or a smaller number of hours.

Table 7

STATE.	Census year.	AVERAGE NUMBER OF WAGE EARNERS.								
		Total.	In establishments where the prevailing hours of labor per week were—							
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
United States	1914	25,502	6,373	9,894	5,172	2,690	1,307	46	19	1
	1909	22,895	4,763	6,517	6,574	3,308	1,665	35	28	5
Illinois	1914	1,844	472	518	562	227	65	....	....	....
	1909	1,869	569	541	505	154	99	1	....	....
Indiana	1914	864	86	506	173	57	27	15	....	....
	1909	801	44	485	142	48	82	....	....	....
Maryland	1914	1,053	376	608	40	18	11	....	....	....
	1909	1,193	211	732	39	119	92	....	....	....
Massachusetts	1914	1,381	477	693	85	105	21	....	....	....
	1909	1,183	356	434	63	252	70	8	....	....
Michigan	1914	3,369	77	2,761	380	132	19	....	....	....
	1909	3,249	71	580	2,161	357	79	1	....	....
Minnesota	1914	613	98	98	181	215	21	....	....	....
	1909	475	54	166	89	142	24	....	....	....
Missouri	1914	1,090	224	584	204	16	45	17	....	....
	1909	980	204	348	258	118	52	....	....	....
New Jersey	1914	1,271	105	160	508	463	35	....	....	....
	1909	1,005	80	86	378	383	78	....	....	....
New York	1914	5,699	1,979	2,268	708	696	39	5	4	....
	1909	4,728	1,533	1,762	491	692	239	3	8	....
Ohio	1914	1,032	205	234	157	354	82	....	....	....
	1909	905	163	167	177	311	86	....	1	....
Pennsylvania	1914	2,833	576	693	1,501	14	49	....	....	....
	1909	2,761	288	460	1,603	291	110	....	6	3
Tennessee	1914	648	65	227	171	71	106	3	5	....
	1909	433	46	70	90	175	50	2	....	....

The totals for the industry indicate a shortening of the hours of employment of wage earners. In 1914, 63.8 per cent of the wage earners were employed in establishments where the prevailing hours were less than 54 per week, as compared with 49.3 per cent in 1909.

Of the several groups shown in Table 7, the largest was made up of the wage earners in establishments where the prevailing hours were between 48 and 54 per week in 1914 and 54 in 1909. In Illinois, New Jersey, and Pennsylvania the largest number of wage earners was reported by establishments where the prevailing hours were 54 per week, and in Minnesota and Ohio, between 54 and 60 per week. For all the other states, as for the United States, the table shows the largest numbers in establishments where the prevailing hours were between 48 and 54 per week.

The number of wage earners employed more than 60 hours per week at each census was comparatively negligible.

Character of ownership.—Table 8 presents statistics concerning the character of ownership, or legal organization, of establishments in the combined industry, for 1914 and 1909.

Table 8

CHARACTER OF OWNERSHIP.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	3,815	25,502	$167,372,129	$101,032,186
	1909	3,642	22,895	141,941,602	91,565,937
Individuals	1914	1,498	2,735	15,272,953	9,688,094
	1909	1,520	2,624	16,571,003	10,868,714
Corporations	1914	1,824	20,988	139,303,775	83,300,188
	1909	1,610	18,176	111,493,887	72,081,395
All others	1914	493	1,779	12,795,401	8,043,994
	1909	512	2,095	13,876,712	8,615,828
Per cent distribution:					
Individuals	1914	39.3	10.7	9.1	9.6
	1909	41.7	11.5	11.7	11.9
Corporations	1914	47.8	82.3	83.2	82.4
	1909	44.2	79.4	78.5	78.7
All others	1914	12.9	7.0	7.6	8.0
	1909	14.1	9.2	9.8	9.4

Establishments owned by corporations constituted 47.8 per cent of the total number, and the value of their products represented 83.2 per cent and the value added by manufacture 82.4 per cent of the total for the combined industry in 1914. Corporations form the only class which shows an actual increase for 1914 over 1909 for each item given in the table and also an increase in proportion of the total.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 9.

Table 9

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	3,815	25,502	$167,372,129	$101,032,186
	1909	3,642	22,895	141,941,602	91,565,937
Less than $5,000	1914	1,851	919	3,622,268	2,338,869
	1909	1,741	997	3,438,580	2,375,162
$5,000 to $20,000	1914	1,004	2,361	10,475,453	6,448,308
	1909	1,016	2,232	10,163,891	6,636,614
$20,000 to $100,000	1914	641	4,741	29,150,874	17,293,181
	1909	619	4,711	28,184,453	17,634,400
$100,000 to $1,000,000	1914	294	9,787	77,903,365	49,098,132
	1909	247	9,026	66,522,117	44,105,836
$1,000,000 and over	1914	25	7,694	46,220,169	25,853,696
	1909	19	5,929	33,632,561	20,813,925
Per cent distribution:					
Less than $5,000	1914	48.5	3.6	2.2	2.3
	1909	47.8	4.4	2.4	2.6
$5,000 to $20,000	1914	26.3	9.3	6.3	6.4
	1909	27.9	9.7	7.2	7.2
$20,000 to $100,000	1914	16.8	18.6	17.4	17.1
	1909	17.0	20.6	19.9	19.3
$100,000 to $1,000,000	1914	7.7	38.4	46.5	48.6
	1909	6.8	39.4	46.9	48.2
$1,000,000 and over	1914	0.7	30.2	27.6	25.6
	1909	0.5	25.9	23.7	22.7

During the five-year period 1909–1914 a marked increase took place in the number of wage earners, value of products, and value added by manufacture in establishments with products valued at $100,000 or more. The most important class at both censuses was that embracing establishments whose products were valued at $100,000 but less than $1,000,000, although large increases were shown in all the items reported by establishments with products of $1,000,000 and over. As measured by the value of products, the average size per establishment increased from $38,974 in 1909 to $43,872 in 1914.

Table 10 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the combined industry and for 12 of the leading states.

Table 10

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—																	
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage-earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	3,815	25,502	1,179	1,973	3,936	456	4,956	131	4,190	46	3,341	18	2,841	9	3,209	2	1,335	1	1,694
	1909	3,642	22,895	1,051	1,993	3,942	403	4,251	125	3,868	40	2,889	21	2,743	6	2,228	2	1,185	1	1,789
Illinois	1914	363	1,844	105	190	396	56	642	4	135	7	517	1	151	.....	.....	.....	.....	.....	.....
	1909	359	1,869	116	185	379	38	390	13	378	5	394	2	328	.....	.....	.....	.....	.....	.....
Indiana	1914	156	864	54	85	154	12	132	3	87	1	99	.....	.....	1	392	.....	.....	.....	.....
	1909	113	801	35	68	125	7	69	1	21	.....	.....	1	105	1	481	.....	.....	.....	.....
Maryland	1914	83	1,053	22	40	102	13	125	4	107	2	110	1	136	1	473	.....	.....	.....	.....
	1909	83	1,193	20	43	99	14	156	2	59	2	125	1	110	.....	.....	1	644	.....	.....
Massachusetts	1914	162	1,381	58	68	133	21	235	8	281	6	463	.....	.....	1	269	.....	.....	.....	.....
	1909	154	1,183	47	74	140	17	161	12	406	3	252	1	224	.....	.....	.....	.....	.....	.....
Michigan	1914	142	3,369	41	69	116	18	203	10	312	.....	.....	2	313	.....	.....	1	731	1	1,694
	1909	159	3,249	53	77	154	14	175	11	384	.....	.....	2	266	1	481	.....	.....	1	1,789
Minnesota	1914	99	613	33	49	95	14	137	1	21	.....	.....	2	360	.....	.....	.....	.....	.....	.....
	1909	101	475	33	52	99	12	104	2	60	1	94	1	118	.....	.....	.....	.....	.....	.....
Missouri	1914	212	1,090	55	123	239	23	251	4	123	6	339	1	138	.....	.....	.....	.....	.....	.....
	1909	185	980	51	103	210	19	167	6	196	6	407	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	1914	129	1,271	36	66	143	20	208	5	170	.....	.....	.....	.....	2	750	.....	.....	.....	.....
	1909	111	1,005	20	68	158	18	164	3	80	.....	.....	.....	.....	2	603	.....	.....	.....	.....
New York	1914	806	5,699	221	417	861	107	1,193	42	1,395	12	849	5	720	2	681	.....	.....	.....	.....
	1909	743	4,728	156	423	862	109	1,238	37	1,172	13	909	5	547	.....	.....	.....	.....	.....	.....
Ohio	1914	252	1,032	104	112	209	24	288	10	348	1	79	1	108	.....	.....	.....	.....	.....	.....
	1909	261	905	101	130	236	21	222	5	148	3	186	1	113	.....	.....	.....	.....	.....	.....
Pennsylvania	1914	324	2,833	109	166	326	31	336	10	304	2	139	3	480	2	644	1	604	.....	.....
	1909	367	2,761	121	190	352	42	522	7	247	1	52	3	384	2	663	1	541	.....	.....
Tennessee	1914	82	648	12	47	97	15	156	7	211	.....	.....	1	184	.....	.....	.....	.....	.....	.....
	1909	76	433	17	43	89	12	108	3	75	.....	.....	1	161	.....	.....	.....	.....	.....	.....

There were 1,179, or 30.9 per cent, of the total number of establishments which employed no wage earners. These were small establishments in which the work was done by the proprietors or firm members. In some cases a few wage earners were employed for a short period, but the number was so small and the period so short that in computing the average number, as described in the "Explanation of terms," no wage earners could be shown for these establishments.

Of the 3,815 establishments reported for the industry in 1914, 63.7 per cent employed from 1 to 20 wage earners each, 4.6 per cent from 21 to 100, and eight-tenths of 1 per cent over 100. Only 3 establishments reported more than 500 each, including 1 with over 1,000. Of the total number of wage earners, 34.9 per cent were reported by establishments employing from 1 to 20, 29.5 per cent by establishments employing from 21 to 100, 23.7 per cent by establishments employing from 101 to 500, and 11.9 per cent by the 3 establishments employing over 500.

From 1909 to 1914 there was a decrease in the number of establishments and wage earners in the group employing from 1 to 5 wage earners, and an increase in the number employed in each of those groups having more than 5 wage earners, with the single exception of the group reporting over 1,000.

Engines and power.—Table 11 shows, for 1914, 1909, and 1904, for the industry as a whole, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 11

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	3,069	2,020	453	28,872	25,659	17,008	100.0	100.0	100.0
Owned	461	507	453	18,087	18,035	13,621	62.6	70.3	80.1
Steam engines and turbines [1]	280	333	308	15,908	16,059	12,465	55.1	62.6	73.3
Internal-combustion engines	170	161	125	2,000	1,712	983	6.9	6.7	5.8
Water wheels, turbines, and motors	11	13	20	179	264	173	0.6	1.0	1.0
Rented	2,608	1,513	(2)	10,785	7,624	3,387	37.4	29.7	19.9
Electric	2,608	1,513	(2)	10,422	6,882	2,468	36.1	26.8	14.5
Other	.....	.....	.....	363	742	919	1.3	2.9	5.4
Electric	4,253	2,354	.....	17,924	11,175	4,894	100.0	100.0	100.0
Rented	2,608	1,513	(2)	10,422	6,882	2,468	58.1	61.6	50.4
Generated by establishments reporting	1,645	841	352	7,502	4,293	2,426	41.9	38.4	49.6

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power. [2] Not reported.

More than one-half of the power used in the industry in 1914 was generated by steam, but the proportion which this class forms of the total has decreased materially from census to census, having fallen from 73.3 per cent in 1904 to 55.1 per cent in 1914. During the decade the capacity of internal-combustion engines increased by 103.5 per cent and the proportion which the power of these engines formed of the total increased from 5.8 per cent to 6.9 per cent. The amount of rented electric power in use increased from 2,468 horsepower in 1904 to 6,882 in 1909 and 10,422 in 1914, and during the decade the proportion which this class formed of the total primary power increased from 14.5 to 36.1 per cent. The power capacity of the electric motors operated by current generated in the same establishments represented 41.9 per cent of the total electric power equipment in 1914, and during the decade 1904–1914 the increase in the power of such motors amounted to 209.2 per cent. It is noteworthy that the capacity of the electric motors using electric current generated in the same establishments in 1914 was equal to 26 per cent of the total primary power capacity.

Fuel.—Table 12 shows, for 1914, the quantity of each kind of fuel used, for which data were obtained, for the industry as a whole and for 12 of the leading states.

Table 12

STATE.	COAL.		Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).			
United States	60,504	142,656	459	5,640	512,736
Illinois	3,879	11,128	37	316	3,733
Indiana	10	14,315	68	33	2,433
Maryland	217	4,705	1	3	709
Massachusetts	1,002	2,359	20	5	2,443
Michigan	111	28,792	87	38	3,835
Minnesota	196	3,276	12	49	97
Missouri	122	5,131	.....	31	4,084
New Jersey	24,663	5,086	16	350	2,922
New York	19,864	10,294	81	1,022	33,495
Ohio	43	17,157	10	13	248,270
Pennsylvania	8,330	5,135	.....	81	29,357
Tennessee	.....	1,774	.....	26	8,209
All other states	2,067	33,504	127	3,673	173,149

Coal, 67.8 per cent of which was bituminous, was the most important class of fuel used in the industry as a whole and in each of its branches. The greatest quantity consumed in any one of the states was 32,542 net tons in New York, of which 68.4 per cent was anthracite. Michigan reported the greatest consumption of bituminous coal. Gas was next in importance, owing chiefly to the prevalence of its use in Ohio, which state reported 248,270,000 cubic feet consumed principally by establishments engaged in the manufacture of patent medicines and compounds.

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

A special schedule for materials and products was used at the census of 1914 for the first time. The following tables give the detail statistics for materials and products reported by all establishments, inclusive of the 277 establishments in other lines of manufacture which incidentally manufactured patent or proprietary medicines and compounds, druggists' preparations, and perfumery or cosmetics.

Summary of materials and products: 1914.—Table 13 shows the number of establishments reporting, the quantity of anesthetic and narcotic drugs used, and the value of each of the classified products for 1914.

Of the 4,092 establishments making one or more of the special products covered by the combined industry, 382 reported the use of opium as a material in their preparation; 300, morphine or its derivatives; 136, cocaine or its derivatives; 138, heroin; and 142, diacetyl morphine.

By far the most important branch of the industry was that covering the manufacture of patent medicines and compounds, which, with the subsidiary products from other industries, accounted for about three-fifths (59.8 per cent) of the entire value of products reported.

Table 13	Number or value: 1914.
Number of establishments	4,092
Patent medicines and compounds	2,903
Druggists' preparations	416
Perfumery and cosmetics	496
Subsidiary products of other industries	277
MATERIALS.	
Opium, pounds	118,282
Morphine, or derivative, ounces	316,130
Cocaine, or derivative, ounces	414,255
Heroin, ounces	13,039
Diacetyl morphine, ounces	23,859
PRODUCTS.	
Total value	$176,747,080
Classified industries—All products of included establishments:	
Patent medicines and compounds	$102,463,374
Druggists' preparations	$48,009,654
Perfumery and cosmetics	$16,899,101
Subsidiary products of other industries:	
Patent medicines and compounds	$3,202,057
Druggists' preparations	$5,353,646
Perfumery and cosmetics	$819,248
Classified products.	
Patent and proprietary medicines and compounds	$99,969,616
Medicines—	
Number of establishments	2,460
Value	$83,455,264
Compounds—	
Number of establishments	1,075
Value	$16,514,352
Druggists' preparations	$49,375,739
Alkaloids and derivatives [1]—	
Number of establishments	154
Value	$16,231,503
Synthetic preparations—	
Number of establishments	75
Value	$1,384,996
Tinctures, fluid extracts, medicinal sirups, etc.—	
Number of establishments	347
Value	$13,900,402
Pills, tablets, powders, etc.—	
Number of establishments	281
Value	$10,903,056
Medicinal metals and their salts—	
Number of establishments	55
Value	$732,307
Biological products—Serums, vaccines, toxins, etc.—	
Number of establishments	98
Value	$6,223,475
Toilet preparations and perfumery and cosmetics:	
Number of establishments	932
Value	$19,160,407
All other products, value	$8,241,318

[1] Includes alkaloids made by 8 chemical establishments; 5,805,212 ounces, value $4,738,335. They also made and consumed 138,948 ounces. Drugs used by chemical establishments in manufacture not reported, and not included above.

Under "classified products" in Table 13 the actual value of the specific articles manufactured is given without regard to the industry classification of the establishments reporting them.

Patent medicines and compounds, reported by establishments under various classifications to the value of $99,969,616, formed 56.6 per cent of the total value of products for the combined industry; druggists' preparations, aggregating $49,375,739, 27.9 per cent; toilet preparations and perfumery and cosmetics valued at $19,160,407, 10.8 per cent, while products other than those specifically covered by the schedule of inquiry were made in the same establishments to the value of $8,241,318, or 4.7 per cent.

Patent and proprietary medicines comprise substances or mixtures intended to be used for the cure, mitigation, or prevention of disease of man or animal, prepared for the use of the laity for self-medication and intended to be sold primarily in unbroken unit packages. They may be dispensed on physicians' prescriptions or orders, but the sole right to manufacture and sell is vested in the owner by reason of a patent on the compound, or a copyright or trade-mark on the distinguishing name or mark, or by reason of its being prepared according to a secret formula. These products were reported by 2,460 establishments to the value of $83,455,264, or 83.5 per cent of the value of the specific products of this the most important branch of the industry. Patent and proprietary compounds comprise goods not intended for medicinal use, as above described, but for other purposes, such as fire-extinguisher compounds, household ammonia, insecticides, etc. These were reported by 1,075 establishments to the value of $16,514,352, or 16.5 per cent of the total for the group.

Druggists' preparations include preparations, substances, and compounds for the use of druggists in compounding prescriptions and medicines or substances which are intended to be dispensed upon physicians' prescriptions or orders. These products were reported to the value of $49,375,739, of which amount alkaloids and derivatives (codein, cocaine, morphine, quinine, strychnine, etc.) formed 32.9 per cent; tinctures, fluid extracts, medicinal sirups, and other liquid preparations, 28.1 per cent; pills, tablets, powders, etc., 22.1 per cent; biological products (serums, vaccines, toxins, etc.), 12.6 per cent; synthetic preparations (acetanilid, acetphenetidin, phenolphthalein, saccharin, methylsalicylate, etc.), 2.8 per cent; and medicinal metals and their salts (bromides, acetates, citrates, bismuth, etc.), 1.5 per cent.

Perfumery, cosmetics, and toilet preparations, such as cologne, toilet water, face powder, cold cream, and perfumes were reported by 932 establishments to the value of $19,160,407.

Materials, by states.—Table 14 shows the quantities of the principal materials used in the manufacture of patent medicines, druggists' preparations, etc., and the number of establishments reporting them, by states.

With the exception of heroin, the largest consumption of each anesthetic and narcotic drug for which statistics were collected was reported from New York. Establishments in this state used as materials 63.7 per cent of the opium, 56 per cent of the morphine, 97.5 per cent of the cocaine, and 52.6 per cent of the diacetyl morphine reported for the United States. New York accounted for only 16.2 per cent of the heroin used, being exceeded in the consumption of this drug by Michigan, Pennsylvania, and Indiana, in the order named.

Table 14

STATE.	MATERIALS—ANESTHETIC AND NARCOTIC DRUGS.									
	Opium.		Morphine, or derivative.		Cocaine, or derivative.		Heroin		Diacetyl morphine.	
	Number of establishments reporting.	Pounds.	Number of establishments reporting.	Ounces.	Number of establishments reporting.	Ounces.	Number of establishments reporting.	Ounces.	Number of establishments reporting.	Ounces.
United States	382	118,282	300	316,130	136	414,255	138	13,039	142	23,859
Alabama	5	2,856	4	62	(1)	(1)	(1)	(1)	.....	.....
Illinois	20	242	26	6,232	15	246	13	190	19	554
Indiana	15	2,561	9	24,302	7	1,786	(1)	(1)	7	677
Maryland	19	3,373	15	27,173	3	1,297	6	921	4	2,281
Massachusetts	17	1,234	13	3,083	7	71	8	239	7	214
Michigan	15	17,575	11	18,039	7	4,050	6	3,309	6	843
Missouri	11	1,109	12	11,060	5	202	5	80	8	947
New Jersey	8	162	12	4,297	(1)	(1)	(1)	(1)	3	246
New York	51	75,393	39	177,156	25	403,862	19	2,118	24	12,542
Ohio	24	496	18	2,770	5	227	6	23	5	675
Pennsylvania	53	7,887	42	36,803	24	1,272	19	2,845	23	4,138
Tennessee	21	1,888	13	2,402	8	437	10	173	7	211
All other states	123	3,506	86	2,751	30	805	46	3,141	29	531

[1] Included in "all other states," to avoid disclosure of individual operations.

Products, by states.—Table 15 shows, by states, the number of establishments and the value of each of the specific products for which statistics were collected for 1914.

Table 15

STATE.	Number of establishments.	Total value of products.	PATENT AND PROPRIETARY MEDICINES AND COMPOUNDS, VALUE.		DRUGGISTS' PREPARATIONS, VALUE.						Toilet preparations, perfumery, and cosmetics, value.	All other products, value.
			Medicines.	Compounds.	Alkaloids and derivatives.	Synthetic preparations.	Tinctures, fluid extracts, medicinal sirups, etc.	Pills, tablets, powders, etc.	Medicinal metals and their salts.	Biological products—serums, vaccines, toxins, etc.		
United States	4,092	$176,747,080	$83,455,264	$16,514,352	$16,231,503	$1,384,996	$13,900,402	$10,903,056	$732,307	$6,223,475	$19,160,407	$8,241,318
Alabama	32	230,628	159,005	21,629	(1)	(1)	24,520	(1)	.....	.....	7,625	220
California	142	2,519,741	1,080,774	427,331	13,813	(1)	84,847	379,504	(1)	(1)	274,298	111,039
Illinois	391	15,580,958	7,966,158	2,799,881	151,801	1,430	491,399	1,053,753	3,998	160,619	1,852,055	1,099,864
Indiana	162	5,766,270	2,179,637	219,896	(1)	.....	1,707,914	1,283,160	.....	209,132	98,700	(1)
Iowa	99	4,868,245	3,025,574	249,789	27,897	(1)	88,893	10,850	.....	503,191	590,129	(1)
Maryland	89	6,445,569	3,526,967	440,362	463,795	(1)	1,088,504	381,204	.....	.....	452,196	(1)
Massachusetts	179	8,630,115	4,980,881	1,075,128	310,234	34,474	459,859	485,534	.....	.....	1,220,523	63,482
Michigan	155	16,518,480	3,710,705	316,470	7,865,409	263,251	706,389	1,108,646	(1)	1,364,893	991,538	(1)
Minnesota	107	4,926,555	2,834,458	397,928	45,107	(1)	12,085	633	(1)	(1)	514,549	1,067,262
Missouri	236	10,713,205	6,009,810	736,965	1,493,269	66,555	774,638	208,897	(1)	376,875	805,585	(1)
New Jersey	136	8,654,192	3,373,046	1,458,709	1,202,642	(1)	114,269	1,221,769	(1)	.....	816,199	440,598
New York	852	43,057,468	21,383,575	3,569,503	1,346,887	441,802	4,835,653	1,548,835	318,536	312,744	7,507,864	1,792,069
Ohio	268	7,983,411	4,513,034	1,062,373	19,623	58,608	732,665	324,231	(1)	.....	841,555	(1)
Pennsylvania	354	17,828,762	5,923,204	954,154	3,095,693	429,128	1,653,525	2,550,700	326,875	1,647,664	848,704	399,115
Tennessee	86	5,015,227	3,325,871	106,057	(1)	(1)	474,985	113,579	(1)	(1)	436,690	490,645
Wisconsin	63	1,443,730	839,128	72,936	44,554	8,689	23,376	42,578	12,771	12,766	255,990	130,942
All other states	741	16,564,524	8,623,437	2,605,241	150,779	81,059	626,881	189,183	70,127	1,635,591	1,646,207	2,646,082

[1] Included in "all other states," to avoid disclosure of individual operations.

New York was the leading state in the combined industry and in the manufacture of most of the articles for which special statistics were collected, producing 25.6 per cent of the patent and proprietary medicines; 21.6 per cent of the patent and proprietary compounds; 39.2 per cent of the toilet preparations, perfumery, cosmetics, etc.; 34.8 per cent of the tinctures, fluid extracts, etc.; and 31.9 per cent of the synthetic preparations.

Michigan was the most important state in the production of alkaloids and derivatives, and Pennsylvania in the manufacture of pills, tablets, powders, etc., medicinal metals and their salts, and biological products.

DETAIL STATE TABLES.

The principal statistics secured by the census inquiry concerning establishments engaged in the manufacture of patent and proprietary medicines and compounds, druggists' preparations, and perfumery and cosmetics are presented in Tables 16 and 17. Table 16 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, as reported for the industry as a whole.

Table 17 presents, for 1914, by states, the more detailed statistics for each of the three branches of the industry.

TABLE 16.—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	3,815	25,502	28,872	$12,710	$66,340	$167,372
	1909	3,642	22,805	25,650	9,897	50,376	141,042
	1904	2,777	20,472	17,008	7,913	39,494	117,436
Alabama	1914	30	48	16	22	72	226
	1909	18	32	.....	17	38	123
	1904	14	27	6	7	42	131
California	1914	126	328	598	180	1,187	2,466
	1909	89	310	347	148	630	1,549
	1904	89	344	124	175	533	1,445
Colorado	1914	26	48	49	23	95	193
	1909	23	50	90	24	64	168
	1904	11	30	13	15	23	63
Connecticut	1914	43	327	206	125	704	2,063
	1909	64	237	381	88	488	1,342
	1904	52	146	174	57	290	1,023
District of Columbia	1914	[1] 20	169	62	62	218	613
	1909	17	78	50	36	57	384
	1904	[2] 6	59	45	23	35	264
Georgia	1914	45	155	206	63	592	1,219
	1909	50	210	84	81	442	1,421
	1904	34	168	126	63	319	1,541
Illinois	1914	363	1,844	2,573	1,066	5,097	15,032
	1909	359	1,869	3,234	805	4,413	13,114
	1904	312	1,808	1,545	818	3,438	13,320
Indiana	1914	156	804	998	415	2,095	5,740
	1909	113	801	809	354	1,460	4,344
	1904	100	813	468	292	1,454	4,410
Iowa	1914	94	418	642	220	1,607	4,828
	1909	100	358	503	133	1,065	3,461
	1904	[2] 59	260	195	99	806	2,045
Kansas	1914	54	241	198	120	716	1,432
	1909	39	63	96	34	245	610
	1904	31	55	16	19	71	286
Kentucky	1914	45	376	838	140	755	2,163
	1909	49	280	447	93	750	2,123
	1904	35	208	442	73	520	1,770
Louisiana	1914	25	65	46	21	132	401
	1909	21	111	68	20	134	363
	1904	[1] 16	156	70	43	197	472
Maine	1914	[1] 30	113	67	42	202	468
	1909	37	144	94	49	197	756
	1904	27	147	36	46	158	585
Maryland	1914	83	1,053	1,424	432	2,389	5,970
	1909	83	1,103	983	420	2,167	5,548
	1904	74	971	770	286	1,839	4,839
Massachusetts	1914	162	1,381	1,586	$690	$3,323	$8,263
	1909	154	1,183	1,376	566	2,727	7,432
	1904	134	1,196	1,148	542	3,266	8,035
Michigan	1914	142	3,360	2,694	1,994	7,003	16,434
	1909	159	3,249	2,270	1,509	4,941	13,475
	1904	96	2,536	2,301	952	3,798	10,470
Minnesota	1914	99	613	945	285	2,341	4,879
	1909	101	475	741	188	1,690	4,412
	1904	77	344	545	136	1,340	3,136
Missouri	1914	212	1,090	867	532	2,926	9,010
	1909	185	980	908	415	2,536	7,639
	1904	125	924	449	353	1,985	5,512
New Jersey	1914	120	1,271	2,223	616	3,147	7,673
	1909	111	1,005	1,478	432	2,089	5,410
	1904	78	931	1,209	330	1,315	3,710
New York	1914	806	5,699	5,549	2,977	16,012	41,796
	1909	743	4,728	5,423	2,220	12,589	37,343
	1904	611	4,334	3,418	1,847	8,816	28,646
North Carolina	1914	[2] 26	74	17	27	260	512
	1909	26	60	28	18	216	474
	1904	26	55	6	11	139	266
Ohio	1914	252	1,032	1,949	479	3,018	7,734
	1909	261	905	1,568	385	1,888	5,859
	1904	196	1,046	1,255	386	2,118	7,371
Pennsylvania	1914	324	2,833	2,495	1,233	6,474	14,721
	1909	367	2,761	2,619	1,145	5,310	12,656
	1904	243	2,325	1,402	824	4,087	9,460
Tennessee	1914	82	648	802	249	1,824	4,942
	1909	76	433	418	148	1,341	3,515
	1904	[2] 47	480	371	143	900	2,788
Texas	1914	61	116	97	52	288	740
	1909	59	145	51	62	411	1,014
	1904	[2] 38	103	17	35	241	700
Vermont	1914	[2] 12	119	283	57	327	1,019
	1909	15	161	333	68	586	1,200
	1904	[2] 20	198	268	81	370	1,398
Washington	1914	32	45	94	21	142	273
	1909	18	38	95	19	106	258
	1904	10	20	.....	13	37	99
Wisconsin	1914	62	278	275	131	510	1,442
	1909	62	269	219	118	445	1,707
	1904	58	262	113	77	362	1,233
All other states	1914	274	885	1,073	403	1,864	5,090
	1909	243	767	1,246	278	1,336	4,203
	1904	158	448	467	167	986	2,418

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

TABLE 17.—DETAIL STATEMENT FOR

	STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.									WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.				Total.	16 and over.		Under 16.		
						Male.	Female.	Average number.	Number, 15th day of—				Male.	Female.	Male.	Female	
									Maximum month.		Minimum month.						
	PATENT MEDICINES AND COMPOUNDS.																
1	United States	2,903	25,927	2,112	2,221	5,151	3,115	13,328	Mh	14,235	Au	12,543	13,310	7,127	5,944	109	130	$71,436,840
2	Alabama	27	93	22	14	11	10	36	Jy [3]	39	Ap [3]	32	47	41	4	2	.....	128,354
3	Arkansas	21	67	20	11	6	4	26	Ap	29	Jy	24	30	19	11	.....	.....	87,523
4	California	104	454	74	71	69	48	192	Mh	203	Se [2]	185	205	121	81	3	.....	1,242,688
5	Colorado	18	38	6	5	2	2	23	(1)	23	(1)	23	26	15	10	1	.....	52,020
6	Connecticut	37	366	29	23	66	25	223	Ap	253	Ja	166	227	76	137	1	13	543,329
7	Delaware	3	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,209
8	District of Columbia	17	160	10	15	2	10	123	Ja [3]	130	Je	115	130	40	89	.....	1	843,336
9	Florida	18	50	16	5	4	1	24	Je	29	Jy [3]	22	30	18	12	.....	.....	204,017
10	Georgia	41	277	31	28	58	31	129	Fe	146	Jy	107	141	90	48	3	.....	565,342
11	Illinois	265	2,634	155	224	693	449	1,113	Mh	1,223	Au	1,022	1,069	601	430	10	28	7,969,991
12	Indiana	124	722	100	78	107	93	344	Oc	357	Au	321	377	174	201	1	1	1,262,167
13	Iowa	73	1,219	72	79	651	125	292	Mh	301	Jy	280	305	160	145	.....	.....	2,704,151
14	Kansas	27	164	34	10	27	29	64	Ja [3]	70	Au	54	64	33	31	.....	.....	380,369
15	Kentucky	32	482	19	35	60	19	349	My	425	Oc	263	305	222	76	1	6	1,435,766
16	Louisiana	18	74	9	10	11	6	38	Mh	41	No [3]	34	35	15	16	3	1	132,398
17	Maine	24	163	15	11	21	17	99	Fe	136	Au	56	132	37	95	.....	.....	260,039
18	Maryland	60	673	49	55	86	65	418	Ja	430	Au	405	420	179	232	2	7	1,482,138
19	Massachusetts	130	1,374	98	94	163	125	894	Ja	1,039	Je	774	947	481	460	4	2	3,967,433
20	Michigan	102	1,590	76	108	213	164	1,029	Mh	1,124	De	945	572	485	75	5	7	3,847,798
21	Minnesota	84	980	72	63	138	146	561	Fe	640	No	480	543	235	307	1	.....	5,257,685
22	Mississippi	6	13	5	2	.....	1	5	Fe	7	Mh [3]	4	6	5	1	.....	.....	25,605
23	Missouri	168	1,540	98	144	315	196	787	Mh	840	No	750	801	322	463	10	6	4,377,397
24	Montana	4	6	4	.....	.....	.....	2	Fe [3]	3	Ja [3]	1	3	3	.....	.....	.....	5,746
25	Nebraska	27	223	21	19	62	29	92	No	101	Ja [3]	84	98	81	16	.....	1	304,400
26	New Hampshire	11	29	7	3	3	2	14	Je [3]	15	Ja [3]	13	14	6	6	1	1	56,692
27	New Jersey	108	1,148	63	107	198	84	696	My	718	De	665	707	428	235	27	17	4,351,323
28	New York	566	5,377	365	504	920	794	2,794	Fe	2,995	Je	2,486	3,009	1,551	1,441	9	8	15,152,807
29	North Carolina	26	153	22	18	34	5	74	Mh	83	No	62	73	31	40	.....	2	424,300
30	Ohio	198	1,631	162	133	452	244	640	Mh	718	Jy	572	691	399	286	2	4	3,027,744
31	Oklahoma	13	37	9	9	3	.....	16	Oc [3]	18	Ja [3]	15	17	10	6	1	.....	31,525
32	Oregon	20	97	39	6	7	3	42	Ja	49	Au	36	55	45	10	.....	.....	112,362
33	Pennsylvania	237	1,601	211	134	304	138	814	Mh	855	Au	772	836	436	379	13	8	3,930,395
34	Rhode Island	23	69	13	9	17	5	25	Ap [3]	27	Mh	20	28	20	7	1	.....	150,633
35	South Carolina	6	21	5	4	1	.....	11	Ja [3]	12	Je [3]	10	13	7	5	1	.....	26,000
36	South Dakota	3	3	2	.....	.....	.....	1	Je [3]	2	Au [5]	0	2	2	.....	.....	.....	1,378
37	Tennessee	62	1,043	29	78	294	126	516	My	569	De	434	519	234	268	2	15	3,007,693
38	Texas	49	185	38	32	29	12	74	My [3]	80	De	67	80	52	26	.....	2	486,578
39	Utah	11	36	6	3	7	1	19	Jy [3]	27	Ja [3]	13	30	15	11	4	.....	110,981
40	Vermont	12	203	11	11	40	22	119	Mh	126	Au	111	122	54	68	.....	.....	748,585
41	Washington	28	70	23	9	4	5	29	Je [3]	41	De	14	33	31	2	.....	.....	238,583
42	Wisconsin	51	365	47	25	49	50	194	Fe	215	Au	174	191	73	117	1	.....	601,372
43	All other states [6]	49	495	23	32	24	29	387	.....		.....		377	280	97	.....	.....	1,895,983

[1] Owned power only.
[2] Includes rented power, other than electric.
[3] Same number reported for one or more other months.

THE INDUSTRY, BY STATES: 1914.

EXPENSES.								Value of products.	Value added by manufacture.	POWER.						
Salaries and wages.			For contract work.	Rent and taxes.		For materials.				Primary horsepower.						Electric horsepower generated in establishments reporting.
Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[1]	Internal-combustion engines.[2]	Water wheels and motors.[1]	Electric (rented).		
PATENT MEDICINES AND COMPOUNDS.																
$5,598,258	$7,766,113	$6,675,168	$175,617	$1,224,971	$642,106	$35,419,552	$520,882	$102,463,374	$66,522,940	18,542	9,515	1,624	170	7,233	3,235	1
12,610	8,960	18,322	350	5,304	1,045	49,747	625	176,069	125,697	15	4	.....	.....	11	.....	2
11,303	6,529	11,548	.....	4,138	2,635	65,907	792	162,450	95,751	30	6	.....	.....	24	5	3
141,387	119,303	114,589	5,185	42,352	10,263	585,099	7,805	1,573,783	980,879	460	105	96	.....	259	.....	4
4,940	1,950	13,374	1,741	3,194	287	41,876	475	103,893	61,542	22	.....	.....	.....	22	.....	5
128,713	119,159	80,801	11,771	10,195	7,067	491,840	5,399	1,442,194	944,955	70	30	4	.....	36	.....	6
.....	.....	.....	.....	145	13	989	.....	2,077	1,088	.....	.....	.....	.....	.....	.....	7
28,922	5,157	43,817	970	13,335	2,338	147,040	320	476,730	329,370	57	.....	.....	.....	57	.....	8
3,770	3,580	10,576	1,005	3,595	769	38,738	185	115,893	76,970	6	.....	4	.....	2	.....	9
49,674	74,500	50,273	2,368	15,919	7,117	539,183	2,934	1,089,358	547,241	153	90	2	.....	61	3	10
601,448	1,191,950	662,132	19,088	148,448	49,510	3,634,859	34,558	11,470,734	7,801,317	1,694	832	137	10	715	591	11
118,815	140,212	171,130	4,937	19,313	9,027	735,821	9,915	2,425,279	1,679,543	440	122	60	.....	258	.....	12
142,602	775,068	150,251	3,805	16,231	13,920	1,137,038	10,759	3,760,168	2,612,371	612	225	34	1	352	89	13
32,133	50,073	31,111	16	5,573	5,946	166,133	2,032	413,040	244,875	53	.....	10	.....	43	.....	14
79,094	77,640	139,516	621	8,036	18,336	661,092	28,870	2,010,876	1,320,914	825	780	2	.....	43	25	15
18,645	11,461	12,890	305	2,190	1,636	77,939	205	263,999	185,855	14	.....	.....	.....	14	.....	16
27,200	23,413	38,038	180	2,299	1,831	182,913	2,189	434,253	249,151	64	35	.....	.....	29	.....	17
151,063	127,361	177,592	7,105	19,370	31,288	943,489	10,016	2,958,431	2,004,926	647	393	41	.....	213	.....	18
290,466	241,743	473,034	7,261	92,111	57,923	2,113,809	25,237	5,782,215	3,643,169	1,241	528	165	.....	548	23	19
262,741	367,171	558,016	1,330	29,743	39,192	1,452,537	23,317	3,871,014	2,395,160	821	574	30	.....	217	365	20
162,659	176,203	254,490	1,110	28,649	45,587	2,138,993	27,268	4,583,827	2,417,566	923	254	10	.....	659	200	21
300	800	2,205	.....	270	165	15,352	75	25,685	10,258	.....	.....	.....	.....	.....	.....	22
434,584	517,161	384,104	26,262	84,475	32,766	1,912,713	17,448	6,828,865	4,898,704	642	161	142	.....	339	201	23
.....	.....	1,400	.....	435	84	2,930	287	7,981	4,764	6	.....	6	.....	.....	.....	24
29,422	93,900	71,511	19	8,519	2,729	217,429	2,847	561,737	341,461	234	.....	38	.....	196	.....	25
2,555	5,545	6,428	.....	1,806	285	26,690	521	75,557	48,346	13	3	2	.....	8	.....	26
311,924	332,447	378,566	1,947	42,322	38,875	1,914,127	63,305	5,001,736	3,024,304	1,804	1,447	114	.....	243	313	27
1,557,943	1,417,004	1,529,633	55,825	393,052	131,255	8,487,279	104,594	25,650,716	17,058,843	3,209	1,719	456	2	1,032	670	28
24,265	48,435	26,788	920	2,973	3,868	249,136	11,121	511,568	251,311	17	.....	.....	1	16	.....	29
233,480	466,458	294,184	1,895	67,123	26,338	2,229,920	43,180	5,611,885	3,338,785	1,449	829	50	.....	570	403	30
2,762	2,080	9,790	.....	2,028	353	25,340	107	62,036	36,589	7	.....	6	.....	1	.....	31
3,920	5,799	21,813	.....	5,795	376	107,973	740	216,714	108,001	25	20	3	.....	2	6	32
316,044	523,680	404,506	7,702	60,146	23,831	2,059,412	27,092	5,733,868	3,047,364	1,045	542	164	.....	339	186	33
12,151	11,578	15,930	648	4,957	523	47,983	1,307	133,539	84,249	34	.....	5	.....	29	.....	34
6,550	750	2,966	.....	1,590	311	42,767	95	66,090	23,228	2	.....	2	.....	.....	2	35
.....	.....	710	.....	60	61	1,413	.....	3,790	2,377	.....	.....	.....	.....	.....	.....	36
180,823	521,238	196,520	1,438	29,706	34,837	1,384,895	7,810	4,025,646	2,632,941	736	156	3	.....	577	.....	37
41,480	37,951	31,183	2,625	12,446	2,291	152,816	946	489,518	335,756	87	.....	18	.....	69	.....	38
1,840	4,300	7,091	.....	2,670	460	55,221	230	99,849	44,398	9	.....	.....	.....	9	.....	39
41,575	115,609	57,343	.....	3,036	7,986	317,262	9,561	1,018,651	691,828	283	6	4	150	123	150	40
11,947	5,910	11,044	6,830	7,034	1,248	92,872	3,091	199,678	103,715	80	54	7	6	13	.....	41
37,023	84,588	85,788	210	16,207	6,074	336,641	5,486	973,084	630,957	94	25	.....	.....	69	.....	42
79,485	49,387	124,165	148	8,181	21,665	534,339	28,138	2,048,898	1,486,421	619	575	9	.....	35	3	43

[1] Same number reported throughout the year.
[2] None reported for one or more other months.
[3] All other states embrace: North Dakota, 1 esblishment; Vrginia, 32; West Virginia, 16.

TABLE 17.—DETAIL STATEMENT FOR

	STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Number, 15th day of— Maximum month.		Number, 15th day of— Minimum month.		WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male.	Under 16. Female	Capital.
	DRUGGISTS' PREPARATIONS.																	
1	United States	416	14,508	229	635	3,067	1,300	9,277	Fe	9,558	Au	8,855	9,310	4,705	4,492	47	66	$46,638,098
2	California	6	188	1	12	34	25	116	Mh	136	De	90	90	29	61	.....	.....	280,777
3	Colorado	4	18	2	3	1	2	10	Mh	13	Oc [3]	7	12	7	5	.....	.....	27,421
4	District of Columbia	3	55	2	6	.....	1	46	Mh [3]	48	Au	42	45	9	36	.....	.....	153,052
5	Georgia	3	31	.....	5	1	1	24	Jy [3]	25	Au [3]	23	24	9	15	.....	.....	28,500
6	Illinois	38	684	20	47	149	110	358	Se [3]	371	Ja	340	362	232	129	1	.....	1,969,343
7	Indiana	17	917	10	51	291	68	497	Ja	559	De	429	502	266	234	.....	2	3,685,436
8	Iowa	13	147	10	14	22	18	83	Se	118	Ja	51	81	73	7	.....	1	379,263
9	Kansas	19	188	7	31	21	4	125	Oc [3]	173	Ja	82	162	162	.....	.....	.....	480,681
10	Kentucky	9	34	2	5	7	1	19	(4)	19	(4)	19	19	16	3	.....	.....	99,445
11	Louisiana	3	9	3	1	.....	.....	5	(4)	5	(4)	5	5	3	2	.....	.....	4,608
12	Maine	6	22	7	1	.....	.....	14	Je	16	No [3]	10	12	6	6	.....	.....	6,822
13	Maryland	12	1,007	11	49	286	95	566	Ja	644	De	501	570	208	362	.....	.....	2,889,987
14	Massachusetts	16	483	7	23	90	41	322	My	345	Au	300	322	146	172	.....	4	964,283
15	Michigan	15	3,718	5	35	1,057	446	2,175	Ja	2,231	Jy	2,123	2,175	1,143	1,019	11	2	12,797,223
16	Minnesota	4	29	.....	6	4	2	17	Se	18	De	16	16	11	5	.....	.....	76,422
17	Missouri	22	424	16	36	97	25	250	Se	271	Ja	226	261	162	96	2	1	894,967
18	Montana	5	12	2	3	1	.....	6	Jy [3]	8	De	4	6	3	1	2	.....	29,097
19	Nebraska	11	83	7	12	11	2	51	Oc [3]	54	Ja	47	53	50	3	.....	.....	274,556
20	New York	81	2,417	46	113	416	191	1,651	Ap	1,724	Au	1,574	1,603	831	749	9	14	8,344,436
21	Ohio	26	446	25	34	97	31	259	Je	271	No	242	246	141	103	2	.....	963,851
22	Pennsylvania	46	2,480	24	83	323	191	1,859	Fe	2,051	Au	1,729	1,811	810	949	15	37	9,719,432
23	Tennessee	9	193	6	18	57	6	106	Mh	109	De [3]	102	103	46	57	.....	.....	534,553
24	Virginia	5	64	3	7	12	2	40	Au	47	Ja	34	42	11	28	2	1	91,068
25	Wisconsin	7	68	3	3	18	4	40	(4)	40	(4)	40	40	32	8	.....	.....	154,714
26	All other states*	36	791	10	37	72	34	638	.....		.....		748	299	442	3	4	1,788,161

* All other states embrace: Alabama, 3 establishments; Arkansas, 1; Connecticut, 2; Florida, 2; New Hampshire, 1; New Jersey, 9; North

	PERFUMERY AND COSMETICS.																	
1	United States	496	5,421	384	388	875	877	2,897	Oc	3,150	Ja	2,646	3,033	1,047	1,929	18	39	$9,646,613
2	California	16	58	10	8	9	11	20	Oc	26	Je	16	19	8	11	.....	.....	168,506
3	Colorado	4	25	4	1	5	.....	15	Ap	19	Ja [3]	12	15	1	13	1	.....	47,182
4	Illinois	60	617	42	43	28	131	373	Oc	390	Ja	353	368	94	258	7	9	555,664
5	Indiana	15	53	18	2	8	2	23	De	30	Ap	18	30	15	15	.....	.....	56,418
6	Iowa	8	133	18	7	48	17	43	Ja [3]	47	Au [3]	41	41	14	26	1	.....	303,513
7	Kansas	8	70	7	3	5	3	52	De	157	Ap [3]	20	157	34	123	.....	.....	65,155
8	Kentucky	4	25	2	3	.....	12	8	Ja [3]	9	Je [3]	7	8	1	7	.....	.....	13,663
9	Louisiana	4	52	1	7	12	10	22	Jy	39	Ja [5]	0	29	9	19	1	.....	208,260
10	Maryland	11	118	8	12	14	15	69	My	76	Ja [3]	68	68	22	44	.....	2	167,403
11	Massachusetts	16	198	8	9	10	6	165	Se	186	De	130	176	52	123	.....	1	540,215
12	Michigan	25	301	17	26	34	59	165	De	205	Je	146	206	65	139	1	1	528,315
13	Minnesota	11	71	5	12	6	13	35	Mh [3]	36	Ja	32	38	15	23	.....	.....	96,596
14	Missouri	22	136	29	9	20	25	53	Ap	67	Oc	37	53	16	37	.....	.....	426,046
15	New York	159	2,242	106	141	324	417	1,254	Oc	1,356	Ja	1,136	1,207	469	722	3	13	4,185,364
16	Ohio	28	488	25	21	259	50	133	Oc	149	Au	117	139	63	76	.....	.....	413,142
17	Oklahoma	3	7	2	.....	.....	.....	5	(4)	5	(4)	5	5	4	1	.....	.....	6,800
18	Pennsylvania	41	288	37	32	29	30	160	Oc	175	Ja	136	165	58	101	.....	6	384,393
19	Rhode Island	4	12	4	1	2	.....	5	Je [3]	7	De [3]	3	5	3	2	.....	.....	15,137
20	Tennessee	11	49	5	6	7	5	26	Ap	33	Ja	19	26	8	15	2	1	131,853
21	Texas	7	22	5	3	.....	2	12	(4)	12	(4)	12	12	6	6	.....	.....	36,963
22	Wisconsin	4	90	2	8	13	23	44	Oc	56	Je	37	50	13	30	1	6	372,774
23	All other states*	35	366	29	34	42	46	215	.....		.....		216	77	138	1	.....	923,251

* All other states embrace: Arkansas, 2 establishments; Connecticut, 4; District of Columbia, 2; Georgia, 1;

[1] Owned power only. [2] Includes rented power, other than electric. [3] Same number reported for one or more other months.

THE INDUSTRY, BY STATES: 1914—Continued.

EXPENSES.								Value of products.	Value added by manufacture.	POWER.						
Salaries and wages.			For contract work.	Rent and taxes.		For materials.				Primary horsepower.						Electric horsepower generated in establishments reporting.
Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.[1]	Internal-combustion engines.[2]	Water wheels and motors.[1]	Electric (rented).		
DRUGGISTS' PREPARATIONS.																
$1,032,084	$5,112,898	$1,754,508	$27,001	$408,134	$331,005	$22,663,711	$271,012	$48,009,654	$25,074,931	8,417	6,026	306	2	2,083	4,047	1
25,060	52,651	58,127	.....	11,340	1,024	526,809	3,650	767,329	236,870	72	.....	.....	.....	72	.....	2
3,000	1,303	4,773	.....	1,325	93	28,913	251	43,304	14,140	5	.....	.....	.....	5	.....	3
13,200	350	17,000	.....	1,625	660	70,949	92	135,915	64,874	5	.....	.....	.....	5	3	4
17,040	1,720	12,002	.....	3,000	938	43,740	103	118,000	74,157	3	.....	.....	.....	3	.....	5
122,077	286,863	234,356	6,589	27,780	12,148	717,149	19,559	2,000,494	1,263,786	786	653	43	.....	90	324	6
100,200	442,239	231,147	.....	8,954	31,990	1,285,418	17,203	3,234,004	1,922,193	552	446	2	.....	104	400	7
22,105	21,802	53,685	2,679	7,508	1,472	313,431	2,488	623,564	307,645	22	.....	2	.....	20	.....	8
49,653	19,663	84,069	3,858	6,307	4,346	522,154	4,466	958,686	432,006	141	30	10	.....	101	.....	9
6,900	9,310	7,153	25	1,565	502	54,523	247	100,465	45,695	13	.....	.....	.....	13	.....	10
1,200	.....	1,508	.....	200	65	4,458	27	10,495	6,010	7	.....	.....	.....	7	.....	11
2,080	.....	4,241	.....	1,083	92	16,420	12	33,480	17,057	3	.....	1	.....	2	.....	12
151,790	356,405	226,925	.....	38,526	20,765	1,302,538	11,008	2,725,251	1,411,705	654	650	.....	.....	4	328	13
51,328	137,505	159,062	.....	30,651	7,823	599,035	8,022	1,345,612	746,655	307	100	35	.....	172	.....	14
215,735	1,858,023	1,351,606	200	68,829	148,030	5,064,288	65,188	11,738,662	6,609,186	1,800	1,480	17	.....	303	1,579	15
11,180	4,880	14,454	.....	1,060	413	119,360	270	170,245	50,615	1	.....	.....	.....	1	.....	16
70,42	117,073	124,562	150	18,957	4,808	708,773	5,181	1,648,228	934,274	121	62	6	.....	53	66	17
2,120	600	4,400	.....	945	100	6,092	643	21,143	14,408	11	.....	.....	.....	11	.....	18
18,600	13,070	34,501	3,600	3,495	1,028	155,823	1,766	305,606	148,107	4	.....	4	.....	.....	.....	19
453,009	867,562	847,057	3,360	107,018	32,903	4,746,312	57,830	8,856,268	4,052,126	1,694	1,058	136	.....	500	459	20
59,125	155,214	138,916	.....	10,891	11,230	528,449	10,883	1,291,403	752,071	386	127	.....	.....	259	10	21
283,501	510,321	770,277	2,890	31,402	32,512	4,034,734	38,821	8,300,728	4,227,173	1,319	1,120	47	2	150	873	22
36,970	58,515	43,716	.....	4,802	4,030	349,991	1,236	685,027	333,800	20	.....	.....	.....	20	.....	23
9,500	14,808	16,227	.....	3,130	817	118,102	178	195,052	76,772	.....	.....	.....	.....	.....	.....	24
7,000	17,201	27,360	.....	4,178	682	95,035	1,647	209,434	112,752	48	.....	.....	.....	48	.....	25
105,895	154,840	286,335	1,550	13,503	11,334	1,249,315	20,151	2,490,260	1,220,794	443	300	3	.....	140	5	26

Carolina, 1; Oklahoma, 1; Oregon, 1; Rhode Island, 2; South Carolina, 1; South Dakota, 2; Texas, 5; Utah, 1; Washington, 2; West Virginia, 2;

PERFUMERY AND COSMETICS.

$1,000,867	$1,467,048	$1,270,809	$19,467	$380,042	$122,812	$7,414,728	$50,058	$16,809,101	$9,434,315	1,913	367	433	7	1,106	220	1
8,725	11,572	7,371	3,376	4,417	1,406	63,741	140	154,709	90,018	66	.....	60	.....	6	.....	2
1,800	5,040	4,643	.....	1,220	457	23,555	324	45,786	21,907	22	.....	.....	.....	22	.....	3
83,700	123,322	109,865	4,489	43,708	6,361	685,929	4,725	1,560,270	869,625	93	.....	.....	.....	93	.....	4
2,600	8,474	12,754	.....	2,564	585	36,100	415	79,362	42,847	6	.....	2	.....	4	.....	5
13,579	66,644	24,071	.....	1,532	2,599	202,084	902	444,303	241,317	8	.....	1	.....	7	.....	6
3,850	3,415	13,423	.....	324	910	20,034	259	60,103	38,010	4	.....	.....	.....	4	.....	7
10,770	5,073	2,689	150	1,032	324	9,807	66	51,601	41,728	.....	.....	.....	.....	.....	.....	8
12,898	14,025	6,744	.....	1,702	980	49,240	205	126,189	76,735	25	.....	.....	.....	25	.....	9
17,595	21,072	27,150	2,356	4,636	1,720	120,145	1,627	286,798	165,026	123	.....	96	1	26	3	10
26,600	17,414	63,720	.....	15,235	10,833	584,100	975	1,135,133	549,998	38	.....	.....	.....	38	.....	11
55,500	78,736	84,519	.....	13,915	7,537	303,418	3,808	824,096	426,870	73	30	.....	.....	43	.....	12
13,425	10,774	10,090	.....	5,182	559	54,198	986	124,954	69,770	21	.....	.....	4	17	.....	13
31,580	95,187	23,549	7,352	4,106	5,254	279,946	2,306	533,316	251,064	104	.....	.....	.....	104	.....	14
403,524	733,314	600,494	651	218,696	40,158	3,496,619	10,111	7,289,251	3,773,521	646	160	34	2	450	.....	15
33,390	137,961	46,113	683	12,969	12,948	204,366	1,569	830,893	624,958	114	.....	80	.....	34	80	16
.....	.....	3,940	.....	750	570	9,125	55	22,900	13,720	2	.....	.....	.....	2	.....	17
44,570	29,047	57,745	350	20,062	3,181	310,007	3,510	686,735	373,218	131	63	40	.....	28	.....	18
1,820	520	1,074	.....	864	251	7,134	182	17,206	9,800	.....	.....	.....	.....	.....	.....	19
11,300	11,717	8,455	.....	2,342	2,933	79,511	625	231,772	151,636	46	4	.....	.....	42	.....	20
4,080	1,020	5,646	.....	3,156	215	31,595	108	66,536	34,833	1	.....	.....	.....	1	.....	21
23,115	24,217	17,574	.....	2,370	3,183	68,757	2,442	259,824	188,625	133	.....	120	.....	13	120	22
106,350	68,204	80,470	.....	10,800	10,848	684,348	5,718	2,067,265	1,377,190	257	110	.....	.....	147	17	23

Maine, 2; Montana, 1; Nebraska, 2; New Jersey, 12; North Dakota, 1; Utah, 1; Vermont, 1; Virginia, 4; Washington, 2.

[1] Same number reported throughout the year.

[2] None reported for one or more other months.

DRUG GRINDING.

Powdered or pulverized drugs are the principal products reported by establishments under this classification, which includes the grinding of drugs, charcoal, roots, herbs, gums, licorice root, etc. Statistics for this industry are presented in Table 18 for the census years from 1889 to 1914, inclusive. The returns do not show the quantity or value of drugs ground by establishments engaged primarily in the manufacture of patent medicines and compounds and druggists' preparations.

Table 18

DRUG GRINDING.	Number or amount.					Per cent of increase.[1]				
	1914	1909	1904	1899	1889	1909–1914	1904–1909	1904–1914	1899–1909	1889–1899
Number of establishments	29	25	27	26	13					
Persons engaged	1,280	1,152	1,111	775	(2)	11.1	3.7	15.2	48.6	
Proprietors and firm members	22	16	23	29	(2)					
Salaried employees	199	214	107	102	(2)	−7.0	100.0	86.0	109.8	
Wage earners (average number)	1,059	922	981	644	148	14.9	−6.0	8.0	43.2	335.1
Primary horsepower	4,972	3,322	2,866	4,697	845	49.7	15.9	73.5	−29.3	455.9
Capital	$8,434,036	$5,187,214	$4,991,218	$2,837,911	$337,885	62.6	3.9	69.0	82.8	739.9
Salaries and wages	935,484	732,456	637,780	418,446	103,594	27.7	14.8	46.7	75.0	303.9
Salaries	352,123	268,328	154,683	126,623	(2)	31.2	73.5	127.6	111.9	
Wages	583,361	464,128	483,097	291,823	(2)	25.7	−3.9	20.8	59.0	
Paid for contract work	35	5,000		12,050	(2)	−99.3			−58.5	
Rent and taxes (including internal revenue)	91,883	55,339	[3] 43,709	[3] 43,963	(2)	66.0				
Cost of materials	5,215,287	3,453,720	3,024,305	3,315,228	192,321	51.0	14.2	72.4	4.2	1,623.8
Value of products	8,080,118	6,006,999	5,145,522	4,308,144	436,766	34.5	16.7	57.0	39.4	886.4
Value added by manufacture (value of products less cost of materials)	2,864,831	2,553,279	2,121,217	992,916	244,445	12.2	20.4	35.1	157.1	306.2

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100. [2] Figures not available. [3] Exclusive of internal revenue.

PETROLEUM, REFINING.

By Story B. Ladd.

GENERAL STATISTICS.

Scope of the industry.—This industry embraces establishments engaged primarily in the refining of crude petroleum by distillation. Establishments which purchase refined or partly refined petroleum products and compound them with vegetable, animal, or mineral oils, or other substances, in order to produce a special composition, are not included.

At the census of 1880 a special report on the Production, Technology, and Uses of Petroleum and its Products included statistics on petroleum refining, although they were not included in the report on manufactures for that census. This report covered the year 1879 and furnished statistics comparable with those secured at subsequent censuses of manufactures. Beginning with 1889 the refining of petroleum has been classed as a manufacturing industry. With respect to crude petroleum, data and statistics in regard to marketed production, output, stocks, prices, imports and exports, wells drilled, foreign production, etc., will be found in the annual reports on Mineral Resources of the United States, compiled by the Geological Survey: Subject, Petroleum.

There is a large and growing production of gasoline from natural gas, produced by the condensation of the gas at the wells, and known as casing-head gasoline. It utilizes the waste of the natural gas incident to oil mining. This is to a certain extent a manufacturing operation, but it is closely related to the operations of the wells, and the statistics for capital investment, labor, and expense chargeable to gasoline manufacture can not be segregated. The general statistics for these establishments are not included in this report, though the statistics for casing-head gasoline production, compiled annually by the Geological Survey, are given in Table 17.

Comparison with earlier censuses.—In 1859, 78 petroleum refining establishments were reported, with products valued at $6, 397,680, and in 1869 there were 170 establishments, with products valued at $26,942,-287. Table 1 summarizes the statistics of establishments engaged in petroleum refining for each census from 1879 to 1914, and gives percentages of increase from census to census.

Table 1	Number or amount.						Per cent of increase.[1]				
	1914	1909	1904	1899	1889	1879	1909–1914	1904–1909	1899–1904	1889–1899	1879–1889
Number of establishments	176	147	98	67	94	86	19.7	50.0	46.3	−28.7	9.3
Persons engaged	31,077	16,640	18,768	13,447	(2)	(2)	86.8	−11.3	39.6	.....	.....
Proprietors and firm members	52	42	24	47	(2)	(2)	23.8	75.0	−48.9	.....	.....
Salaried employees	5,650	2,660	1,974	1,201	(2)	(2)	112.0	35.2	64.4	.....	.....
Wage earners (average number)	25,360	13,929	16,770	12,199	11,403	9,869	82.1	−16.9	37.5	(3)	(3)
Primary horsepower	128,468	90,268	46,019	36,127	32,536	(2)	42.3	96.2	27.4	11.0	.....
Capital	$325,646,120	$181,916,205	$136,280,541	$95,327,892	$77,416,296	$27,325,746	79.0	33.5	43.0	23.1	183.3
Salaries and wages	$27,289,894	$13,758,945	$12,713,432	$8,528,487	$6,989,478	$4,381,572	98.3	8.2	49.1	22.0	59.5
Salaries	$7,892,428	$3,928,867	$2,724,065	$1,811,400	(2)	(2)	100.9	44.2	50.4	.....	.....
Wages	$19,397,466	$9,830,078	$9,989,367	$6,717,087	(2)	(2)	97.3	−1.6	48.7	.....	.....
Paid for contract work	$502,651	$119,610	$49,248	$15,415	(2)	(2)	320.2	142.9	219.5	.....	.....
Rent and taxes (including internal revenue)	$2,062,552	$932,402	[4] $613,231	[4] $377,723	(2)	(2)	185.6	.....	.....	.....	.....
Cost of materials	$325,264,500	$199,273,402	$139,387,213	$102,859,341	$67,918,723	$34,999,101	63.2	43.0	35.5	51.4	94.1
Value of products	$396,361,406	$236,997,659	$175,005,320	$123,929,384	$85,001,198	$43,705,218	67.2	35.4	41.2	45.8	94.5
Value added by manufacture (value of products less cost of materials)	$71,096,897	$37,724,257	$35,618,107	$21,070,043	$17,082,475	$8,706,117	88.5	5.9	69.0	23.3	96.2
Crude petroleum used (barrels)	191,262,724	120,775,439	66,982,862	52,011,005	30,602,629	17,417,455	58.4	80.3	28.8	69.6	76.0

[1] A minus sign (−) denotes decrease. [2] Comparable figures not available. [3] Figures not strictly comparable. [4] Exclusive of internal revenue.

It should be noted that although the statistics for the industry cover the petroleum refineries of the country they do not show the total number of refineries, because in some cases several of them are included under a single report. The term "establishment" as used by the Census Bureau may designate two or more plants under common ownership, if these are located in the same state and outside cities of 10,000 population. The 176 establishments, as reported for 1914, represent 184 refineries, the 8 included in combined reports being distributed—4 in California, 2 in Texas, and 1 each in Oklahoma and West Virginia. These should be added to the number of establishments reported for the respective states to show the number of refineries.

The industry advanced steadily during the 35 years covered by the table, the amount of petroleum refined in 1914 being nearly 11 times as great, and the cost of materials and value of products each being over 9 times as great, as in 1879. The greatest actual increase during any of the five-year periods appears for 1909–1914, though the industry showed marked de-

velopment during each period. The decrease in average number of wage earners and wages reported for 1909, as compared with 1904, is partly due to the fact that at the census of 1909 one of the large companies made separate reports for its box, cooperage, and tin shops, which at prior censuses had been included with the reports for the refineries. This considerably affected the number of wage earners shown for the industry in 1909, as compared with those for other censuses. During the ten-year period, 1904–1914, the cost of materials increased by 133.4 per cent; value of products, 126.5 per cent; value added by manufacture, 99.6 per cent; and amount of crude petroleum refined, 185.5 per cent.

Summary, by states.—Table 2 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states (Texas, New York, Indiana, and Louisiana) for which data could not be shown separately without disclosing the operations of individual establishments ranked higher than some of those named in the table.

Table 2

STATE.	CENSUS OF 1914.													PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.				Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904
United States.	176	25,366	100.0	....	....	$396,361,406	100.0	....	....	$71,096,897	100.0	....	....	82.1	−16.9	37.5	67.2	35.4	41.2	88.5	5.9	69.0
New Jersey	8	5,178	20.4	1	1	90,876,993	22.9	1	1	11,485,433	16.2	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
California	38	1,930	7.6	6	6	55,527,651	14.0	2	5	17,357,834	24.4	1	5	107.5	37.2	.....	210.6	211.0	723.7	336.1	146.0	678.2
Pennsylvania	48	4,902	19.3	2	2	52,875,101	13.3	4	2	8,490,607	11.9	3	2	69.0	−31.4	28.1	−0.4	11.9	35.7	50.3	−33.8	14.4
Illinois	9	1,072	4.2	8	10	16,892,727	4.3	7	8	4,484,549	6.3	7	8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oklahoma	23	516	2.0	10	13	13,014,372	3.3	8	14	3,423,635	4.8	8	13	.....	.....	.....	1133.6	.....	.....	614.0	.....	.....
Ohio	7	1,519	6.0	7	4	11,169,189	2.8	10	7	1,244,744	1.8	12	7	−8.4	−12.7	88.5	3.9	−1.8	30.4	−52.3	−20.6	48.0
Kansas	13	890	3.5	9	8	8,922,718	2.3	11	10	1,737,757	2.4	11	9	174.7	.....	.....	118.8	.....	.....	37.9	.....	.....
All other states	30	9,359	36.9	....	....	147,082,655	37.1	....	....	22,872,338	32.2	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 20; a minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or where comparable figures can not be given.

New Jersey, California, and Pennsylvania together reported over 50 per cent of the establishments and total value of products for petroleum refining in 1914 and 47.3 per cent of the wage earners. New Jersey was the most important state in the industry, producing 22.9 per cent of the total value of the products, and reporting the employment of 20.4 per cent of the wage earners. This state ranked second, however, in value added by manufacture, while California, which ranked second in value of products and sixth in average number of wage earners, was first in value added by manufacture.

Of the states for which comparable data are given in the table, Oklahoma shows the greatest relative gain in value of products, over 1,100 per cent, during the five-year period 1909–1914, and California the next greatest, 210.6 per cent. Measured by average number of wage earners, however, the greatest increase, 174.7 per cent, appears for Kansas, and the next greatest, 107.5 per cent for California. New Jersey is the only state that held the same rank in value of products in 1914 as in 1909. California, Illinois, and Oklahoma advanced from fifth, eighth, and fourteenth places, respectively, in 1909 to second, seventh, and eighth places, respectively, in 1914; while Pennsylvania, Ohio, and Kansas dropped from second, seventh, and tenth places, respectively, in 1909, to fourth, tenth, and eleventh places, respectively, in 1914.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 3

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY.				
		Total.	Male.	Female.	Per cent of total. Male.	Per cent of total. Female.
All classes	1914	31,077	30,622	455	98.5	1.5
	1909	16,640	16,251	389	97.7	2.3
Proprietors and officials	1914	839	833	6	99.3	0.7
	1909	671	661	10	98.5	1.5
Proprietors and firm members	1914	52	47	5	90.4	9.6
	1909	42	37	5	88.1	11.9
Salaried officers of corporations	1914	251	250	1	99.6	0.4
	1909	211	207	4	98.1	1.9
Superintendents and managers	1914	536	536	.....	100.0	.....
	1909	418	417	1	99.8	0.2
Clerks and other subordinate salaried employees.	1914	4,872	4,582	290	94.0	6.0
	1909	2,040	1,820	220	89.2	10.8
Wage earners (average number)	1914	25,366	25,207	159	99.4	0.6
	1909	13,929	13,770	159	98.9	1.1
16 years of age and over	1914	25,326	25,167	159	99.4	0.6
	1909	13,886	13,727	159	98.9	1.1
Under 16 years of age	1914	40	40	.....	100.0	.....
	1909	43	43	.....	100.0	.....

Table 4 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914, and the per cent distribution at the two censuses.

Table 4

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase,[1] 1909-1914.			Per cent distribution.					
	Total.	Male.	Female.	Total.		Male.		Female.	
				1914	1909	1914	1909	1914	1909
All classes	86.8	88.4	17.0	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	25.0	26.0	.....	2.7	4.0	2.7	4.1	1.3	2.6
Proprietors and firm members	.....	.....	.....	0.2	0.3	0.2	0.2	1.1	1.3
Salaried officers of corporations	19.0	20.8	.....	0.8	1.3	0.8	1.3	0.2	1.0
Superintendents and managers	28.2	28.5	.....	1.7	2.5	1.7	2.6	.....	0.3
Clerks and other subordinate salaried employees	138.8	151.8	31.8	15.7	12.3	15.0	11.2	63.7	56.6
Wage earners (average number)	82.1	83.1	.....	81.6	83.7	82.3	84.7	34.9	40.9
16 years of age and over	82.4	83.3	.....	81.5	83.4	82.2	84.5	34.9	40.9
Under 16 years of age	.....	.....	.....	0.1	0.3	0.1	0.3	.....	.....

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

Of the 31,077 persons engaged in the industry in 1914, 25,366, or 81.6 per cent, were wage earners, practically all of whom were males; only 159, or six-tenths of 1 per cent of the wage earners, were women. The number of wage earners under 16 years of age, all of whom were males, decreased slightly. The greatest relative increase, 138.8 per cent, appears for clerks and other subordinate salaried employees, and this is the only class for which an increase appears in the proportion it forms of the total in 1914, as compared with 1909.

Wage earners employed, by months.—The following table gives, for the industry, the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

The degree of fluctuation in employment of wage earners in this industry was smaller in 1914 than in either of the two preceding census years. The percentage which the number reported for the month of minimum employment formed of the number for the month of maximum employment was 96.2 in 1914, 84.9 in 1909, and 85.5 in 1904. The greatest activity in employment occurred during July in 1914, and June in 1904, but during November in 1909.

Table 5

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	25,068	13,319	16,670	97.0	87.3	94.6
February	25,053	13,079	16,757	96.9	85.8	95.1
March	25,833	12,952	17,290	99.9	84.9	98.1
April	25,565	13,076	16,937	98.9	85.7	96.1
May	25,138	13,206	17,178	97.2	86.6	97.5
June	25,572	13,617	17,621	98.9	89.3	100.0
July	25,849	14,156	17,386	100.0	92.8	98.7
August	24,946	14,221	17,163	96.5	93.3	97.4
September	25,516	14,434	16,848	98.7	94.7	95.6
October	25,773	15,032	16,478	99.7	98.6	93.5
November	25,211	15,249	15,845	97.5	100.0	89.9
December	24,868	14,805	15,067	96.2	97.1	85.5

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Table 6 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for each state in which the average number of wage earners was 500 or more in 1914.

Table 6

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	25,366	25,068	25,053	25,833	25,565	25,138	25,572	**25,849**	24,946	25,516	25,773	25,211	*24,868*	96.2
California	1,930	2,012	2,188	**2,250**	2,195	2,119	2,103	2,050	1,899	1,688	1,587	1,553	*1,516*	67.4
Illinois	1,072	1,175	1,133	1,188	1,135	1,069	1,035	1,051	986	*984*	1,075	1,040	993	82.8
Kansas	890	1,048	1,039	1,011	987	998	878	839	801	779	*752*	766	782	71.8
New Jersey	5,178	4,975	*4,953*	5,078	5,232	5,257	5,216	5,267	4,954	**5,524**	5,501	5,140	5,039	89.7
New York	2,892	2,862	2,802	2,879	3,047	3,003	2,921	2,894	2,793	*2,733*	2,823	2,920	3,027	89.7
Ohio	1,519	1,501	1,480	1,508	1,550	1,542	1,505	1,570	*1,458*	1,477	**1,592**	1,540	1,505	91.6
Oklahoma	516	601	501	497	505	*495*	511	499	507	517	526	519	514	82.4
Pennsylvania	4,902	5,048	**5,201**	5,118	4,802	*4,622*	4,756	4,822	4,766	4,933	5,043	4,952	4,761	88.9
Texas	2,909	2,579	2,588	2,633	2,669	*2,562*	3,079	3,164	3,053	3,152	3,033	3,087	3,309	77.4

The greatest stability of employment appears for Ohio, where the number of wage earners employed in August formed 91.6 per cent of the number employed in October, and the greatest variation in California, the minimum number employed, reported for December, representing but 67.4 per cent of the maximum number reported for March.

Prevailing hours of labor.—In Table 7 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or smaller number of hours.

Table 7

STATE.	Census year.	AVERAGE NUMBER OF WAGE EARNERS. Total.	In establishments where the prevailing hours of labor per week were— 48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72.	Over 72.
United States	1914	25,366	1,241	848	12,621	56	2,502	6,502	92	1,504
	1909	13,929	43	....	8,670	61	1,894	673	222	2,366
California	1914	1,930	1,239	20	261	41	2	6	....	361
	1909	930	25	....	485	31	18	64	22	285
Illinois	1914	1,072	.....	....	249	....	302	521	....	.....
	1909	312	.....	....	150	....	.....	45	5	112
Kansas	1914	890	.....	....	.....	....	278	572	....	40
	1909	324	4	....	55	....	150	29	5	81
New Jersey	1914	5,178	.....	....	4,992	....	186	.....	....	.....
	1909	2,906	.....	....	2,328	....	100	.....	....	478
New York	1914	2,892	.....	....	956	....	734	1,202	....	.....
	1909	1,932	.....	....	1,904	....	.....	.....	....	28
Ohio	1914	1,519	.....	828	406	....	123	162	....	.....
	1909	1,659	.....	....	480	30	1,122	19	8	.....
Oklahoma	1914	516	1	....	76	14	64	168	....	193
	1909	75	11	....	12	....	.....	34	1	17
Pennsylvania	1914	4,902	.....	....	3,067	1	575	1,133	92	34
	1909	2,900	.....	....	1,596	....	418	270	68	548
Texas	1914	2,909	.....	....	1,960	....	8	78	....	863
	1909	1,281	.....	....	467	....	.....	206	113	495

A slight tendency toward a shorter working-day for wage earners in this industry is shown by the fact that, in 1909, 99.7 per cent of the wage earners were employed in establishments where the prevailing hours of labor were 54 and over per week, as compared with 91.8 per cent in 1914. In both years the largest number of wage earners for the industry as a whole was employed in establishments where the working hours were 54 per week; this group was also the most important in New Jersey, Pennsylvania, and Texas in 1914.

Character of ownership.—Table 8 presents statistics concerning character of ownership, or legal organization, of establishments engaged in the industry as a whole for 1914 and 1909, and for 1914 only for five of the leading states.

This table shows the great extent to which the industry is dominated by establishments under corporate ownership. Corporations controlled 88.1 per cent of the establishments in 1914 and 89.1 per cent in 1909, and reported over 98 per cent of the average number of wage earners and value of products in both years. In 1914 establishments under ownership other than corporate were reported from only three states—Pennsylvania, California, and Kansas; Pennsylvania being the only state in which such establishments were of importance.

Table 8

STATE.	Census year.	NUMBER OF ESTABLISHMENTS OWNED BY— Individuals.	Corporations.	All others.	AVERAGE NUMBER OF WAGE EARNERS. Total.	In establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.	VALUE OF PRODUCTS. Total.	Of establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.
United States	1914	6	155	15	25,366	137	24,944	285	0.6	98.3	1.1	$396,361,406	$2,442,105	$389,378,595	$4,540,706	0.6	98.2	1.2
	1909	4	131	12	13,929	99	13,678	152	0.7	98.2	1.1	236,997,659	1,922,431	232,539,969	2,535,259	0.8	98.1	1.1
California	1914	2	32	4	1,930	.....	1,907	[1] 23	.....	98.8	[1] 1.2	55,527,651	.....	54,917,623	[1] 610,028	.....	98.9	[1] 1.1
Kansas	1914	.....	12	1	890	.....	[2] 890	.....	.....	.....	.....	8,922,718	.....	[2] 8,922,718	.....	.....	.....	.....
Ohio	1914	.....	7	.....	1,519	.....	1,519	.....	.....	100.0	.....	11,169,189	.....	11,169,189	.....	.....	100.0	.....
Oklahoma	1914	.....	23	.....	516	.....	516	.....	.....	100.0	.....	13,014,372	.....	13,014,372	.....	.....	100.0	.....
Pennsylvania	1914	4	34	10	4,902	123	4,528	251	2.5	92.4	5.1	52,875,101	2,204,024	46,654,960	4,016,117	4.2	88.2	7.6

[1] Includes the group "individuals."

[2] Includes the group "all others."

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 9.

The industry is one of comparatively large units. In 1914, 54, or 30.7 per cent, of the establishments each reported products exceeding $1,000,000 in value, and of these, 12 were plants with products each exceeding $10,000,000; and in 1909, 35 establishments, or 23.8 per cent of the total number, each reported products exceeding $1,000,000 in value, including 5 with products exceeding $10,000,000. The establishments of the "$1,000,000 and over" class reported

90.6 per cent of the wage earners, 91.2 per cent of the value of products, and 90.3 per cent of the value added by manufacture in 1914, as compared with 83.5 per cent, 88 per cent, and 82.9 per cent, respectively, in 1909. The establishments of the "$10,000,000 and over" class reported 52.4 per cent of the wage earners, 57.3 per cent of the value of products, and 58.3 per cent of the value added by manufacture, in 1914, as compared with 28.7 per cent, 42.3 per cent, and 31.8 per cent, respectively, in 1909.

Table 9

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	176	25,366	$396,361,406	$71,096,897
	1909	147	13,929	236,997,659	37,724,257
Less than $20,000	1914	[1] 10	17	87,594	28,638
	1909	[1] 16	57	206,158	62,811
$20,000 to $100,000	1914	27	205	1,669,133	426,474
	1909	25	221	1,524,305	299,158
$100,000 to $1,000,000	1914	85	2,166	33,282,855	6,446,389
	1909	71	2,015	26,595,548	6,088,243
$1,000,000 and over	1914	54	22,978	361,321,824	64,195,996
	1909	35	11,636	208,671,648	31,274,045
$1,000,000 to $10,000,000	1914	42	9,694	134,392,740	22,742,684
	1909	30	7,631	108,468,880	19,290,286
$10,000,000 and over	1914	12	13,284	226,929,084	41,453,312
	1909	5	4,005	100,202,768	11,983,759

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Per cent distribution:					
Less than $20,000	1914	5.7	0.1	(2)	(2)
	1909	10.9	0.4	$0.1	$0.2
$20,000 to $100,000	1914	15.3	0.8	0.4	0.6
	1909	17.0	1.6	0.6	0.8
$100,000 to $1,000,000	1914	48.3	8.5	8.4	9.1
	1909	48.3	14.5	11.2	16.1
$1,000,000 and over	1914	30.7	90.6	91.2	90.3
	1909	23.8	83.5	88.0	82.9
$1,000,000 to $10,000,000	1914	23.9	38.2	33.9	32.0
	1909	20.4	54.8	45.8	51.1
$10,000,000 and over	1914	6.8	52.4	57.3	58.3
	1909	3.4	28.7	42.3	31.8

[1] Includes one establishment "less than $5,000."

[2] Less than one-tenth of 1 per cent.

Table 10 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole, and for nine of the leading states.

Table 10

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
				1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	176	25,366	[1] 25	80	57	695	42	1,410	13	831	12	1,990	13	4,693	8	5,729	6	9,938
	1909	147	13,929	24	71	51	647	32	965	11	845	11	1,804	12	4,491	4	2,620	2	2,486
California	1914	38	1,930	10	31	19	212	7	224	.....	.....	.....	.....	1	262	.....	.....	1	1,201
	1909	29	930	6	16	18	211	3	76	.....	.....	.....	.....	2	627	.....	.....	.....	.....
Illinois	1914	9	1,072	.....	.....	4	37	1	23	1	52	1	174	1	278	1	508	.....	.....
	1909	7	312	1	5	3	45	1	23	.....	.....	2	239	.....	.....	.....	.....	.....	.....
Kansas	1914	13	890	2	10	5	71	2	56	1	69	2	394	1	290	.....	.....	.....	.....
	1909	18	324	7	21	4	48	6	161	1	94	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey	1914	8	5,178	.....	.....	1	10	.....	.....	1	72	1	114	1	258	2	1,440	2	3,284
	1909	6	2,906	.....	.....	.....	.....	.....	.....	2	184	.....	.....	2	852	1	548	1	1,322
New York	1914	6	2,802	.....	.....	.....	.....	1	39	.....	.....	.....	.....	3	1,426	2	1,427	.....	.....
	1909	7	1,932	1	4	.....	.....	1	28	.....	.....	1	205	3	1,129	1	566	.....	.....
Ohio	1914	7	1,519	.....	.....	.....	.....	3	84	1	75	1	126	1	406	1	828	.....	.....
	1909	10	1,659	.....	.....	2	27	3	99	1	97	2	248	1	480	1	708	.....	.....
Oklahoma	1914	23	516	5	14	9	122	7	270	2	110	.....	.....	.....	.....	.....	.....	.....	.....
	1909	9	75	4	8	5	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	1914	48	4,902	6	24	14	206	17	561	4	236	3	491	3	1,001	.....	.....	1	2,383
	1909	41	2,900	3	12	13	183	18	578	2	115	3	559	1	289	.....	.....	1	1,164
Texas	1914	9	2,909	.....	.....	2	16	2	88	1	77	1	196	.....	.....	2	1,526	1	1,006
	1909	8	1,281	.....	.....	2	28	.....	.....	2	153	2	308	2	792	.....	.....	.....	.....

[1] Includes one establishment with part-time wage earner averaging less than one for the year and classed as "no wage earners" in general tables.

Of the total number of wage earners, 22,350, or 88.1 per cent, in 1914, and 11,401, or 81.9 per cent, in 1909 were reported by establishments which employed more than 100 wage earners each. The most important group in 1914 was that comprising establishments which employed over 1,000 wage earners each. This group represented nearly 40 per cent of total number of wage earners in 1914, as compared with only 17.8 per cent in 1909. In 1914 California, New Jersey, and Pennsylvania reported the largest number of wage earners in establishments of this class.

Engines and power.—Table 11 shows, for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

Table 11

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	2,499	2,142	1,143	128,468	90,268	46,019	100.0	100.0	100.0
Owned	2,130	2,138	1,129	113,837	89,955	45,869	88.6	99.7	99.7
Steam engines and turbines [1]	1,818	2,039	1,072	94,052	84,085	43,810	73.2	93.2	95.2
Internal-combustion engines	300	99	57	18,298	5,870	2,059	14.2	6.5	4.5
Water wheels, turbines, and motors	12	.....	.....	1,487	.....	.....	1.2	.....	.....
Rented	369	4	14	14,631	313	150	11.4	0.3	0.3
Electric	369	4	14	14,353	28	150	11.2	(2)	0.3
Other	.....	.....	.....	278	285	.....	0.2	0.3	.....
Electric	1,464	511	238	38,614	8,808	3,468	100.0	100.0	100.0
Rented	369	4	14	14,353	28	150	37.2	0.3	4.3
Generated by establishments reporting	1,095	507	224	24,261	8,780	3,318	62.8	99.7	95.7

[1] Figures for horsepower include for 1909 and 1904 the amounts reported under the head of "other" owned power.

[2] Less than one-tenth of 1 per cent.

The total primary power used in the industry increased by 179.2 per cent between 1904 and 1914. Although steam was the principal power used at each census, and the horsepower generated by steam engines and turbines increased during each five-year period, the proportion which it formed of the total power used decreased from 95.2 per cent in 1904 to 93.2 per cent in 1909 and 73.2 per cent in 1914. This change was due principally to the increased use of rented electric power and of internal-combustion engines. Little of the former was used previous to 1914; in 1904 it represented only three-tenths of 1 per cent of the total power used, and in 1909, less than one-tenth of 1 per cent; but in 1914, purchased electric power formed 11.2 per cent of the total for the industry. The horsepower of internal-combustion engines increased from 4.5 per cent of the total power used in petroleum refining in 1904 to 6.5 per cent in 1909 and 14.2 per cent in 1914. Electric power generated by establishments reporting represented by far the greater portion of the electric power used at each census, forming 99.7 per cent of the total in 1909 and 95.7 per cent in 1904; in 1914 it formed 62.8 per cent, and the rented electric power formed 37.2 per cent of all the electric power used by the industry.

Fuel.—Table 12 shows, for 1914, the quantity of each kind of fuel used for which data were obtained, for the industry as a whole, and for eight separate states.

Table 12

STATE.	COAL.		Coke (tons, 2,000 lbs.).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (tons, 2,240 lbs.).	Bituminous (tons, 2,000 lbs.).			
United States	1,367,429	2,045,485	157,621	7,455,918	10,993,746
California	.....	.....	22,030	2,471,640	896,940
Illinois	890	290,899	3,630	259,939	419,968
Kansas	.....	2,330	66	436,949	1,398,469
New Jersey	953,106	69,587	36,701	78,641	267,781
Ohio	.....	244,739	3,433	15,989	188,311
Oklahoma	.....	2,762	.....	143,282	2,976,649
Pennsylvania	302,994	587,025	23,696	83,561	3,484,065
Texas	.....	11,632	10,701	2,437,135	.....
All other states	110,439	836,511	57,364	1,528,782	1,361,505

The industry is a large consumer of fuel, and that reported includes the fuels used under the stills and retorts, as well as for the generation of power. Naturally, a large portion of the fuel used was oil or gas, oil chiefly in California and Texas, and natural gas largely in Pennsylvania, Oklahoma, and Kansas.

The cost of fuel and rent of power in 1914 was $13,567,284, and equaled 4.2 per cent of the cost of all materials. The amount included for rent of power was but $141,338. In 1909 the expense for fuel and rent of power constituted the same proportionate part of all material expense, 4.2 per cent, as compared with 3.7 per cent in 1904 and 3 per cent in 1899.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

Materials.—Table 13 presents detailed statistics of the materials used in the industry in 1914, 1909, 1904, and 1899.

The largest increase, both actual and proportional, in cost of materials is shown for the period from 1909 to 1914. This increase, $125,991,107, exceeded the cost of all materials in 1899 and was but a little less than the total for 1904. The percentages of increase were 35.5 per cent for the period 1899–1904, 43 for 1904–1909, and 63.2 for 1909–1914.

In 1914 crude petroleum constituted 76.8 per cent of the cost of all materials; containers, 6.2 per cent; fuel and rent of power, 4.2 per cent; and all other materials, including partly refined oils and waxes purchased, sulphuric acid, sulphur and pyrites for acid manufacture, caustic soda, etc., 12.8 per cent. In 1909 the per cent distribution of cost of materials was crude oil, 76.4; containers, 8.5; fuel and rent of power, 4.2; and all other materials, 10.8 per cent. In 1904 the respective percentages were 77.1, 12.8, 3.7, and 6.4 per cent; and in 1899, 78.2, 10.8, 3, and 7.9 per cent.

Table 13	1914	1909	1904	1899
Materials, total cost	$325,264,509	$199,273,402	$139,387,213	$102,859,341
Crude petroleum used:				
Barrels (42 gallons)	191,262,724	120,775,439	66,982,862	52,011,005
Cost	$249,727,856	$152,307,040	$107,487,091	$80,424,207
Partly refined oils and waxes purchased:				
Barrels (50 gallons)	7,942,444	(1)	(1)	(1)
Cost	$24,395,541	(1)	(1)	(1)
Caustic soda:				
Tons (2,000 pounds)	11,108			
Cost	$361,421			
Sulphur and pyrites	[2] $206,053			
Sulphuric acid:				
Consumption, tons (2,000 pounds)	328,895	$4,003,198	$2,304,635	$1,735,782
Purchased—				
Tons	290,455			
Cost	$3,519,552			
Made and consumed, tons	38,440	48,580	49,379	(3)
Containers and materials therefor:				
Wooden	$12,944,471	$8,937,421	$17,870,348	$11,151,733
Metal	$7,292,207	$8,037,467		
Fuel and rent of power	$13,567,284	$8,376,383	$5,139,934	$3,120,441
All other materials	[4] $13,250,124	$17,611,893	$6,585,205	$6,427,178

[1] Included under "all other materials."
[2] Quantities represented, sulphur 2,035 tons, pyrites 23,669 tons.
[3] Figures not available.
[4] Includes "wet" natural gas used by refineries, estimated at 1,500,208 thousand cubic feet; cost, $92,476.

Table 14 gives, by fields, the statistics for crude petroleum consumed by the refineries in 1914 and 1909. The Mid-Continent field embraces Kansas, Oklahoma, northern Texas, and northern Louisiana; and the Gulf field, southern Texas and southern Louisiana. The Appalachian field, oil from which is known as of Pennsylvania grade, includes Pennsylvania, southeastern Ohio, Kentucky, New York, and West Virginia; and the Lima-Indiana field, northwestern Ohio and eastern Indiana.

Nearly one-half of the crude petroleum used in 1914 (48.3 per cent) was from the Mid-Continent field, as compared with 35.5 per cent in 1909. The consumption of Mid-Continent oil in 1914 shows an increase of 115.6 per cent in quantity and 188.8 per cent in cost over 1909. Crude oil from the California field ranked second in importance on a quantity basis in 1914, whereas it was fourth in 1909. It formed 21.9 per cent of the crude petroleum in 1914 and 11.2 per cent in 1909. Oil from the Appalachian field, or of Pennsylvania grade, third in quantity consumed in 1914, constituted 11.1 per cent of the total in 1914 and 20.3 per cent in 1909, when it ranked second.

Table 14	Crude petroleum used.						Average cost per barrel.	
	1914			1909				
Field.	Quantity.		Cost.	Quantity.		Cost.	1914	1909
	Barrels (42 gallons).	Per cent of total.		Barrels (42 gallons).	Per cent of total.			
Total	191,262,724	100.0	$249,727,856	120,775,439	100.0	$152,307,040	$1.31	$1.26
Mid-Continent	92,462,637	48.3	121,188,441	42,895,051	35.5	41,959,100	1.31	.98
California	41,901,651	21.9	30,157,013	13,481,885	11.2	10,108,541	.72	.75
Appalachian (Pennsylvania grade)	21,196,964	11.1	50,019,939	24,508,218	20.3	47,545,138	2.36	1.94
Illinois	17,672,279	9.2	30,137,986	26,236,883	21.7	36,218,407	1.71	1.38
Gulf	5,787,313	3.0	6,080,907	5,262,664	4.4	4,669,486	1.05	.89
Lima-Indiana	2,564,742	1.3	4,286,588	8,093,096	6.7	11,455,784	1.67	1.42
Colorado and Wyoming	3,441,893	1.8	2,088,700	307,642	0.2	350,604	.61	1.14
Mexican	6,235,245	3.3	5,768,282				.93	

The Mid-Continent oils range from asphaltic oils, poor in gasoline and illuminants, to oils which yield relatively high percentages of the lighter products on distillation. Oils from the Gulf field are characterized by relatively high percentages of asphalt and low percentages of the higher distillation products, and the California oils contain much asphalt and little or no paraffin, the chief products being fuel and illuminating oils, lubricants and oil asphalt, with low percentages of naphthas from certain of the lighter oils. On the other hand, oils of the Pennsylvania grade are in the main of paraffin base, free from asphalt, and yield high percentages of gasoline and illuminating oils. Illinois oils contain varying proportions of asphalt and paraffin and differ considerably as to distillation products; those of the Lima-Indiana field contain some asphalt, though consisting chiefly of paraffin hydrocarbons; and Wyoming and Colorado oils are in the main of paraffin base suitable for refining by ordinary methods.

In 1914 the average cost per barrel of crude petroleum from the different fields ranged from 61 cents for Colorado and Wyoming petroleum to $2.36 for that of Pennsylvania grade. For 1909 the range was from 75 cents for California to $1.94 for Pennsylvania. The average cost per barrel for the entire country was $1.31 in 1914 and $1.26 in 1909.

Table 15 gives comparative statistics of production and consumption for 1914 and 1909 and shows, by fields, the total marketed production of crude petroleum in the United States and the refinery consumption, with the percentage the consumption formed of the production.

The refineries consumed 69.6 per cent of the marketed crude petroleum of domestic origin in 1914 and 65.9 per cent in 1909, ranging for 1914 from 94.4 per cent for the Mid-Continent field to 42 per cent for California, and for 1909 from 98.4 per cent for Lima-Indiana to 24.3 per cent for California.

Table 15	Census year.	CRUDE PETROLEUM, BARRELS (42 GALLONS).		
FIELD.		Marketed production.	Consumption by refineries.	Per cent consumption is of production.
Total	1914	.....	191,262,724	.....
Mexican	1914	.....	6,235,245	.....
United States	1914	265,762,525	185,027,479	69.6
	1909	183,170,874	120,775,439	65.9
California	1914	99,775,327	41,901,651	42.0
	1909	55,471,601	13,481,885	24.3
Mid-Continent	1914	97,995,400	92,462,637	94.4
	1909	50,833,740	42,895,051	84.4
Pennsylvania grade (Appalachian)	1914	24,101,048	21,196,964	88.0
	1909	26,535,844	24,508,218	92.4
Illinois	1914	21,919,749	17,672,279	80.6
	1909	30,898,339	26,236,883	84.9
Gulf	1914	13,117,528	5,787,313	44.1
	1909	10,883,240	5,262,664	48.4
Lima-Indiana	1914	5,062,543	2,564,742	50.7
	1909	8,211,443	8,083,096	98.4
Colorado and Wyoming	1914	3,790,940	3,441,893	90.8
	1909	336,667	307,642	91.4

Products.—Table 16 shows the quantities and values of the different products for 1914, 1909, 1904, and 1899.

Table 16	1914	1909	1904	1899
Products, total value	$396,361,406	$236,997,659	$175,005,320	$123,929,384
Naphthas and lighter products:				
Gasoline (petroleum refineries)—				
Barrels (50 gallons)	[1] 23,908,242	10,806,550	5,811,289	5,615,554
Value	$106,140,170	$39,771,959	$21,314,837	$15,991,742
All other—				
Barrels	5,292,522			
Value	$15,779,137			
Illuminating oils:				
Barrels	38,705,496	33,495,798	27,135,094	25,171,289
Value	$96,806,452	$94,547,010	$91,366,434	$74,694,297
Fuel oils:				
Barrels	74,681,841	34,034,577	7,209,428	6,095,224
Value	$84,017,916	$36,462,883	$9,205,391	$7,550,664
Distillates—				
Barrels	9,149,833	(2)	(2)	(2)
Value	$15,999,342	(2)	(2)	(2)
Gas oils—				
Barrels	15,111,168	(2)	(2)	(2)
Value	$22,805,340	(2)	(2)	(2)
Residual fuel oils—				
Barrels	50,420,840	(2)	(2)	(2)
Value	$45,213,234	(2)	(2)	(2)
Lubricating oils:				
Barrels	10,356,776	10,745,885	6,298,251	3,408,918
Value	$55,812,120	$38,884,236	$23,553,091	$10,897,214
Pale or paraffin; viscosity less than 100 per cent Universal; or flash under 400 per cent Fahrenheit, closed cup—				
Barrels	1,868,442	3,239,230	1,644,400	1,606,783
Value	$8,084,650	$9,473,975	$6,210,279	$3,987,037
Red or neutral; viscosity 100 per cent Universal; or flash 400 per cent Fahrenheit, or over, closed cup (not including cylinder oils)—				
Barrels	2,327,050	614,884	504,042	608,185
Value	$12,426,023	$2,255,924	$1,942,153	$2,256,626
Cylinder oils—				
Barrels	2,058,982	1,587,579	1,366,661	517,787
Value	$13,703,772	$9,482,568	$9,332,299	$2,984,264
All other lubricating oils, including compounded (except cylinder) oils—				
Barrels	4,102,302	[3] 5,304,192	2,783,148	676,163
Value	$21,597,675	$17,671,769	$6,068,360	$1,669,287

[1] The production of casing-head gasoline—that made at the wells from natural gas—was 853,053 barrels (42,652,632 gallons). Excluding duplication on account of casing-head gasoline reported by refineries, the total production of gasoline was 24,711,565 barrels of 50 gallons each.
[2] Figures not available.
[3] Includes 2,564,812 barrels reported as reduced oil.

Table 16—Continued.	1914	1909	1904	1899
Residuum or tar, including liquid asphaltic road oils:				
Barrels	2,696,887	1,787,008	3,187,921	596,615
Value	$4,017,858	$2,215,623	$3,138,361	$688,455
Greases:				
Barrels	280,128	138,302	202,439	572,140
Value	$3,536,491	$1,567,647	$1,394,130	$2,454,617
Petroleum mineral jelly, etc.—				
Barrels	121,561	(1)	(1)	(1)
Value	$1,243,388	(1)	(1)	(1)
Lubricating greases—				
Barrels	99,603	(1)	(1)	(1)
Value	$1,624,949	(1)	(1)	(1)
Axle grease—				
Barrels	58,964	(1)	(1)	(1)
Value	$668,154	(1)	(1)	(1)
Paraffin wax:				
Barrels	1,150,776	946,830	794,068	774,924
Value	$8,897,106	$9,388,812	$10,007,274	$7,791,149
Asphalt, other than liquid asphalt:				
Tons (2,000 pounds)	465,157	233,328	(1)	(1)
Value	$4,867,213	$2,724,752	(1)	(1)
Coke:				
Tons	213,777	(1)	(1)	(1)
Value	$818,889	$507,695	$149,653	$176,281
Reclaimed or separated acid sold (calculated at 66° Baumé):				
Tons	89,792	133,215	165,104	(1)
Value	$491,380	$402,295	$400,480	(1)
Candles	$1,402,945	$10,524,747	$14,475,669	$3,684,965
Other special products	[2] $8,507,993			
All other products	$5,265,736			

[1] Figures not available.
[2] Includes partly finished stock, paraffin acid oil, tree sprays, etc.

The total products aggregated $396,361,406 in 1914, an increase of 67.2 per cent since 1909 and 126.5 per cent for the decade 1904–1914. This conforms closely to the increase in the cost of crude petroleum used, which was 64 per cent from 1909 to 1914 and 132.3 per cent during the decade 1904–1914. Gasoline was by far the most important product in 1914, as measured by value, followed by illuminating oils, fuel oils, and lubricating oils.

Most of the products show large percentages of increase from 1904 to 1914 both in quantity and in value. The largest gain was in the case of fuel oils, which increased 67,472,413 barrels, or more than 900 per cent in quantity, and $74,812,525, or more than 800 per cent, in value during the decade. The production of naphthas and gasoline increased 402.5 per cent in quantity and 472 per cent in value, while lubricating oils increased 64.4 per cent in quantity and 137 per cent in value. Although there was an increase of 44.9 per cent in the amount of paraffin wax produced, there was a decrease of 11.1 per cent in its value during this ten-year period.

The amount of refinery products reported in barrels, this not including asphalt and coke, aggregated 157,072,668 barrels (of 50 gallons) in 1914, 91,954,950 barrels in 1909, and 50,638,490 barrels in 1904. Considering the quantity of crude petroleum used and the partially refined oils purchased and used by certain establishments and reported separately in 1914, these refined products were equal to 93.2 per cent of the material in 1914, as compared with 90.6 per cent in 1909 and 90 per cent in 1904. In making this comparison it is to be noted that the crude oil is reported in 42-gallon barrels and the refined products in 50-gallon barrels, and the computations are on a gallon basis.

The relative proportions of the several classes of products vary considerably. On account of the growing demand for gasoline the naphthas form in late years an increasing proportion of the total production. The part the naphthas and lighter products, chiefly gasoline, form of the total products reported in barrels—that is, of all oils, greases, and wax—was 18.6 per cent in 1914, 11.8 per cent in 1909, and 11.5 per cent in 1904. Fuel oils formed 47.5 per cent of this total in 1914, 37 per cent in 1909, and 14.2 per cent in 1904; illuminating oils formed 24.6 per cent in 1914, 36.4 per cent in 1909, and 53.6 per cent in 1904; lubricating oils, 6.6 per cent, 11.7 per cent, and 12.4 per cent, respectively; residuum or tar, 1.7 per cent, 1.9 per cent, and 6.3 per cent; greases, two-tenths of 1 per cent in 1914 and 1909 and four-tenths of 1 per cent in 1904; and paraffin wax, seven-tenths of 1 per cent, 1 per cent, and 1.6 per cent in the respective years.

Gasoline.—In addition to the 23,908,242 barrels of gasoline obtained from the distillation of crude petroleum, there was a considerable production made by liquefying processes from natural gas at the wells. The total production of casing-head gasoline, as it is called, in 1914 was 42,652,632 gallons, or 853,053 barrels. A certain amount of this casing-head gasoline figures in the reports of a few of the refineries. Excluding duplication on account thereof, the total production of gasoline in 1914, inclusive of casing-head gasoline, was 24,711,565 barrels of 50 gallons.

The production of gasoline from natural gas has only within the past few years become of commercial importance, owing principally to the ever increasing demand for gasoline.

Table 17 gives the annual statistics of production, beginning with 1911, when first collected by the United States Geological Survey.

Table 17	CASING-HEAD GASOLINE.			
	Number of operators.	Number of plants.	Gallons.	Value.
United States:				
1914	254	386	42,652,632	$3,105,909
1913	232	341	24,060,817	2,458,443
1912	186	250	12,081,179	1,157,476
1911	132	176	7,425,839	531,704
States, 1914:				
Oklahoma	35	58	17,277,555	1,113,059
West Virginia	65	121	9,278,108	691,899
California	17	19	7,581,309	633,517
Pennsylvania	96	119	4,611,738	359,402
Ohio	25	47	2,440,171	184,097
Illinois	7	14	1,164,178	100,331
All other states [1]	9	8	[2] 299,573	23,604

[1] All other states embrace: Kansas, 3 operators; New York, 3; Colorado, 2; and Kentucky, 1.
[2] Includes gasoline in Kentucky from natural condensation in gas mains.

Exports of petroleum products.—Table 18 gives, for 1880, 1890, 1900, 1909, and each year thereafter to 1914, the marketed production of crude petroleum and the quantity and value of the petroleum products exported.

Table 18		EXPORTS OF PETROLEUM PRODUCTS.[2]												
YEAR ENDING DECEMBER 31—	Total marketed production of crude petroleum (barrels, 42 gallons).[1]	Total.		Crude oil, including all natural oils without regard to gravit		Refined or manufactured.						Residuum tar, pitch, and all other from which light bodies have been distilled.		Paraffin and paraffin wax (value).
						Naphthas, benzine, gasoline, etc.		Illuminating oil.		Lubricating and heavy paraffin oil.				
		Barrels (50 gallons).	Value.	Barrels (50 gallons).	Value.	Barrels (50 gallons).	Value.	Barrels (50 gallons).	Value.	Barrels (50 gallons).	Value.	Barrels (50 gallons).	Value.	
1914	265,762,535	44,800,044	$139,900,587	2,494,711	$4,958,838	4,193,853	$25,288,414	20,208,985	$64,112,772	3,832,953	$26,316,313	14,070,142	$19,224,250	$5,434,831
1913	248,446,230	42,731,315	149,316,409	3,891,303	8,448,204	3,760,808	28,091,608	22,388,825	72,042,107	4,152,782	29,608,549	8,537,447	11,125,851	8,176,331
1912	222,935,044	37,669,508	124,210,382	3,774,228	6,770,484	3,720,002	20,450,378	20,522,765	62,084,022	4,327,864	28,297,467	5,324,739	6,599,031	9,602,758
1911	220,449,301	35,374,634	105,922,848	4,036,807	6,165,403	2,745,892	11,482,761	22,245,900	61,055,095	3,666,393	23,337,126	2,679,582	3,882,463	7,047,853
1910	209,557,248	30,049,839	94,107,022	3,602,223	5,404,253	2,013,908	8,407,102	18,804,941	55,042,368	3,276,651	20,921,103	2,352,116	3,732,190	7,329,143
1909	183,170,874	31,382,067	103,838,590	3,406,755	6,027,588	1,375,173	5,799,994	20,928,021	67,814,406	3,232,792	20,016,107	2,439,326	4,180,495	7,608,624
1900	63,620,529	19,737,129	74,493,707	2,763,223	7,340,749	371,410	1,681,201	14,783,269	54,602,872	1,424,227	9,933,548	395,000	845,337	8,185,518
1890	45,822,672	13,876,597	52,270,953	1,931,453	6,535,499	249,253	1,050,613	11,017,468	39,826,086	641,811	4,766,850	36,612	91,905	2,920,262
1880	26,286,123	6,935,788	34,505,645	734,062	2,772,400	302,302	1,344,520	5,722,611	29,047,908	112,360	1,141,825	63,553	198,983	(3)

[1] Compiled from the reports of the United States Geological Survey.
[2] Compiled from reports on "Commerce and Finance," Bureau of Foreign and Domestic Commerce, Department of Commerce.
[3] Not reported separately.

Over 45 per cent of the total amount of petroleum products exported in 1914 consisted of illuminating oils. A fair comparison of production with exports may be had by a study of this table in conjunction with Table 16. It is impracticable to determine what proportion of the total petroleum products are exported, but the percentages that the exports formed of the total output of each of the three main groups of products are: Naphtha, benzine, gasoline, etc., 14.4 per cent; illuminating oils, 52.2; and lubricating oils, 37. Corresponding percentages for 1909 are 12.7 per cent, 62.5, and 30.1.

Equipment.—Table 19 gives in detail, for 1914, 1909, 1904, and 1899, statistics of the equipment reported by the petroleum refineries.

Table 19

EQUIPMENT.	1914	1909	1904	1899
Stills, number	3,639	2,395	1,907	1,774
Steam—				
Number	612	467	297	316
Capacity (barrels, 42 gallons)	426,000	431,000	(1)	(1)
Fire—				
Number	3,027	1,928	1,610	1,458
Capacity	2,021,000	1,657,000	(1)	(1)
Agitators	770	529	374	327
Chilling houses for paraffin	76	79	67	48
Hydraulic or other presses	459	357	311	510

EQUIPMENT.	1914	1909	1904	1899
Storage tanks for:				
Crude petroleum—				
Number	1,014	678	304	275
Capacity (gallons)	580,202,000	242,591,000	245,760,000	(1)
Refined petroleum products—				
Number	6,967	6,476	3,575	2,869
Capacity	1,042,836,000	1,041,627,000	576,459,000	(1)
Fuel oil—				
Number	807	.....	.....	.....
Capacity	343,132,000	.....	.....	.....
Other storage tanks—				
Number	4,111	(1)	(1)	(1)
Capacity	646,608,000	(1)	(1)	(1)

[1] Figures not available.

DETAIL STATE TABLES.

Table 20 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the industry. Table 21 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 20.—COMPARATIVE SUMMARY, BY STATES: 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	176	25,366	128,468	$19,397	$325,265	$396,361
	1909	147	13,929	90,268	9,830	199,273	236,998
	1904	98	16,770	46,019	9,989	139,387	175,005
California	1914	38	1,930	22,309	1,716	38,170	55,528
	1909	29	930	5,630	801	13,898	17,878
	1904	19	678	1,283	477	4,131	5,749
Kansas	1914	13	890	4,423	752	7,185	8,923
	1909	18	324	1,150	186	2,817	4,077
Ohio	1914	7	1,519	4,920	1,025	9,924	11,169
	1909	10	1,659	4,324	1,028	8,145	10,754
	1904	12	1,900	4,386	1,054	7,662	10,949
Oklahoma	1914	23	516	3,304	$432	$9,591	$13,014
	1909	9	75	231	54	575	1,055
Pennsylvania	1914	48	4,902	37,522	3,219	44,384	52,875
	1909	41	2,900	35,212	1,861	47,440	53,088
	1904	43	4,227	11,609	2,371	38,922	47,460
All other states	1914	47	15,609	55,990	12,253	216,011	254,852
	1909	40	8,041	43,721	5,900	126,398	150,146
	1904	24	9,965	28,741	6,087	88,672	110,847

TABLE 21.—DETAIL STATISTICS, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY.								WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Capital.	EXPENSES.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.			Salaries and wages.	
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male	Female		Officials.	Clerks, etc.
United States	176	31,077	52	787	4,582	290	25,366	Jy 25,849	De 24,868	24,938	24,742	157	39	.....	$325,646,120	$2,699,672	$5,192,756
California	38	3,379	14	86	1,324	25	1,930	Mh 2,250	De 1,516	1,526	1,525	1	.....	.....	30,596,711	229,756	1,557,920
Illinois	9	1,208	.....	30	98	8	1,072	Mh 1,188	Se 984	993	993	.....	.....	.....	9,168,159	95,567	111,476
Kansas	13	1,108	5	53	143	17	890	Ja 1,048	Oc 752	787	787	.....	.....	.....	10,427,533	185,562	162,849
New Jersey	8	5,786	.....	131	432	45	5,178	Se 5,524	Fe 4,953	5,204	5,194	8	2	.....	77,364,114	552,936	556,990
Ohio	7	2,626	.....	35	1,026	46	1,519	Oc 1,592	Au 1,458	1,505	1,483	22	.....	.....	10,426,715	192,318	922,785
Oklahoma	23	736	.....	78	129	13	516	Ja 601	My 495	520	520	.....	.....	.....	8,556,725	229,478	166,763
Pennsylvania	48	5,709	33	147	555	72	4,902	Fe 5,201	My 4,622	4,791	4,740	30	21	.....	55,393,563	441,292	660,331
All other states[1]	30	10,525	.....	227	875	64	9,359	.....	.....	9,612	9,500	96	16	.....	123,712,600	772,763	1,053,642

STATE.	EXPENSES—continued.						Value of products.	Value added by manufacture.	POWER.					
	Salaries and wages—Continued.	For contract work.	Rent and taxes.		For materials.				Primary horsepower.					Electric horsepower generated in establishments reporting.
	Wage-earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total	Steam engines.[2]	Internal-combustion engines.[3]	Water wheels and motors.[2]	Electric (rented)	
United States	$19,397,466	$502,651	$108,753	$2,553,799	$311,697,225	$13,567,284	$396,361,406	$71,096,897	128,468	94,052	18,576	1,487	14,353	24,261
California	1,715,830	133,479	14,451	176,170	36,548,836	1,620,981	55,527,651	17,357,834	22,309	5,798	3,734	1,390	11,387	141
Illinois	899,208	46,569	14,590	68,337	11,914,032	494,146	16,892,727	4,484,549	2,607	2,072	184	.....	351	326
Kansas	752,161	7,957	.....	116,796	6,642,521	542,440	8,922,718	1,737,757	4,423	3,494	662	7	260	407
New Jersey	4,000,530	35,394	.....	737,499	77,082,827	2,308,733	90,876,993	11,485,433	26,498	22,834	3,664	.....	.....	7,553
Ohio	1,024,535	40,889	.....	148,620	9,424,188	500,257	11,169,189	1,244,744	4,920	4,820	50	50	.....	70
Oklahoma	432,005	13,624	1,354	59,328	9,348,984	241,753	13,014,372	3,423,635	3,304	1,887	1,352	.....	65	471
Pennsylvania	3,219,048	183,124	17,359	150,694	42,181,115	2,203,379	52,875,101	8,490,607	37,522	33,694	2,842	5	981	4,206
All other states[1]	7,354,149	41,615	60,999	1,096,355	118,554,722	5,055,595	147,082,055	22,372,338	26,885	19,453	6,088	35	1,309	11,087

[1] All other states embrace: Colorado, 4 establishments; Indiana, 1; Louisiana, 1; Maryland, 3; Missouri, 1; New York, 6; Texas, 9; West Virginia, 3; and Wyoming, 2.
[2] Owned power only.
[3] Includes rented power, other than electric.

THE SOAP INDUSTRY.

SUMMARY AND ANALYSIS.

Scope of the industry.—Establishments for which statistics are presented in this report manufacture chiefly hard soaps, including powdered soap, toilet, shaving, and special soaps; soft soap and glycerin. It includes the soap departments of the important slaughtering and meat-packing plants, such departments being treated as individual establishments in the soap industry. In addition, considerable quantities of soap were manufactured by establishments engaged primarily in other lines of manufacture, such as chemicals, greases, and cottonseed and other oils. The soap products of these establishments are included in the detail statistics for products, Table 13.

Comparative summary for the United States.—Table 1 summarizes the statistics of establishments engaged in the soap industry for each census from 1904 to 1914, and gives percentages of increase.

Table 1	1914	1909	1904	PER CENT OF INCREASE.[1]	
				1909–1914	1904–1909
Number of establishments	371	420	436	−11.7	−3.7
Persons engaged	19,839	18,393	14,501	7.9	26.8
Proprietors and firm members	252	329	399	−23.4	−17.5
Salaried employees	5,415	5,065	3,058	6.9	65.6
Wage earners (average number)	14,172	12,999	11,044	9.0	17.7
Primary horsepower	35,737	28,360	20,228	26.0	40.2
Capital	$92,871,533	$71,951,109	$54,816,301	29.1	31.3
Salaries and wages	$14,779,629	$11,732,431	$8,265,248	26.0	41.9
Salaries	$6,691,692	$5,505,549	$3,502,572	21.5	57.2
Wages	$8,087,937	$6,226,882	$4,762,676	29.9	30.7
Paid for contract work	$48,916	$119,609	$28,504	−59.1	319.6
Rent and taxes (including internal revenue)	$1,021,534	$541,003	[2] $413,430	88.8	30.9
Cost of materials	$88,866,786	$72,179,418	$43,625,608	23.1	65.5
Value of products	$127,942,441	$111,357,777	$68,274,700	14.9	63.1
Value added by manufacture (value of products less cost of materials)	$39,075,655	$39,178,359	$24,649,092	−0.3	58.9
Soap production, pounds	2,121,230,000	1,854,286,000	1,430,509,000	14.4	29.6
Hard soap	2,064,228,000	1,794,249,000	1,386,610,000	15.0	29.4
Soft soap	57,002,000	60,037,000	43,899,000	−5.1	36.8

[1] A minus sign (−) denotes decrease. [2] Exclusive of internal revenue.

The decrease of 49 in the number of establishments in 1914 as compared with 1909 was due to the decrease in number owned by individuals and firms (see Table 8), and as a result there is a corresponding decrease in proprietors and firm members. Only a few establishments report work done under contract, and variations in the amount paid for such work at different censuses, though proportionately large, are of little significance. The small decrease in value added by manufacture for 1914 as compared with 1909 is due to the increase in cost of materials. Expense for materials increased at the rate of 23.1 per cent while the increase in value of products was but 14.9 per cent. The proportion which the value added by manufacture formed of the total value of products was less in 1914 than in 1909 or 1904, for in 1914 it was but 30.5 per cent of the value of products, whereas in 1909 it was 35.2 per cent and in 1904, 36.1 per cent.

At censuses prior to 1904 the statistics for soap and candles were combined and in Table 2 there is presented a summary of the statistics for the combined industry for each census from 1859 to 1914, inclusive. The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents gold to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

Although the number of establishments decreased between 1859 and 1914, the combined industry has shown a constant and decided increase from census to census.

Table 2	SOAP AND CANDLE INDUSTRIES COMBINED.					
CENSUS YEAR.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1914	386	14,559	$8,270,944	$89,985,361	$129,673,164	$39,687,803
1909	436	13,538	6,473,172	74,355,520	114,488,298	40,132,778
1904	453	11,860	5,056,611	46,536,823	72,164,062	25,627,239
1899	558	9,487	3,754,767	33,143,230	53,231,017	20,087,787
1889	578	7,821	3,416,854	28,687,412	43,600,285	14,912,873
1879	629	5,289	2,219,513	19,907,444	26,552,627	6,645,183
1869	618	4,471	1,944,331	15,268,847	22,624,612	7,355,765
1859	629	3,464	1,129,678	13,413,609	19,611,374	6,197,765

Summary by states.—Table 3 summarizes the more important statistics of the industry, by states, the states being arranged according to the value of products reported for 1914. Some of the states for which data can not be shown separately without disclosing the operations of individual establishments, ranked higher than some of those named in the table, notably Ohio, which ranked fourth in value of products; Kansas, sixth; Connecticut, twelfth; and Kentucky, sixteenth.

While establishments engaged in the manufacture of soap were reported at the census of 1914 for 36 states, the industry is largely centralized, the five leading states being New York, Illinois, New Jersey, Ohio, and Pennsylvania. These states reported approximately three-fourths of the total number of wage earners, a little less than three-fourths of the value of products, and about two-thirds of the value added by manufacture. While there were 34 establishments reported for Ohio, one company reported such a large

proportion of the products that it was necessary to include the statistics in the group of "all other states" in order to avoid the disclosure of its operations. New York is the most important state in the industry, ranking first at the census of 1914 in number of establishments, number of wage earners, value of products, and value added by manufacture. In 1914 this state reported soap products to the value of $27,526,199, or 21.5 per cent of the total for the United States. Between 1909 and 1914 the value of soap products in New York increased 16.7 per cent, and the number of wage earners 6.5 per cent. Illinois retained its rank as second in wage earners and value of products in 1914 and regained second place in value added by manufacture also. New Jersey ranked third in 1914 in value of products and value added by manufacture.

Table 3

STATE.	CENSUS OF 1914.													PER CENT OF INCREASE.[1]					
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.				Wage earners (average number).		Value of products.		Value added by manufacture.	
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909–1914	1904–1909	1909–1914	1904–1909	1909–1914	1904–1909
United States	371	14,172	100.0	....	....	$127,942,441	100.0	....	....	$39,075,655	100.0	....	....	9.0	17.7	14.9	63.1	−0.3	58.9
New York	65	3,168	22.4	1	1	27,526,199	21.5	1	1	7,656,815	19.6	1	1	6.5	23.9	16.7	76.0	−3.9	59.7
Illinois	27	2,144	15.1	2	2	21,420,035	16.7	2	2	6,167,142	15.8	2	3	−2.0	14.9	6.1	42.6	−1.1	29.5
New Jersey	16	2,057	14.5	4	4	16,692,406	13.0	3	4	5,932,529	15.2	3	2	28.6	158.3	22.1	240.3	−16.0	233.7
Pennsylvania	50	1,159	8.2	5	5	10,098,393	7.9	5	5	3,496,991	8.9	4	5	−3.2	1.1	10.7	31.1	10.1	9.4
Missouri	9	521	3.7	7	6	4,919,685	3.8	7	7	2,108,865	5.4	7	8	−6.0	1.1	4.3	51.6	26.7	34.0
Massachusetts	32	460	3.2	8	8	4,671,310	3.7	8	8	2,195,290	5.6	6	6	0.4	0.7	9.1	70.3	15.2	82.7
Indiana	12	315	2.2	9	14	2,980,028	2.3	9	15	1,393,317	3.6	10	15	150.0	−37.0	266.5	23.4	433.7	0.8
California	25	244	1.7	12	12	2,967,932	2.3	10	10	949,679	2.4	11	12	47.0	−24.5	88.3	−1.5	107.0	−13.6
Wisconsin	11	272	1.9	10	10	2,894,103	2.3	11	9	1,524,858	3.9	9	10	27.7	13.9	79.6	60.8	117.5	90.0
Rhode Island	12	167	1.2	13	11	1,539,069	1.2	13	13	610,166	1.6	13	13	−0.6	−12.5	23.3	44.1	97.4	10.0
Iowa	8	115	0.8	15	13	1,418,042	1.1	15	12	441,586	1.1	15	11	−23.3	9.5	2.6	36.3	−6.4	16.8
Minnesota	6	46	0.3	19	....	614,028	0.5	17	....	151,303	0.4	19	....	.....	.....	.....	.....	.....	.....
Michigan	11	78	0.6	17	18	522,446	0.4	18	17	159,956	0.4	18	16	.....	−48.1	−2.6	−33.0	−12.1	−39.9
Maryland	3	19	0.1	23	20	108,640	0.1	23	23	29,708	0.1	23	21	.....	.....	−43.5	−24.0	.....	36.8
All other states	84	3,407	24.0	....	....	29,570,125	23.1	....	....	6,257,450	16.0	....	....	.....	.....	.....	.....	.....	.....

[1] Percentages are based on figures in Table 16. A minus sign (−) denotes decrease. Percentages are omitted where base is less than 100 for wage earners, or less than $100,000 for value of products or value added by manufacture, or where comparable figures can not be given.

Persons engaged in the industry.—Table 4 shows for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, and average number of wage earners distributed by age.

The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms."

Table 4.

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	19,839	14,671	5,168	74.0	26.0
	1909	18,393	13,780	4,613	74.9	25.1
Proprietors and officials	1914	823	799	24	97.1	2.9
	1909	963	925	38	96.1	3.9
Proprietors and firm members	1914	252	236	16	93.7	6.3
	1909	329	306	23	93.0	7.0
Salaried officers of corporations	1914	286	280	6	97.9	2.1
	1909	274	265	9	96.7	3.3
Superintendents and managers	1914	285	283	2	99.3	0.7
	1909	360	354	6	98.3	1.7
Clerks and other subordinate salaried employees.	1914	4,844	3,237	1,607	66.8	33.2
	1909	4,431	3,269	1,162	73.8	26.2
Wage earners (average number)	1914	14,172	10,635	3,537	75.0	25.0
	1909	12,999	9,586	3,413	73.7	26.3
16 years of age and over	1914	13,964	10,532	3,432	75.4	24.6
	1909	12,664	9,429	3,235	74.5	25.5
Under 16 years of age	1914	208	103	105	49.5	50.5
	1909	335	157	178	46.9	53.1

Table 5 gives, for the several classes of persons engaged in the industry, the percentage of increase from 1909 to 1914, and the per cent distribution at the two censuses.

The average number of persons engaged in the industry during 1914 was 19,839, of whom 14,172, or 71.4 per cent, were wage earners; 823, or 4.1 per cent, proprietors and officials; and 4,844, or 24.4 per cent, clerks and other subordinate salaried employees. Of the total number of persons engaged in the industry, 74 per cent were males and 26 per cent were females; only a little more than 1 per cent of the total number were under 16 years of age.

The average number of wage earners, as reported at the censuses of 1914, 1909, and 1904, is given, by states, in Table 16. The distribution of the average number by sex and age is not shown for the individual states, but Table 17 gives such a distribution of the

number employed on December 15, or the nearest representative day. Female wage earners were reported as employed in 23 states; the largest number reported for any state was 712 for New York, and the next largest number, 581, for New Jersey. Wage earners under 16 years of age were reported for 14 states, the largest number, 81, being reported for Illinois.

There was very little change in the per cent distribution of the persons engaged in the soap industry during the five-year period 1909–1914. The number of clerks and other subordinate salaried employees and the number of wage earners have each increased slightly, the proportion which clerks formed of the total increasing from 24.1 per cent to 24.4 per cent and that of wage earners from 70.7 per cent to 71.4 per cent. The proportion represented by proprietors and officials, on the other hand, decreased from 5.2 per cent to 4.1 per cent. The proportion which male wage earners 16 years of age and over formed of the total number of wage earners increased from 72.5 per cent to 74.3 per cent, while the proportion represented by female wage earners 16 years of age and over decreased from 24.9 to 24.2 per cent.

Table 5

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.								
	Per cent of increase,[1] 1909–1914.			Per cent distribution.					
				Total.		Male.		Female.	
	Total.	Male.	Female.	1914	1909	1914	1909	1914	1909
All classes	7.9	6.5	12.0	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	−14.5	−13.6	.....	4.1	5.2	5.4	6.7	0.5	0.8
Proprietors and firm members	−23.4	−22.9	.....	1.3	1.8	1.6	2.2	0.3	0.5
Salaried officers of corporations	4.4	5.7	.....	1.4	1.5	1.9	1.9	0.1	0.2
Superintendents and managers	−20.8	−20.1	.....	1.4	2.0	1.9	2.6	(2)	0.1
Clerks and other subordinate salaried employees	9.3	−1.0	38.3	24.4	24.1	22.1	23.7	31.1	25.2
Wage earners (average number)	9.0	10.9	3.6	71.4	70.7	72.5	69.6	68.4	74.0
16 years of age and over	10.3	11.7	6.1	70.4	68.9	71.8	68.4	66.4	70.1
Under 16 years of age	−37.9	−34.4	−41.0	1.0	1.8	0.7	1.1	2.0	3.9

[1] A minus sign (−) denotes decrease; percentages ore omitted where base is less than 100.

[2] Less than one-tenth of 1 per cent.

Wage earners employed, by months.—Table 6 gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for the years 1914 and 1909, and the average number employed during each month in 1904, together with the percentage which the number reported for each month forms of the greatest number reported for any month.

Table 6

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	14,212	12,337	11,013	98.3	90.4	95.6
February	14,325	12,671	10,974	99.1	92.8	95.3
March	14,427	12,885	11,151	99.8	94.4	96.8
April	14,461	12,843	10,990	100.0	94.1	95.4
May	14,418	12,476	10,792	99.7	91.4	93.7
June	14,138	12,653	10,796	97.8	92.7	93.8
July	13,893	13,001	10,661	96.1	95.2	92.6
August	13,927	13,105	10,806	96.3	96.0	93.8
September	14,160	13,250	11,168	97.9	97.1	97.0
October	14,286	13,475	11,414	98.8	98.7	99.1
November	14,106	13,649	11,515	97.5	[2] 100.0	100.0
December	13,711	13,650	11,248	94.8	100.0	97.7

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

[2] Less than one-tenth of 1 per cent below maximum.

The table shows a constant increase in the number of wage earners employed during the year, the number for each month for 1914 being considerably in excess of the number for the corresponding months of 1909 and 1904. The percentage that the minimum number is of the maximum for each year shows comparatively little fluctuation. The period of greatest activity in 1914 was during March and April, the maximum number 14,461 being employed in the latter month. The smallest number, 13,711, was employed in December and formed 94.8 per cent of the maximum.

In 1909 the minimum number was 90.4 per cent of the maximum, and in 1904, 92.6 per cent.

Prevailing hours of labor.—In Table 7 the average number of wage earners reported for 1914 and 1909 for the industry has been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. The number employed in each establishment was classified as a total, even though a few employees worked a greater or less number of hours.

The figures in this table emphasize the tendency toward a shortening of the hours of employment. The average number of hours of labor per wage earner per week obtained by computing the total number of hours of labor for all wage earners and dividing this total by the number of wage earners, was 55 in 1914 and 56.4 in 1909, indicating an average decrease of 1.4 hours per week for the five-year period. In making this computation the number of wage earners in each group is multiplied by the number of hours of labor per week for the group and the resultants of the several groups added. The lowest group "48 and under" has been figured at 48; the group "between 48 and 54" at 51; and the group "between 54 and 60" at 57.

Table 7

STATE.	Census year.	AVERAGE NUMBER OF WAGE EARNERS.					
		Total.	In establishments where the prevailing hours of labor per week were—				
			48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.
United States	1914	14,172	1,027	3,446	1,514	6,371	1,814
	1909	12,999	635	1,786	1,998	3,849	[1] 4,731
Illinois	1914	2,144	5	194	24	1,300	621
	1909	2,188	8	95	19	49	2,017
Missouri	1914	521	101	.....	389	29	2
	1909	554	2	46	310	41	155
New Jersey	1914	2,057	17	1,609	56	355	20
	1909	1,599	3	1,101	202	188	105
New York	1914	3,168	100	1,265	131	1,389	283
	1909	2,976	20	315	1,152	753	736
Pennsylvania	1914	1,159	637	74	204	137	107
	1909	1,197	520	16	19	396	246

[1] Includes 23 with "hours of labor per week between 60 and 72," and 2 in an establishment where the prevailing hours of labor per week were 72.

Only a little more than one-eighth (12.8 per cent) of the wage earners employed in the industry in 1914 were in establishments where the prevailing number of hours was 60 per week; 55.6 per cent were employed in establishments where the prevailing hours were 54 but less than 60 per week; and 31.6 per cent were employed in establishments where the prevailing hours were less than 54 per week On the other hand, in 1909 more than one-third (36.4 per cent) were employed in establishments where the prevailing number of hours of labor was 60 per week or more, and but 18.6 per cent in establishments where the prevailing hours were less than 54 per week. There were no establishments in 1914 where the prevailing hours of labor were more than 60 hours per week, and in 1909 but a few were employed in such establishments.

Character of ownership.—Table 8 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry for 1914 and 1909, and for 1914 only for such states, except Kansas and Ohio, as reported an average of 500 wage earners or more.

Table 8

STATE.	Census year.	NUMBER OF ESTABLISHMENTS OWNED BY—			AVERAGE NUMBER OF WAGE EARNERS.							VALUE OF PRODUCTS.							
					Total.	In establishments owned by—			Per cent of total.			Total.	Of establishments owned by—			Per cent of total.		
		Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.		Individuals.	Corporations.	All others.	Individuals.	Corporations.	All others.
United States	1914	106	200	65	14,172	484	13,039	649	3.4	92.0	4.6	$127,942,441	$3,829,844	$120,009,032	$4,103,565	3.0	93.8	3.2
	1909	142	201	77	12,999	801	10,607	1,591	6.2	81.6	12.2	111,357,777	5,302,283	93,937,697	12,117,797	4.8	84.4	10.9
Illinois	1914	7	18	2	2,144	[1] 39	2,105	.....	1.8	98.2	.....	21,420,035	[1] 247,769	21,172,266	.....	1.2	98.8	.....
Missouri	1914	2	5	2	521	.....	[2] 521	.....	.....	.....	.....	4,919,685	.....	[2] 4,919,685	.....	.....	.....	.....
New Jersey	1914	2	12	2	2,057	.....	[2] 2,057	.....	.....	.....	.....	16,692,406	.....	[2] 16,692,406	.....	.....	.....	.....
New York	1914	20	36	9	3,168	140	3,024	4	4.4	95.5	0.1	27,526,199	1,695,793	25,793,857	36,549	6.2	93.7	0.1
Pennsylvania	1914	26	11	13	1,159	105	732	322	9.1	63.2	27.8	10,098,393	621,632	7,678,032	1,798,729	6.2	76.0	17.8

[1] Includes the group "All others."

[2] Includes the groups "Individuals and all others."

In 1914, of the total number of establishments reported for the industry, 53.9 per cent were under corporate ownership, as compared with 47.9 per cent in 1909. While corporations thus controlled only a little more than one-half of the total number of establishments in 1914 the average number of wage earners of these establishments represented 92 per cent of the total number, and the value of products 93.8 per cent of the total value. The group designated as "all others" consists chiefly of partnerships or firms.

There was some variation in the relative importance of the establishments operated under the different forms of ownership in the different states. In New York, the leading state, corporations controlled 55.4 per cent of the total number of establishments, gave employment to 95.5 per cent of the wage earners, and reported 93.7 per cent of the total value of products. In Pennsylvania corporations operated only 22 per cent of the establishments, employed 63.2 per cent of the wage earners, and contributed 76 per cent of the total value of products.

Size of establishments.—The tendency of the industry to become concentrated in large establishments is indicated by the statistics given in Table 9.

Table 9

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	371	14,172	$127,942,441	$39,075,655
	1909	420	12,999	111,357,777	39,178,359
Less than $5,000	1914	82	60	185,506	98,548
	1909	104	83	253,674	130,996
$5,000 to $20,000	1914	82	200	879,269	339,719
	1909	102	264	1,039,754	468,411
$20,000 to $100,000	1914	102	768	4,916,756	1,687,374
	1909	110	834	5,362,689	1,808,374
$100,000 to $1,000,000	1914	76	2,711	21,667,439	8,311,788
	1909	82	3,980	27,740,013	10,460,303
$1,000,000 and over	1914	29	10,433	100,293,471	28,538,226
	1909	22	7,838	76,911,647	26,310,275
Per cent distribution:					
Less than $5,000	1914	22.1	0.4	0.1	0.3
	1909	24.8	0.6	0.2	0.3
$5,000 to $20,000	1914	22.1	1.4	0.7	1.0
	1909	24.3	2.0	1.0	1.2
$20,000 to $100,000	1914	27.5	5.4	3.8	4.3
	1909	26.2	6.4	4.8	4.6
$100,000 to $1,000,000	1914	20.5	19.1	16.9	21.3
	1909	19.5	30.6	24.9	26.7
$1,000,000 and over	1914	7.8	73.6	78.4	73.2
	1909	5.2	60.3	69.1	67.2

In 1914, 7.8 per cent of the establishments reported products to the value of $1,000,000 or over, as against 5.2 per cent in 1909 and 3 per cent in 1904. While such establishments represented a comparatively small proportion of the total number they reported 78.4 per cent of the total value of products in 1914, 69.1 per cent in 1909, and 55.9 per cent in 1904.

The average value of products per establishment increased from $156,593 in 1904 to $265,138 in 1909 and to $344,858 in 1914 and the average value added by manufacture, as computed from the figures in Table 1, from $56,535 in 1904 to $93,282 in 1909 and to $105,325 in 1914. The average number of wage earners per establishment increased from 25 in 1904 to 31 in 1909 and to 38 in 1914.

Table 10 shows the size of establishments in 1914 and 1909, as measured by the number of wage earners employed, for the industry as a whole, and for five of the leading states.

Table 10

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—																
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	371	14,172	43	166	396	90	1,033	29	1,017	14	1,125	17	2,763	5	1,679	4	2,386	3	3,773
	1909	420	12,999	50	199	480	86	931	38	1,283	17	1,125	18	2,822	6	1,706	5	3,550	1	1,102
Illinois	1914	27	2,144	3	10	26	5	57	2	76	1	65	3	366	1	448	2	1,106	....	.....
	1909	34	2,188	1	17	42	5	41	5	165	1	58	2	322	1	267	2	1,293	....	.....
Missouri	1914	9	521	2	3	5	....	.....	1	27	1	100	2	389	....	.....	....	.....	....	.....
	1909	10	554	1	4	6	....	.....	3	117	....	.....	1	124	1	307	....	.....	....	.....
New Jersey	1914	16	2,057	....	6	14	3	34	3	124	2	186	1	227	....	.....	....	.....	1	1,472
	1909	21	1,599	3	6	11	4	47	2	87	3	195	2	290	....	.....	1	969	....	.....
New York	1914	65	3,168	11	29	74	13	163	5	163	2	164	2	370	1	393	1	671	1	1,170
	1909	67	2,976	8	28	70	15	156	7	192	1	69	5	777	2	610	....	.....	1	1,102
Pennsylvania	1914	50	1,159	3	33	90	8	97	3	125	1	91	1	147	....	.....	1	609	....	.....
	1909	59	1,197	4	42	119	7	78	2	86	1	100	2	304	....	.....	1	510	....	.....

Of the 371 establishments reported in 1914, 11.6 per cent employed no wage earners; 69 per cent employed from 1 to 20; 11.6 per cent employed from 21 to 100; and 7.8 per cent employed more than 100. There were only 12 establishments that employed more than 250 wage earners, and of these only 3 employed 1,000 or more.

Those with no wage earners are, in the main, small establishments in which the work is done by the proprietors or firm members. In some cases they may employ a few wage earners for short periods, but the number is so small and the time of employment so short that in computing the average number of wage earners none could be shown for the establishments.

Of the total number of wage earners reported, 10.1 per cent in 1914 and 10.9 per cent in 1909 were reported by establishments employing from 1 to 20; 15.1 per cent in 1914 and 18.5 per cent in 1909 by establishments employing 21 to 100; and 74.8 per cent in 1914 and 70.6 per cent in 1909 by establishments employing more than 100.

Expenses.—The census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest, or depreciation, or a large amount of miscellaneous expense; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expense which were reported. Table 1 shows the total reported expenses in 1914 to have been $104,716,865, distributed as follows: Cost of materials, $88,866,786, or 84.9 per cent; wages $8,087,937, or 7.7 per cent; salaries $6,691,692, or 6.4 per cent; rent and taxes $1,021,534, or 1 per cent; and contract work $48,916, or less than one-tenth of 1 per cent. In 1909 the corresponding percentages were: Materials, 85.3; wages, 7.4; salaries, 6.5; rent and taxes, 0.6; and contract work, 0.1; and in 1904: Materials, 83.4; wages, 9.1; salaries, 6.7; rent and taxes, 0.8; and contract work one-tenth of 1 per cent.

Naturally there are variations in the proportions of total expenses in the several states, owing to differences in the kinds of soap produced. The cost of tallow, grease, and other fats and oils constitute the principal item of expense in the cost of materials in this industry.

Engines and power.—Table 11 shows for 1914, 1909, and 1904, for the industry, the number and horsepower of engines or motors employed in generating power (including electric motors operated by purchased current). It also shows separately the number and horsepower of electric motors operated by current generated in the establishments reporting.

The total primary power used increased from 20,228 horsepower in 1904 to 28,360 in 1909, and to 35,737 in 1914—increases of 40.2 and 26 per cent, respectively. Although steam power increased more than one-fifth from 1909 to 1914, the proportion which it formed of

the total primary power slightly decreased. Electric power, both rented and generated, shows a large increase, and of the total primary power, whether owned or rented, 47.5 per cent was utilized in the form of electric power in 1914, 45.3 per cent in 1909, and 1.8 per cent in 1904.

Table 11

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	846	696	524	35,737	28,360	20,228	100.0	100.0	100.0
Owned	414	465	468	30,091	25,038	18,891	84.2	88.3	93.4
Steam engines and turbines [1]	399	446	454	29,805	24,538	18,750	83.4	86.5	92.7
Internal-combustion engines	10	14	11	120	245	88	0.3	0.9	0.4
Water wheels, turbines, and motors	5	5	3	166	255	53	0.5	0.9	0.3
Rented	432	231	56	5,646	3,322	1,337	15.8	11.7	6.6
Electric	432	231	56	4,014	1,974	517	11.2	7.0	2.6
Other	.....	.....	.....	1,632	1,348	820	4.6	4.8	4.1
Electric	1,902	1,196	357	16,960	12,839	4,410	100.0	100.0	100.0
Rented	432	231	56	4,014	1,974	517	23.7	15.4	11.7
Generated by establishments reporting	1,470	965	301	12,946	10,865	3,893	76.3	84.6	88.3

[1] Figures for horsepower include for 1909 and 1904 the amount reported under the head of "other" owned power.

Fuel.—Table 12 shows, for 1914, the quantity of each kind of fuel used for which data were obtained, for the industry as a whole, and for five separate states.

Bituminous coal was the principal fuel used in all states except New Jersey. Anthracite was also used to some extent, 52,564 long tons, or 63 per cent of the total for the industry, being reported from New Jersey.

Table 12

STATE.	COAL.		Coke (ton, 2,000 pounds).	Oil, including gasoline (barrels).	Gas (1,000 cubic feet).
	Anthracite (ton, 2,240 pounds).	Bituminous (ton, 2,000 pounds).			
United States	83,378	515,356	2,850	36,150	70,948
Illinois	11	112,409	23	621	3,343
Missouri	.....	27,189	.....	.....	50
New Jersey	52,564	9,804	.....	.....	6,190
New York	27,874	107,922	.....	510	4,009
Pennsylvania	2,446	26,996	2,753	.....	15,925
All other states	483	231,036	74	35,019	41,431

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

Table 13 shows statistics for the principal materials used in the industry and the products manufactured in 1914, 1909, and 1904. It shows also the number of establishments manufacturing soap as a chief product and the number engaged primarily in other lines of manufacture but making soap as a subsidiary product. The statistics for materials relate only to establishments manufacturing soap as a chief product and which constitute the classified soap industry. Establishments in other industries that manufacture some soap did not report the materials used in soap manufacture.

The table gives the statistics for certain intermediates, made from basic purchased material and consumed in soap manufacture in the same establishment. These are materials which are also, to a large extent, purchased.

The detail statistics for products cover all soap production, including that made by the subsidiary soap establishments.

The expense for fats and oils, including foots, in 1914 aggregated $55,129,954, or 62 per cent of the cost of all materials, the corresponding proportion in 1909 being 57.3 per cent, and in 1904, 63.1 per cent. The relatively large expense for "all other materials" is due to the fact that it includes cost of materials used in the manufacture of subsidiary products, such as cottoline, by certain establishments, cottonseed from which the oil is extracted for soap manufacture, etc., as well as boxes and other containers. Combining the cottonseed oil purchased and that made and consumed, it gives a total consumption of 16,144,786 gallons for 1914, considerably less than in 1909, though in excess of the quantity used in 1904.

The combined value of all products of the establishments constituting the classified soap industry and the value of the soap made by other establishments, 1914, was $135,304,499. This amount includes in addition to the soaps and the affiliated products listed in the table, miscellaneous products made by soap establishments to the value of $12,870,191.

During the five-year period, 1909–1914, the production of hard soap increased 15 per cent in quantity and 14.7 per cent in value. The statistics show a slight decrease in quantity for soft soap with a considerable increase in value.

In the manufacture of soap large quantities of glycerin are liberated of which the manufacturers appear to have imperfect record. The quantity recovered is subject to great variation, dependent not only upon the character of the stock used and its treatment in the kettle, but also on the efficiency of the method of recovery employed. In the reports received for 1914, in addition to the quantity of glycerin reported

among the products of the industry, there was a considerable amount for which there was no value, but this item was not in all cases reported.

Table 13	1914	1909	1904
Number of establishments	513	526	.....
Soap industry	371	420	436
Manufacturing subsidiary soap products	142	106	(1)
MATERIALS.[2]			
Total cost	$88,866,786	$72,179,418	$43,625,608
Tallow, grease, and other fats:			
Pounds	546,289,571	413,969,787	475,618,277
Cost	$32,565,899	$23,341,905	$19,723,311
Coconut and palm-kernel oil:			
Gallons	13,225,330	11,856,337	6,833,132
Cost	$9,406,583	$5,875,294	$2,692,034
Cottonseed oil:			
Consumption, gallons	16,144,786	26,611,810	14,196,416
Purchased—			
Gallons	15,903,691	24,221,712	13,276,006
Cost	$6,700,688	$9,718,988	$3,882,987
Produced and consumed, gallons	241,095	2,390,098	920,410
Rosin:			
Pounds	185,310,786	207,296,447	168,107,246
Cost	$4,067,992	$4,362,412	$2,734,848
Foots:			
Pounds	123,032,886	94,050,892	59,761,740
Cost	$6,456,784	$2,453,609	$1,222,982
Caustic soda:			
Tons (2,000 pounds)	55,320	52,172	71,551
Cost	$1,936,575	$2,212,232	$2,843,988
Soda ash:			
Tons (2,000 pounds)	140,983	121,016	53,777
Cost	$1,997,575	$2,281,787	$1,011,694
All other materials	$25,734,690	$21,933,191	$9,513,764
Produced in works where consumed.			
Red oil, gallons	3,653,557	3,128,736	1,149,346
Tallow, pounds	5,331,000	16,664,000	10,613,000
Cottonseed oil, gallons	241,095	2,390,098	920,410
Caustic lye (30° Baumé), gallons	22,777,000	15,804,000	9,569,000
Sodium silicate, pounds	43,197,255	37,466,246	1,597,886
Glycerin, pounds	2,156,591	5,879,279	3,433,359
Framed soap, pounds	618,096,000	524,775,000	(1)
PRODUCTS.			
Total value	$135,304,499	$115,455,190	$72,110,023
Soap industry	$127,942,441	$111,357,777	$68,274,700
Subsidiary soap products, other industries	$7,362,058	$4,097,413	$3,835,323
Hard soaps:			
Quantity, pounds	2,064,228,000	1,794,249,000	1,386,610,000
Tallow soap	938,447,000	944,409,000	
Olein soap	42,524,000	33,696,000	
Foots soap	111,063,000	73,444,000	
Toilet soap	169,926,000	111,571,000	(1)
Powdered soap	367,744,000	301,176,000	
Soap chips	97,746,000	329,953,000	
All other hard soaps	336,778,000		
Value	$104,464,542	$91,064,466	$58,027,406
Soft soap:			
Pounds	57,002,000	60,037,000	43,899,000
Value	$1,697,424	$1,269,187	$761,081
Special soap articles	$832,654	$706,177	$554,881
Glycerin:[3]			
Crude, for sale—			
Pounds	12,745,336	.....	.....
Value	$1,817,536		
Refined, pounds	34,831,082	$6,790,282	$5,401,520
For sale—			
Pounds	32,674,491		
Value	$5,775,887		
Produced and consumed, pounds	2,156,591	5,879,279	3,433,359
Lye:			
Pounds	23,346,000	.....	.....
Value	$891,265		
Perfumes and toilet preparations	$6,804,508	$15,625,078	$7,365,135
Candles	$150,492		
All other products	[4] $12,870,191		

[1] Figures not available.
[2] Not including those consumed in soap manufacture in establishments making subsidiary soap products.
[3] Total production of refined glycerin, all industries, in 1914, 60,944,799 pounds (includes 1,134,394 made and consumed): Crude glycerin made for sale, 16,568,920 pounds. See report on chemicals.
[4] Includes cottonseed products, $3,008,386; chemicals, $941,379; cleansing and polishing preparations, $500,466; grease and tallow, $235,195; lard oil, $125,706; dyestuffs and extracts, $73,003; patent medicines and compounds, $64,477; and miscellaneous and undesignated products, $7,921,579.

It is to be noted that the soap establishments reported a total production of 34,831,082 pounds of refined glycerin of which 2,156,591 pounds were consumed by the establishments producing. The total production of refined glycerin by all manufacturing establishments, including those in the chemical and other industries, was approximately 61,000,000 pounds. This, however, includes some refined glycerin from imported stock.[1]

The schedule for the census of 1914 called for the quantity and value of the different classes of hard soap made during the year. Some of the principal manufacturers could not furnish separate values for the different classes and there was some confusion due to the fact that the distinction between the different kinds is not clearly marked. The quantities of the different kinds manufactured in 1914 and 1909 are shown for all establishments in the industry.

Table 14 shows, by states, for 1914, 1909, and 1904, the quantity, and for 1914, the cost, of the principal materials for the leading states.

Table 14 — MATERIAL AND STATE.	MATERIALS. 1914 Cost.	1914 Quantity.	1909 Quantity.	1904 Quantity.
Tallow, grease, and other fats	$32,565,899	*Pounds.* 546,289,571	*Pounds.* 413,969,787	*Pounds.* 475,618,277
California		766,202	13,786,432	9,976,744	(2)
Illinois		4,736,142	77,759,488	54,546,522	79,134,570
Massachusetts		1,211,344	19,842,746	16,867,002	19,268,432
Missouri		673,894	11,549,902	16,979,866	12,381,419
New Jersey		3,992,431	73,721,741	41,593,627	33,132,333
New York		7,733,796	120,901,255	98,083,852	105,415,189
Pennsylvania		3,162,061	39,695,395	38,897,770	35,546,631
All other states		10,285,029	189,032,612	137,024,404	190,739,703
Coconut and palm kernel oil	9,406,583	*Gallons.* 13,225,330	*Gallons.* 11,856,337	*Gallons.* 6,833,132
California		309,209	423,920	271,420	(2)
Illinois		1,903,059	2,550,332	2,174,700	1,009,930
Iowa		343,603	531,672	556,875	(2)
Massachusetts		147,391	245,736	285,024	175,728
Missouri		734,778	873,359	771,522	(2)
New Jersey		226,696	388,564	387,676	126,386
New York		1,403,063	1,761,289	1,749,124	812,844
Pennsylvania		556,287	812,461	1,658,454	946,672
Wisconsin		349,573	454,429	331,257	(2)
All other States		3,432,924	5,183,568	3,670,285	3,761,572
Cottonseed oil	6,700,688	15,903,691	24,221,712	13,276,006
California		304,128	716,072	10	(2)
Illinois		917,258	1,927,981	1,565,800	3,356,680
Indiana		84,467	166,136	104,045	(2)
Iowa		165,117	357,455	387,803	(2)
Massachusetts		39,297	81,820	111,141	95,648
Missouri		72,273	156,569	635,502	(2)
New Jersey		338,265	727,494	2,060,885	122,999
New York		1,449,013	3,929,966	4,237,007	1,786,255
Pennsylvania		141,885	314,113	307,699	185,859
All other states		3,188,985	7,526,085	14,811,760	2,728,565
Rosin	4,067,992	*Pounds.* 185,310,786	*Pounds.* 207,296,447	*Pounds.* 168,107,246
Illinois		419,697	16,272,793	18,272,898	18,667,593
Massachusetts		122,883	4,919,724	7,106,905	4,968,066
Missouri		103,520	5,417,533	9,031,412	11,743,615
New Jersey		699,773	29,462,140	22,692,182	5,399,357
New York		1,005,502	44,908,025	43,642,265	34,527,676
Pennsylvania		636,673	30,443,364	41,587,292	20,596,420
All other states		1,079,944	53,887,207	64,963,493	72,204,519
Foots	6,456,784	123,032,886	94,050,892	59,761,740
Illinois		292,520	21,169,801	21,403,551	13,367,007
Indiana		56,196	3,559,446	522,366	(2)
Massachusetts		113,586	1,854,486	2,028,144	556,547
Missouri		116,107	8,858,061	10,215,584	(2)
New Jersey		146,945	3,001,901	4,739,134	(2)
New York		4,870,765	33,135,684	9,825,800	3,495,053
Pennsylvania		190,503	4,646,829	1,868,744	1,338,503
All other states		670,162	46,806,678	43,447,569	41,004,630

[1] See report on chemicals for glycerin production.
[2] Included in all other states.

Table 14—Continued.

MATERIAL AND STATE.	MATERIALS. 1914 Cost.	1914 Quantity.	1909 Quantity.	1904 Quantity.
		Tons (2,000 lbs.).	*Tons (2,000 lbs.).*	*Tons (2,000 lbs.).*
Caustic soda	$1,936,575	55,320	52,172	71,551
California	84,507	2,007	1,132	(1)
Illinois	304,430	9,719	8,022	10,186
Massachusetts	82,569	2,366	2,397	1,722
New Jersey	187,263	5,657	5,039	6,526
New York	325,879	9,931	11,006	13,928
Pennsylvania	330,544	9,122	8,708	7,877
All other states	621,383	16,518	15,868	31,312
Soda ash	1,997,575	140,983	121,016	53,777
California	70,730	3,061	2,509	(1)
Illinois	216,954	14,984	15,640	9,715
Indiana	128,661	8,712	4,043	(1)
Massachusetts	41,678	2,702	2,603	1,174
Missouri	83,259	5,499	6,647	(1)
New Jersey	228,218	16,110	17,434	320
New York	494,759	38,501	24,958	12,648
Pennsylvania	33,526	2,368	2,608	3,445
Rhode Island	63,534	3,877	3,779	(1)
All other states	636,256	45,169	40,795	26,475

[1] Included in all other states.

Table 15 shows, by states, the quantities and value of the hard soap and soft soap products for 1914, and the quantities for 1909.

Table 15

PRODUCT AND STATE.	1914 Value.	1914 Quantity (pounds).	1909 Quantity (pounds).
Hard soap	$104,464,542	2,064,227,694	1,794,249,191
Illinois	17,904,726	337,886,077	254,017,401
Massachusetts	4,069,089	69,924,649	67,179,247
Missouri	4,453,771	76,714,777	93,639,378
New Jersey	12,626,147	234,543,027	199,501,374
New York	19,974,263	419,323,945	374,590,818
Pennsylvania	8,938,968	168,858,891	167,700,046
All other states	36,497,578	756,976,328	637,620,927
Soft soap	1,697,424	57,001,556	60,036,670
Illinois	205,759	8,329,247	10,291,816
Massachusetts	210,094	5,456,908	6,812,254
New Jersey	206,028	3,074,715	7,293,291
New York	271,221	19,012,016	14,788,812
Pennsylvania	208,761	6,624,125	9,690,079
Rhode Island	153,463	3,728,631	2,050,567
All other states	442,098	10,775,914	9,109,851

DETAIL STATE TABLES.

The principal data secured concerning soap factories are presented by states in Tables 16 and 17. Table 16 shows for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products, as reported for the soap industry. Table 17 presents, for 1914, by states, the more detailed statistics for the industry.

TABLE 16.—SOAP—COMPARATIVE STATISTICS BY STATES: 1914, 1909, and 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horse power.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	371	14,172	35,737	$8,088	$88,867	$127,942
	1909	420	12,999	28,360	6,227	72,179	111,358
	1904	436	11,044	20,228	4,763	43,626	68,275
California	1914	25	244	724	191	2,018	2,968
	1909	23	166	477	115	1,117	1,576
	1904	27	220	614	135	1,069	1,600
Illinois	1914	27	2,144	6,108	1,255	15,253	21,420
	1909	34	2,188	5,155	1,053	13,948	20,181
	1904	34	1,905	3,519	887	9,345	14,157
Indiana	1914	12	315	668	181	1,587	2,930
	1909	11	126	366	54	552	813
	1904	15	200	559	71	396	659
Iowa	1914	8	115	290	71	976	1,418
	1909	9	150	270	58	910	1,382
	1904	7	137	185	62	610	1,014
Maryland	1914	3	19	155	9	79	109
	1909	3	46	165	16	126	193
	1904	4	72	165	22	148	254
Massachusetts	1914	32	460	1,400	260	2,476	4,671
	1909	38	458	1,379	227	2,377	4,283
	1904	36	455	956	205	1,472	2,515
Michigan	1914	11	78	245	49	362	522
	1909	8	68	882	37	354	536
	1904	11	131	477	55	497	800
Missouri	1914	9	521	1,358	$279	$2,811	$4,920
	1909	10	554	954	272	3,055	4,719
	1904	10	548	745	237	1,871	3,113
New Jersey	1914	16	2,057	4,276	1,200	10,760	16,692
	1909	21	1,599	2,761	796	7,084	13,674
	1904	14	619	625	287	2,043	4,018
New York	1914	65	3,168	8,744	1,785	19,869	27,526
	1909	67	2,976	5,873	1,436	15,612	23,583
	1904	67	2,402	4,270	1,043	8,411	13,402
Pennsylvania	1914	50	1,159	2,554	657	6,601	10,098
	1909	59	1,197	2,598	556	5,947	9,124
	1904	60	1,184	2,152	499	4,054	6,959
Rhode Island	1914	12	167	461	85	929	1,539
	1909	9	168	402	70	939	1,248
	1904	8	192	194	69	585	866
Wisconsin	1914	11	272	339	132	1,369	2,894
	1909	16	213	487	89	910	1,611
	1904	16	187	313	73	633	1,002
All other states	1914	90	3,453	8,415	1,934	23,777	30,185
	1909	112	3,090	6,591	1,448	19,248	28,435
	1904	127	2,792	5,454	1,118	12,492	17,916

TABLE 17.—SOAP—DETAIL STATEMENT, BY STATES: 1914.

STATE.	Number of establishments.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc. Male.	Clerks, etc. Female.	Wage earners. Average number.	Wage earners. Number, 15th day of— Maximum month.	Wage earners. Number, 15th day of— Minimum month.	WAGE EARNERS DEC. 15, OR NEAREST REPRESENTATIVE DAY. Total.	16 and over. Male.	16 and over. Female.	Under 16. Male.	Under 16. Female.	Capital.	EXPENSES. Salaries and wages. Officials.	EXPENSES. Salaries and wages. Clerks, etc.
United States	371	19,839	252	571	3,237	1,607	14,172	Ap 14,461	De 13,711	14,033	10,429	3,398	102	104	$92,871,533	$1,997,815	$4,693,877
California	25	400	22	33	72	20	244	Se 257	De [1] 235	244	203	41	.....	.....	2,066,160	73,536	136,659
Illinois	27	3,107	11	76	682	194	2,144	Mh 2,227	De 2,072	2,093	1,481	531	21	60	12,308,263	267,391	792,125
Indiana	12	438	3	17	84	19	315	My 345	De 264	311	239	68	2	2	1,410,149	35,129	100,596
Iowa	8	184	8	11	43	7	115	Oc 126	Fe 107	123	91	32	.....	.....	882,303	21,106	60,978
Maryland	3	30	.....	5	3	3	19	Mh 20	Fe 18	19	19	.....	.....	.....	78,124	5,640	3,040
Massachusetts	32	634	20	32	82	40	460	Fe 495	Au 422	465	344	118	.....	3	3,421,150	95,894	104,305
Michigan	11	106	8	6	9	5	78	My 83	Ja 71	81	68	11	2	.....	648,557	12,900	15,140
Minnesota	6	91	7	6	28	4	46	Mh 49	De 40	46	35	11	.....	.....	339,031	10,330	33,513
Missouri	9	796	6	19	151	99	521	My 565	Se 477	497	341	142	9	5	3,086,373	62,877	204,192
New Jersey	16	2,930	6	57	491	319	2,057	Oc 2,124	De 1,914	2,064	1,483	577	.....	4	10,269,954	316,171	878,126
New York	65	4,345	43	134	565	435	3,168	My 3,274	Jy 2,971	3,164	2,445	708	7	4	27,889,763	518,544	784,843
Pennsylvania	50	1,642	55	37	198	193	1,159	Oc 1,184	Fe 1,137	1,155	870	242	41	2	6,714,196	121,281	243,192
Rhode Island	12	236	4	13	47	5	167	Mh [1] 169	De 162	167	129	34	1	3	698,837	57,420	67,755
Wisconsin	11	430	5	14	102	37	272	Ap 304	Ja 225	241	166	75	.....	.....	1,143,593	48,063	191,010
All other states [2]	84	4,470	54	111	680	218	3,407	.....	.....	3,363	2,515	808	19	21	21,915,080	351,533	1,078,403

STATE.	EXPENSES—continued. Salaries and wages—Continued. Wage earners.	For contract work.	Rent and taxes. Rent of factory.	Rent and taxes. Taxes, including internal revenue and corporation income.	For materials. Principal materials.	For materials. Fuel and rent of power.	Value of products.	Value added by manufacture.	POWER. Primary horsepower. Total.	Steam engines.[3]	Internal-combustion engines.[4]	Water wheels and motors.[3]	Electric (rented).	Electric horsepower generated in establishments reporting.
United States	$8,087,937	$48,916	$308,071	$713,463	$87,247,953	$1,618,833	127,942,441	$39,075,655	35,737	29,805	1,752	166	4,014	12,946
California	191,230	1,337	7,466	16,711	1,989,328	28,925	2,967,932	949,679	724	484	19	.....	221	50
Illinois	1,254,752	21,882	83,495	77,848	14,936,204	316,689	21,420,035	6,167,142	6,108	3,568	1,501	.....	1,039	316
Indiana	181,432	13,409	2,750	9,040	1,556,562	30,149	2,980,028	1,393,317	668	311	.....	.....	357	90
Iowa	70,664	688	.....	5,348	967,283	9,173	1,418,042	441,586	290	222	5	1	62	.....
Maryland	8,981	.....	1,779	331	77,111	1,821	108,640	29,708	155	155	.....	.....	.....	.....
Massachusetts	260,473	3,803	22,964	33,514	2,411,326	64,694	4,671,310	2,195,290	1,400	1,082	25	.....	293	200
Michigan	49,279	.....	1,590	5,453	354,450	8,040	522,446	159,956	245	203	.....	.....	42	.....
Minnesota	23,968	.....	2,533	2,674	455,599	7,126	614,028	151,303	185	170	.....	.....	15	5
Missouri	279,289	.....	26,329	15,149	2,766,978	43,842	4,919,685	2,108,865	1,358	1,275	.....	.....	83	525
New Jersey	1,199,700	.....	62,000	135,605	10,579,764	180,113	16,692,406	5,932,529	4,276	3,584	.....	.....	692	1,347
New York	1,784,781	815	50,031	181,588	19,456,946	412,438	27,526,199	7,656,815	8,744	8,201	137	.....	406	5,114
Pennsylvania	657,190	120	13,229	24,231	6,532,779	68,623	10,098,393	3,496,991	2,554	2,189	59	.....	306	322
Rhode Island	85,200	.....	2,358	6,267	912,358	16,545	1,539,069	610,166	461	330	6	125	.....	26
Wisconsin	132,259	.....	3,061	14,533	1,355,388	13,857	2,894,103	1,524,858	339	317	.....	.....	22	251
All other states [2]	1,908,739	6,862	28,486	185,171	22,895,877	416,798	29,570,125	6,257,450	8,230	7,714	.....	40	476	4,700

[1] Same number reported one or more other months.
[2] Includes Alabama, 1 establishment; Arizona, 1; Colorado, 1; Connecticut, 7; Florida, 1; Georgia, 2; Idaho, 1; Kansas, 4; Kentucky, 4; Louisiana, 4; Maine, 1; Nebraska, 2; Nevada, 1; New Hampshire, 2; Ohio, 34; Oklahoma, 1; Oregon, 4; Tennessee, 3; Texas, 3; Utah, 2; Vermont, 1; Washington, 4.
[3] Owned power only.
[4] Includes rented power, other than electric.

TURPENTINE AND ROSIN.

By John B. Hopkins.

GENERAL STATISTICS.

Summary for the industry.—The statistics for the turpentine and rosin industry, as given in this report, cover the operations of establishments engaged in the distillation of oil or spirits of turpentine from the semifluid exudation of the pine tree, the crude material, designated as "dip" (the free-flowing sap) or "scrape" (the gum scraped from the cuts in the trees), being derived from the long-leaf pine (*Pinus palustris*), which is indigenous to the coastal area extending from North Carolina to eastern Texas, and to a less extent from the Cuban or slash pine (*Pinus heterophylla*) and the loblolly pine (*Pinus taeda*). A small amount of spirits of turpentine is obtained from pine wood by destructive distillation or by the steam process. The establishments, 14 in number, which produce turpentine in this manner are treated as belonging to the wood-distillation industry, and the statistics therefor are not herein included except in connection with the presentation of data for total production.

Comparison with earlier censuses.—Table 1 summarizes the more important data relative to the industry for the censuses of 1914, 1909, 1904, and 1899, and gives percentages of increase from census to census.

Table 1

	Number or amount.				Per cent of increase.[1]		
	1914	1909	1904	1899	1909–1914	1904–1909	1899–1904
Number of establishments	1,394	1,585	1,287	1,503	−12.1	23.2	−14.4
Persons engaged	38,294	44,524	37,526	45,945	−14.0	18.6	−18.3
Proprietors and firm members	1,621	2,567	1,997	2,192	−36.9	28.5	−8.9
Salaried employees	1,856	2,446	2,147	1,889	−24.1	13.9	13.7
Wage earners (average number)	34,817	39,511	33,382	41,864	−11.9	18.4	−20.3
Primary horsepower	2,478	4,129	1,175	866	−40.0	251.4	35.7
Capital	$20,744,872	$12,400,978	$6,961,185	$11,847,495	67.3	78.1	−41.2
Salaries and wages	$10,017,385	$11,018,750	$9,534,922	$9,172,177	−9.1	15.6	4.0
Salaries	$1,434,415	$1,655,391	$1,152,222	$778,694	−13.3	43.7	48.0
Wages	$8,582,970	$9,363,359	$8,382,700	$8,393,483	−8.3	11.7	−0.1
Paid for contract work	$532,143	$658,006	$51,843	$160,309	−19.1	1,169.2	−67.7
Rent and taxes (including internal revenue)	$192,027	$193,617	[2] $62,502	[2] $99,632	−0.8	.....	.....
Cost of materials	$5,535,561	$4,910,838	$3,774,637	$6,186,492	12.7	30.1	−39.0
Value of products	$20,990,191	$25,295,017	$23,937,024	$20,344,888	−17.0	5.7	17.7
Value added by manufacture (value of products less cost of materials)	$15,454,630	$20,384,179	$20,162,387	$14,158,396	−24.2	1.1	42.4
Quantity of principal products:							
Spirits of turpentine (gallons)	26,980,981	28,988,954	30,687,051	37,733,500	−6.9	−5.5	−18.7
Rosin (barrels of 280 pounds gross)	2,885,077	3,263,857	3,508,347	4,348,094	−11.6	−7.0	−19.3

[1] A minus sign (−) denotes decrease.

[2] Exclusive of internal revenue.

The primitive method of charring wood under sod in kilns or pits to extract tar and pitch was employed by the earlier settlers of the eastern coast of Virginia and the Carolinas. Because the use of tar and pitch at this period was practically restricted to shipbuilding they were called "naval stores" by which term they, as well as spirits of turpentine and rosin, are still known.

Spirits of turpentine and rosin are now used chiefly as ingredients in such commodities as paint, oil, varnish, soap, paper, rubber, oilcloth, linoleum, sealing wax, fly paper, ink, lubricating compounds, and medicinal preparations. In recent years tar and pitch have come to be of little importance, owing mainly to the diminished demand for them since the general displacement of wooden by iron and steel ships.

The relatively small proportion—26.4 per cent in 1914—which the cost of materials, as shown in the table, forms of the value of products in this industry is due to the fact that the greater part of the cost of the material is the compensation of the employees engaged in gathering the crude gum and is reported under the head of "wages." In most cases it is quite impossible to distinguish the cost of labor and other expenses connected with the gathering of the gum from those pertaining to the distillation process.

The decrease of 12.1 per cent in the number of establishments during the five-year period 1909–1914 may be attributed to two causes: First, the diminution in the supply of longleaf pine in turpentine-producing states; and second, the tendency of manufacturing to concentrate in large establishments.

The increase of 67.3 per cent in the capital invested may be ascribed to various causes, viz, the development of new territory; the installation of the more expensive "cup system" of gathering the gum, in place of the less efficient "box system"; an advance in prices paid for turpentine rights; and also, in some instances, the seeming inability of the operators to segregate the value of the land from the value of the turpentine privileges.

The decrease of 17 per cent in value of products between 1909 and 1914 was due in part to diminished production and in part to a decrease in unit values.

During the period 1909–1914 the production of spirits of turpentine declined by more than 2,000,000 gallons, or 6.9 per cent, and that of rosin by 378,780 barrels, or 11.6 per cent; and this decrease in output was accompanied by a drop in the average price of the former product from 43.65 cents to 38.95 cents per gallon and in the average price of the latter from $3.85 to $3.58 per barrel.

Summary, by states.—Table 2 summarizes the more important statistics of the industry by states, the states being arranged according to the value of products reported for 1914.

Table 2

STATE.	CENSUS OF 1914.													PER CENT OF INCREASE.[1]								
	Number of establishments.	Wage earners.				Value of products.				Value added by manufacture.				Wage earners (average number).			Value of products.			Value added by manufacture.		
		Average number.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	Amount.	Per cent distribution.	Rank. 1914	Rank. 1909	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904	1909–1914	1904–1909	1899–1904
United States	1,394	34,817	100.0	....	....	$20,990,191	100.0	....	....	$15,454,630	100.0	....	....	−11.9	18.4	−20.3	−17.0	5.7	17.7	−24.2	1.1	42.4
Florida	508	15,466	44.4	1	1	9,573,083	45.6	1	1	6,989,518	45.2	1	1	−14.8	16.7	3.1	−19.8	20.6	53.0	−29.9	8.6	74.9
Georgia	562	9,118	26.2	2	2	4,607,590	22.0	2	2	3,434,960	22.2	2	2	−28.7	9.0	−38.9	−33.6	−10.0	−5.0	−39.5	−13.3	12.6
Alabama	160	3,411	9.8	3	3	2,047,132	9.8	3	3	1,525,946	9.9	3	3	−3.1	20.6	−21.4	−17.2	1.6	19.7	−23.2	3.3	39.0
Mississippi	61	3,275	9.4	4	4	1,997,139	9.5	4	4	1,416,960	9.2	5	4	27.3	−2.3	15.1	35.4	−37.7	33.5	25.9	−42.9	83.4
Louisiana	27	2,472	7.1	5	5	1,858,391	8.8	5	5	1,434,041	9.3	4	5	46.4	615.3	−21.9	58.3	453.8	84.3	41.3	480.6	113.4
Texas	6	809	2.3	6	7	608,374	2.9	6	8	510,098	3.3	6	8	269.4	.....	.....	179.3	.....	.....	189.9	.....	.....
South Carolina	35	221	0.6	7	6	151,801	0.7	7	7	94,700	0.6	7	6	−50.1	162.1	−80.9	−62.6	−29.3	−27.2	−60.9	21.0	−36.9
North Carolina	35	45	0.1	8	8	146,681	0.7	8	6	48,407	0.3	8	7	−67.6	−6.1	−63.0	−78.2	−9.3	−29.6	−74.7	15.8	−30.7

[1] Percentages are based on figures in Table 14; a minus sign (−) denotes decrease.

In 1849 the industry was largely confined to the eastern part of North Carolina, which continued to be the leading state until 1879 when it was outranked by South Carolina. In 1889 and 1899 Georgia led in value of products, but at the last three censuses Florida has ranked first and Georgia second, while North Carolina in 1914 ranked eighth, producing less than 1 per cent of the total in value of products.

The value added by manufacture forms a much larger proportion of the value of products in this than in most industries, as the greater part of the cost of the raw material is reported as wages.

Persons engaged in the industry.—Table 3 shows, for 1914 and 1909, the number of persons engaged in the industry, distributed by sex, the average number of wage earners being distributed also by age. The sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the "Explanation of terms." Table 4 gives, for the several classes of persons engaged in the industry, the percentages of increase from 1909 to 1914, and the per cent distribution at the two censuses.

Table 3

CLASS.	Census year.	PERSONS ENGAGED IN THE INDUSTRY. Total.	Male.	Female.	Per cent of total. Male.	Female.
All classes	1914	38,294	38,198	96	99.7	0.3
	1909	44,524	44,426	98	99.8	0.2
Proprietors and officials	1914	2,926	2,906	20	99.3	0.7
	1909	3,713	3,683	30	99.2	0.8
Proprietors and firm members	1914	1,621	1,601	20	98.8	1.2
	1909	2,567	2,537	30	98.8	1.2
Salaried officers of corporations	1914	117	117	.....	100.0	.....
	1909	86	86	.....	100.0	.....
Superintendents and managers	1914	1,188	1,188	.....	100.0	.....
	1909	1,060	1,060	.....	100.0	.....
Clerks and other subordinate salaried employees.	1914	551	543	8	98.5	1.5
	1909	1,300	1,296	4	99.7	0.3
Wage earners (average number)	1914	34,817	34,749	68	99.8	0.2
	1909	39,511	39,447	64	99.8	0.2
16 years of age and over	1914	34,358	34,293	65	99.8	0.2
	1909	38,918	38,861	57	99.9	0.1
Under 16 years of age	1914	459	456	3	99.3	0.7
	1909	593	586	7	98.8	1.2

Table 4

CLASS.	PERSONS ENGAGED IN THE INDUSTRY. Per cent of increase,[1] 1909–1914. Total.	Male.	Female.	Per cent distribution. Total. 1914	Total. 1909	Male. 1914	Male. 1909	Female. 1914	Female. 1909
All classes	−14.0	−14.0	.....	100.0	100.0	100.0	100.0	100.0	100.0
Proprietors and officials	−21.2	−21.1	.....	7.6	8.3	7.6	8.3	20.8	30.6
Proprietors and firm members	−36.9	−36.9	.....	4.2	5.8	4.2	5.7	20.8	30.6
Salaried officers of corporations	.....	.....	.....	0.3	0.2	0.3	0.2	.....	.....
Superintendents and managers	12.1	12.1	.....	3.1	2.4	3.1	2.4	.....	.....
Clerks and other subordinate salaried employees	−57.6	−58.1	.....	1.4	2.9	1.4	2.9	8.3	4.1
Wage earners (average number)	−11.9	−11.9	.....	90.9	88.7	91.0	88.8	70.8	65.3
16 years of age and over	−11.7	−11.8	.....	89.7	87.4	89.8	87.5	67.7	58.2
Under 16 years of age	−22.6	−22.2	.....	1.2	1.3	1.2	1.3	3.1	7.1

[1] A minus sign (−) denotes decrease; percentages are omitted where base is less than 100.

In 1914, of the total number of persons engaged in the industry, 90.9 per cent were wage earners, 7.6 per cent were proprietors and officials, and 1.4 per cent were clerks and other subordinate salaried employees. Only 96 females were engaged in the industry and of these 20 were proprietors and firm members. There were 459 wage earners under 16 years of age, or 1.2 per cent of the total.

The only classes which show increases for the five-year period are salaried officers of corporations and superintendents and managers. The employment of child labor shows a marked decline, the decrease in wage earners under 16 being relatively nearly twice as great as that in wage earners 16 years of age and over.

Wage earners employed, by months.—The following table gives for the industry the total number of wage earners employed on the 15th of each month, or the nearest representative day, for 1914 and 1909, and the average number employed each month in 1904, together with the percentage which the number reported for each month forms of the maximum number reported for any month.

Table 5

MONTH.	WAGE EARNERS IN THE INDUSTRY.					
	Number.[1]			Per cent of maximum.		
	1914	1909	1904	1914	1909	1904
January	33,717	37,112	27,515	89.3	91.3	72.9
February	33,984	37,340	28,084	90.0	91.9	74.4
March	35,759	39,489	33,266	94.7	97.2	88.1
April	37,408	39,974	35,955	99.0	98.4	95.2
May	37,767	40,378	37,415	100.0	99.4	99.1
June	37,647	40,555	37,761	99.7	99.8	100.0
July	37,579	40,634	36,799	99.5	100.0	97.5
August	35,747	40,583	35,401	94.7	99.9	93.8
September	34,031	40,378	34,566	90.1	99.4	91.5
October	32,608	39,749	33,544	86.3	97.8	88.8
November	31,150	39,597	32,196	82.5	97.4	85.3
December	30,407	39,343	28,082	80.5	96.8	74.4

[1] The figures for 1914 and 1909 represent the number employed on the 15th of each month, or the nearest representative day; those for 1904, the average number employed during the month.

Table 6 gives the total average number of wage earners employed during 1914, together with the total number employed on the 15th of each month, or the nearest representative day, for the United States as a whole and for each of the eight states.

Table 6

WAGE EARNERS: 1914.
[Month of maximum employment for each state is indicated by **boldface** figures and that of minimum by *italic* figures.]

STATE.	Average number employed during year.	Number employed on 15th day of the month or nearest representative day.												Per cent minimum is of maximum.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
United States	34,817	33,717	33,984	35,759	37,408	**37,767**	37,647	37,579	35,747	34,031	32,608	31,150	*30,407*	80.5
Alabama	3,411	2,979	3,003	3,501	3,751	3,773	3,798	3,815	3,658	3,543	3,314	2,998	*2,799*	73.4
Florida	15,466	15,412	15,502	16,102	16,651	16,926	**16,988**	16,726	15,741	14,523	14,178	13,554	*13,289*	78.2
Georgia	9,118	8,625	8,814	9,345	10,015	10,116	9,884	10,032	9,322	9,070	8,424	8,055	*7,714*	76.3
Louisiana	2,472	2,512	2,511	2,506	2,571	2,454	2,445	2,446	2,488	2,450	*2,401*	2,402	2,478	93.4
Mississippi	3,275	*3,165*	3,189	3,246	3,302	3,312	3,362	3,372	3,351	3,310	3,275	3,216	3,200	93.9
North Carolina	45	27	*26*	44	65	65	65	63	63	34	32	30	*108*	40.0
South Carolina	221	135	145	230	283	303	279	275	262	244	226	162	*731*	35.6
Texas	809	862	794	803	791	818	826	848	862	828	756	*731*	789	84.8

The work done by wage earners in the turpentine and rosin industry is distributed as follows: Cutting boxes and hanging cups during the winter months, chipping and dipping in the spring and summer, and scraping and raking in the fall. The greatest number of wage earners are employed during the chipping and dipping season, a somewhat augmented force being required at that time to transport the gum, operate the distilleries, and handle the products. Taking the industry as a whole, the largest number employed during any month of 1914 was 37,767, in May, and the smallest was 30,407, in December, the minimum forming 80.5 per cent of the maximum. The variation was thus considerably greater than in 1909, when the minimum number represented 91.3 per cent of the maximum, but was materially less than in 1904, for which year the corresponding percentage was only 72.9.

Among the states having over 2,000 wage earners, the greatest fluctuation in 1914 is shown for Alabama, in which the minimum month represented only 73.4 per cent of the maximum, and the smallest for Mississippi, in which the corresponding percentage was 93.9.

Prevailing hours of labor.—In Table 7 the average number of wage earners reported for 1914 and 1909, for the industry, have been classified according to the number of hours of labor per week prevailing in the establishment in which they were employed. In this industry, however, in which the piecework system of wage payments is in very general use and the woodsmen usually work irregular hours, a classification on this basis is of doubtful significance.

The figures in this table for the entire industry indicate a tendency toward a shortening of the working day of the wage earner. In 1914, 16,859 or 48.4 per cent of the wage earners were employed in establishments where 60 hours or more per week were the prevailing hours of labor as compared with 20,776, or 52.6 per cent in 1909. The largest number of wage earners in Alabama, Louisiana, Mississippi, and South Carolina were employed in establishments where the prevailing hours of labor were 48 hours or less per week, while for the industry as a whole, and for the 4 remaining states, the prevailing hours were 60 per week.

Table 7

STATE.	Census year.	WAGE EARNERS. Total.	Average number in establishments where the prevailing hours of labor per week were— 48 and under.	Between 48 and 54.	54	Between 54 and 60.	60	Between 60 and 72.	72	Over 72.
United States	1914	34,817	13,680	2,770	728	780	15,995	713	151	.....
	1909	39,511	14,786	2,647	1,022	280	19,607	997	172	.....
Alabama	1914	3,411	2,027	144	152	40	919	82	47	.....
	1909	3,519	1,243	187	248	24	1,393	359	65	.....
Florida	1914	15,466	5,883	1,155	476	255	7,294	387	16	.....
	1909	18,143	8,344	1,983	635	147	6,859	149	26	.....
Georgia	1914	9,118	2,953	868	90	419	4,700	.....	88	.....
	1909	12,787	2,764	428	139	109	9,032	241	74	.....
Louisiana	1914	2,472	1,187	170	.....	.....	948	167	.....	.....
	1909	1,688	262	.....	.....	.....	1,277	149	.....	.....
Mississippi	1914	3,275	1,494	405	9	50	1,240	77	.....	.....
	1909	2,573	1,830	24	.....	.....	621	98	.....	.....
North Carolina	1914	45	9	8	1	.....	27	.....	.....	.....
	1909	139	69	2	.....	.....	60	1	7	.....
South Carolina	1914	221	127	20	.....	16	58	.....	.....	.....
	1909	443	174	23	.....	.....	246	.....	.....	.....
Texas	1914	809	.....	.....	.....	.....	809	.....	.....	.....
	1909	219	100	.....	.....	.....	119	.....	.....	.....

Character of ownership.—Table 8 presents statistics concerning the character of ownership, or legal organization, of establishments in the industry, for 1914 and 1909, and for 1914 for the eight states.

Table 8

STATE.	Number of establishments owned by— Individuals.	Corporations.	All others.	Average number of wage earners. Total.	In establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.	Value of products. Total.	Of establishments owned by— Individuals.	Corporations.	All others.	Per cent of total. Individuals.	Corporations.	All others.
United States:																	
1914	552	221	621	34,817	8,571	12,812	13,434	24.6	37.0	38.4	$20,990,191	$4,731,386	$8,402,036	$7,856,769	22.5	40.3	37.2
1909	599	196	790	39,511	11,022	9,130	19,359	27.9	23.1	49.0	25,295,017	6,966,127	6,144,056	12,184,834	27.5	24.3	48.1
Alabama	74	24	62	3,411	1,175	881	1,355	34.4	25.8	39.7	2,047,132	642,881	546,710	857,541	31.4	26.7	41.9
Florida	153	100	255	15,466	3,425	5,292	6,749	22.1	34.2	43.6	9,573,083	1,961,374	3,588,009	4,023,700	20.5	37.5	42.0
Georgia	254	42	266	9,118	3,449	835	4,834	37.8	9.2	53.0	4,607,590	1,694,126	447,636	2,465,828	36.8	9.7	53.5
Louisiana	4	17	6	2,472	80	2,293	99	3.2	92.8	4.0	1,858,391	66,099	1,709,584	82,708	3.6	92.0	4.4
Mississippi	16	30	15	3,275	233	2,770	272	7.1	84.6	8.3	1,997,139	155,842	1,552,057	289,240	7.8	77.7	14.5
North Carolina	25	2	8	45	29	.....	[1] 16	64.4	.....	[1] 35.6	146,681	107,934	.....	[1] 38,747	73.6	.....	[1] 26.4
South Carolina	26	2	7	221	180	.....	[1] 41	81.4	.....	[1] 18.6	151,801	103,130	.....	[1] 48,671	67.9	.....	[1] 32.1
Texas	.....	4	2	809	.....	[2] 809	.....	.....	[2] 100.0	.....	608,374	.....	[2] 608,374	.....	.....	[2] 100.00	.....

[1] Includes "corporations."

[2] Includes "all others."

In 1914 the greatest proportion of the establishments and of the number of wage earners employed—44.7 and 38.4 per cent, respectively—are shown for those under "all other" ownership, which is composed of limited partnerships and firms; but for value of products those owned by corporations predominate. In 1909, establishments operated by firms predominated in all three items, forming 49.8 per cent, 49 per cent, and 48.1 per cent, respectively, of the totals. For the states, individual ownership predominated in the Carolinas in all items; corporations in Louisiana, Mississippi, and Texas; and "all other" or firms in Alabama, Florida, and Georgia.

Size of establishments.—The tendency of the industry to become concentrated in large establishments, or the reverse, is indicated by the statistics given in Table 9.

Of the 20 establishments which for 1914 reported products valued at more than $100,000 each, 1 was located in Alabama, 7 in Florida, 7 in Louisiana, 4 in Mississippi, and 1 in Texas. The greatest output was reported by the plant in Texas.

Table 9

VALUE OF PRODUCT.	Census year.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
All classes	1914	1,394	34,817	$20,990,191	$15,454,630
	1909	1,585	39,511	25,295,017	20,384,179
Less than $5,000	1914	357	2,370	1,076,043	730,684
	1909	249	1,409	775,812	530,619
$5,000 to $20,000	1914	800	15,987	8,494,419	6,152,268
	1909	971	19,261	11,216,577	8,933,708
$20,000 to $100,000	1914	217	11,232	7,888,112	5,933,919
	1909	355	16,412	11,618,484	9,594,332
$100,000 to $1,000,000	1914	20	5,228	3,531,617	2,637,759
	1909	10	2,429	1,684,144	1,325,520
Per cent distribution:					
Less than $5,000	1914	25.6	6.8	5.1	4.7
	1909	15.7	3.6	3.1	2.6
$5,000 to $20,000	1914	57.4	45.9	40.5	39.8
	1909	61.3	48.7	44.3	43.8
$20,000 to $100,000	1914	15.6	32.3	37.6	38.4
	1909	22.4	41.5	45.9	47.1
$100,000 to $1,000,000	1914	1.4	15.0	16.8	17.1
	1909	0.6	6.1	6.7	6.5

It is noteworthy that both this group of large establishments and the group comprising the smallest

ones—those having products valued at less than $5,000—show marked increases for the period 1909–1914 in number of establishments, average number of wage earners, value of products, and value added by manufacture, while decreases in all these respects appear for the other two groups and for the entire industry.

Table 10 shows the size of establishments in 1914 and 1909, as measured by number of wage earners employed for the industry as a whole, and for the eight states.

Table 10

STATE.	Census year.	TOTAL.		ESTABLISHMENTS EMPLOYING—															
				No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.	
		Establishments.	Wage earners (average number).	Establishments.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.	Establishments.	Wage earners.
United States	1914	1,394	34,817	21	218	629	631	8,569	419	13,499	77	5,561	20	3,263	7	2,557	1	739
	1909	1,585	39,511	19	194	468	655	9,430	603	19,245	88	5,673	23	3,487	2	553	1	655
Alabama	1914	160	3,411	4	33	101	57	771	59	1,964	7	575	.....	.....	.....	.....	.....	.....
	1909	175	3,519	2	29	92	81	1,147	57	1,824	5	306	1	150	.....	.....	.....	.....
Florida	1914	508	15,466	1	32	119	203	2,885	214	7,025	48	3,448	8	1,313	2	676	.....	.....
	1909	593	18,143	10	18	67	198	3,047	298	9,644	57	3,603	12	1,782	.....	.....	.....	.....
Georgia	1914	562	9,118	6	83	265	344	4,580	118	3,481	11	792	.....	.....	.....	.....	.....	.....
	1909	592	12,787	2	35	134	319	4,515	214	6,620	21	1,414	1	104	.....	.....	.....	.....
Louisiana	1914	27	2,472	.....	2	5	4	46	8	222	4	292	7	1,176	2	731	.....	.....
	1909	23	1,688	.....	.....	.....	7	108	9	371	1	86	5	823	1	300	.....	.....
Mississippi	1914	61	3,275	2	21	59	9	138	16	647	7	454	3	488	2	750	1	739
	1909	64	2,573	2	9	13	27	375	18	591	3	164	3	522	1	253	1	655
North Carolina	1914	35	45	6	28	39	1	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	1909	79	139	.....	76	112	3	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Carolina	1914	35	221	2	19	41	13	143	1	37	.....	.....	.....	.....	.....	.....	.....	.....
	1909	56	443	3	27	50	19	198	7	195	.....	.....	.....	.....	.....	.....	.....	.....
Texas	1914	6	809	.....	.....	.....	.....	.....	3	123	.....	.....	2	286	1	400	.....	.....
	1909	3	219	.....	.....	.....	1	13	.....	.....	1	100	1	106	.....	.....	.....	.....

There were 21 establishments for which no wage earners were shown. These are small concerns where the work is done by the proprietors or firm members, or where the number employed was so small, and the time of employment so short that in computing the average, as described in the "Explanation of terms," the number was less than one person and the establishment was classed as having "no wage earners." The large establishments, those employing over 100 wage earners, formed 2 per cent of the total, but gave employment to 6,559, or 18.8 per cent of the total wage earners employed. A majority of the establishments (1,050, or 75.3 per cent) employed from 6 to 50 wage earners, and the wage earners in this group formed 63.4 per cent of the total number employed, compared with 72.6 per cent in 1909. In the individual states this is true also, with the exception of the Carolinas, where the greatest proportion of establishments employed from 1 to 5 wage earners.

Engines and power.—Table 11 shows, for 1914, 1909, and 1904, the number and horsepower of engines and motors employed in generating power.

Table 11

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.					
				Amount.			Per cent distribution.		
	1914	1909	1904	1914	1909	1904	1914	1909	1904
Primary power, total	522	1,214	176	2,478	[1] 4,129	1,175	100.0	100.0	100.0
Owned	522	1,214	176	2,478	4,122	1,175	100.0	99.8	100.0
Steam engines and turbines	325	1,152	175	1,669	3,877	1,172	67.4	93.9	99.7
Internal-combustion engines	193	58	.....	789	231	.....	31.8	5.6	.....
Water wheels, turbines, and motors	4	4	1	20	14	3	0.8	0.3	0.3

[1] Includes seven horsepower of rented power other than electric.

Little mechanical power is required for this industry, many establishments reporting none. The total primary power increased by 2,954 horsepower, or more than 250 per cent, between 1904 and 1909, but decreased during the next five-year period by 1,651 horsepower, or 40 per cent. Practically all the power is derived from steam engines and turbines and internal-combustion engines, the horsepower of the latter representing nearly one-third of the total in 1914, as against less than 6 per cent in 1909.

Fuel.—The principal fuel used is wood, chiefly waste timber, the quantity of which was not reported. The only class of fuel reported was oil, of which 783 barrels were consumed. All the turpentine states except Texas and South Carolina reported this variety of fuel.

SPECIAL STATISTICS AS TO MATERIALS, PRODUCTS, AND CROPS.

Materials and products.—Table 12 presents, by states, for 1914 and 1909, statistics in regard to the quantity of materials consumed and the quantity and value of products.

Table 12

STATE.	Census year.	Number of establishments.	MATERIALS USED. Crude gum distilled. Dip (barrels).[2]	Crude gum distilled. Scrape (barrels).[2]	Dip and scrape purchased[3] (barrels).	PRODUCTS.[1] Total value.	Spirits of turpentine. Gallons.	Spirits of turpentine. Value.	Rosin. Barrels (280 pounds).	Rosin. Value.	Dross and all other products, value.
United States	1914	1,394	2,194,532	902,477	83,666	$20,990,191	26,980,981	$10,509,527	2,885,077	$10,329,410	$151,254
	1909	1,585	2,376,903	1,099,789	180,119	25,295,017	28,988,954	12,654,228	3,263,857	12,576,721	64,068
Alabama	1914	160	227,695	110,629	9,791	2,047,132	2,721,777	1,053,133	294,820	985,966	8,033
	1909	175	236,279	121,286	13,324	2,471,999	2,840,242	1,253,737	309,763	1,214,054	4,208
Florida	1914	508	975,535	427,484	6,937	9,573,083	12,363,232	4,820,679	1,310,307	4,695,561	56,843
	1909	593	1,112,195	513,924	2,614	11,937,518	13,809,785	5,847,478	1,555,749	6,057,524	32,516
Georgia	1914	562	512,360	178,761	12,717	4,607,590	6,228,041	2,489,145	621,306	2,068,218	50,227
	1909	592	656,736	295,225	13,608	6,938,957	8,056,752	3,556,965	904,103	3,371,676	10,316
Louisiana	1914	27	175,908	74,181	1,046	1,858,391	2,252,118	835,509	269,274	1,006,279	16,603
	1909	23	90,224	43,164	.....	1,173,848	1,231,254	592,641	139,486	573,306	7,901
Mississippi	1914	61	207,876	73,333	12,969	1,997,139	2,385,054	905,747	275,205	1,081,040	10,352
	1909	64	127,102	62,253	6,669	1,474,629	1,588,786	732,334	192,508	739,799	2,496
North Carolina	1914	35	24,964	10,037	27,945	146,681	182,378	70,843	23,641	70,804	5,034
	1909	79	101,188	36,237	122,631	673,954	781,197	369,587	83,070	304,232	135
South Carolina	1914	35	20,034	7,697	12,261	151,801	201,221	78,233	16,169	72,377	1,191
	1909	56	37,479	21,900	21,273	406,286	460,186	205,517	51,401	199,273	1,496
Texas	1914	6	50,160	20,355	.....	608,374	647,160	256,238	74,355	349,165	2,971
	1909	3	15,700	5,800	.....	217,826	220,752	95,969	27,777	116,857	5,000

[1] In addition, in 1914, 92,401 gallons of spirits of turpentine, valued at $36,617, and 8,027 barrels of rosin, valued at $44,734, were reported by establishments assigned to lumber and timber products, and 575,557 gallons of spirits of turpentine, valued at $194,183, and 51,825 barrels of rosin, valued at $198,165, were reported by establishments engaged in the distillation of wood. In 1909, 18,310 gallons of spirits of turpentine, valued at $7,482, were reported by lumber manufactures, and 706,868 gallons, valued at $249,526, by wood distillation.

[2] The barrel in 1914 has been reduced to an estimated weight of 500 pounds each for dip, and of 300 pounds for scrape. The weights reported ranged from 250 to 550 pounds and 180 to 500 pounds, respectively. In 1909, the weight per barrel ranged from 280 to 600 pounds for dip, and from 200 to 400 for scrape. All the establishments did not report the weight per barrel and no attempt was made to reduce them to a uniform weight.

[3] Included in the totals for crude gum distilled.

Including the production of turpentine and rosin by establishments assigned to the lumber and timber and the wood-distillation industries, the total output of these products in 1914 was valued at $21,463,890 and comprised 27,648,939 gallons of spirits of turpentine, valued at $10,740,327; 2,944,929 barrels of rosin, valued at $10,572,309; and dross and other products to the value of $151,254. The average values of the spirits of turpentine distilled from the gum were 39 cents per gallon in 1914, 44 cents in 1909, and 49 cents in 1904; the turpentine product of wood distillation shows somewhat lower averages, namely, 34 cents in 1914, 35 cents in 1909, and 40 cents in 1904.

The decrease in production for the five-year period 1909 to 1914 was shared by five of the eight turpentine-producing states, viz, Alabama, Florida, Georgia North Carolina, and South Carolina; while Louisiana, Mississippi, and Texas show marked gains. In Louisiana the increase amounted to 58.3 per cent in value of products, 82.9 per cent in quantity of spirits of turpentine, and 93 per cent in quantity of rosin; in Mississippi, to 35.4 per cent, 50.1 per cent, and 43 per cent, respectively, and in Texas, to 170.9 per cent, 193.2 per cent, and 167.7 per cent, respectively. Texas thus shows the largest percentage of gain; but the greatest amount of increase in value of products appears for Louisiana and the next greatest for Mississippi.

Equipment and methods of operation.—Two systems of extracting the gum from the trees are in use—the "box system" and the "cup system." The essential feature of the box system is a box or cavity, cut into the base of the tree by means of a long-bladed ax to receive the liquid gum, which is called "dip." This operation is followed by "chipping," which is the wounding or scarifying of the trunk of the tree directly above the box, a strip of bark and sapwood about three-fourths of an inch wide and from one-half to 1 inch deep being removed. The stroke with the "hach," a specially constructed tool for this use, is made from either side diagonally downward, terminating in the center and immediately above the box. An exposed surface the width of the box is thus created, which is termed a "face." A season's chipping extends the face of the tree upward a distance of about 24 inches. The dip is transferred from the box by the use of a flat, trowel-shaped instrument called a "dipper."

The cup system, now most generally used, differs from the box system principally in the substitution of a clay or metal cup for the cut-in box, the gum being conveyed into the cup by means of metal gutters inserted into the tree and leading diagonally downward. The chipping of the tree begins above the cup, and continues upward in the same manner as when the box system is used. After the chipping has extended up the tree for a distance, the cup and gutters may be raised, thus avoiding much waste by evaporation. Its chief advantage over the box system is that it causes less damage to the vitality and stability of the trees and secures a greater yield and a better quality of crude gum.

The gum which hardens on the tree is gathered by the use of a "scraper." Because of evaporation,

"scrape" produces less spirits and more rosin than dip. The methods of operations are more fully described in the reports for the census of 1909. (Thirteenth Census of the United States, 1910, Vol. 10, Manufactures, page 686.)

Timber which is undergoing its first period of working is termed "round timber." After it has been worked four or five years it is allowed to rest for a number of years—generally about four—during which time the wounds heal and its vitality is restored, so that it is in condition to furnish another yield of gum. Timber which, after such a rest, is again being worked, is called "back-boxed timber" (the expression, which refers to the cutting of new boxes, having originated when the box system was the only one employed).

The unit of measure in turpentine operations is the "crop," which consists of 10,500 boxes or cups.

Table 13 shows, by states, for 1914 and 1909, the total number and age of the crops worked, the system used in working them, and the number worked in "round" and in "back-boxed" timber, together with the per cent distribution, by systems, of the total number of crops.

Table 13

SYSTEM EMPLOYED AND NUMBER OF CROPS.

	UNITED STATES.		ALABAMA.		FLORIDA.		GEORGIA.		LOUISIANA.		MISSISSIPPI.		NORTH CAROLINA.		SOUTH CAROLINA.		TEXAS.	
	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909	1914	1909
Number of crops worked, total	18,166	20,158	1,693	1,945	8,950	9,923	5,044	6,178	943	633	1,138	1,053	39	62	125	271	234	93
By cup system	11,813	2,383	1,410	309	5,627	1,114	2,548	457	903	278	1,121	182	.....	2	16	.....	188	41
By box system	6,353	17,775	283	1,636	3,323	8,809	2,496	5,721	40	355	17	871	39	60	109	271	46	52
Per cent distribution:																		
By cup system	65.0	11.8	83.3	15.9	62.9	11.2	50.5	7.4	95.8	43.9	98.5	17.3	.....	3.2	12.8	.....	80.3	44.1
By box system	35.0	88.2	16.7	84.1	37.1	88.8	49.5	92.6	4.2	56.1	1.5	82.7	100.0	96.8	87.2	100.0	19.7	55.9
Virgin (first year), total	3,190	3,860	266	468	1,431	1,700	810	1,146	307	206	279	271	2	6	5	42	90	21
By cup system	2,369	802	250	131	1,025	326	444	120	301	116	275	90	.....	.....	.....	.....	74	19
By box system	821	3,058	16	337	406	1,374	366	1,026	6	90	4	181	2	6	5	42	16	2
Yearling (second year), total	4,666	4,327	460	504	1,978	1,906	1,327	1,283	347	212	402	301	.....	16	40	41	112	64
By cup system	3,287	661	408	84	1,348	313	706	101	339	99	398	49	.....	1	6	.....	82	14
By box system	1,379	3,666	52	420	630	1,593	621	1,182	8	113	4	252	.....	15	34	41	30	50
Third year, total	5,260	4,977	653	494	2,430	2,275	1,546	1,621	211	160	344	328	2	4	42	91	32	4
By cup system	3,625	528	556	71	1,696	210	796	139	199	63	337	40	.....	1	9	.....	32	4
By box system	1,635	4,449	97	423	734	2,065	750	1,482	12	97	7	288	2	3	33	91	.....	.....
Fourth year and older, total	5,050	6,994	314	479	3,111	4,042	1,361	2,128	78	55	113	153	35	36	38	97	.....	4
By cup system	2,532	392	196	23	1,558	265	602	97	64	.....	111	3	.....	.....	1	.....	.....	4
By box system	2,518	6,602	118	456	1,553	3,777	759	2,031	14	55	2	150	35	36	37	97	.....	.....
In round timber, total	9,852	13,363	1,100	1,667	5,747	8,435	995	1,461	743	617	934	995	15	19	84	76	234	93
By cup system	6,440	1,572	867	260	3,220	727	532	100	708	278	917	164	.....	2	8	.....	188	41
By box system	3,412	11,791	233	1,407	2,527	7,708	463	1,361	35	339	17	831	15	17	76	76	46	52
In back-boxed timber, total	8,314	6,795	593	278	3,203	1,488	4,049	4,717	200	16	204	58	24	43	41	195	.....	.....
By cup system	5,373	811	543	49	2,407	387	2,016	357	195	.....	204	18	.....	.....	8	.....	.....	.....
By box system	2,941	5,984	50	229	796	1,101	2,033	4,360	5	16	.....	40	24	43	33	195	.....	.....

The extent to which the cup system is supplanting the box system is strikingly brought out by the figures showing the per cent distribution for the two censuses. In 1909 only 11.8 per cent of the crops were worked by the cup system, but in 1914 the corresponding percentage had increased to 65. Among the states, the greatest proportions of the crops worked by this system in 1914 are shown in the returns from Mississippi and Louisiana, 98.5 per cent and 95.8 per cent, respectively.

GENERAL TABLES.

The principal statistics secured by the census inquiry concerning the turpentine and rosin industry are presented, by states, in Tables 14 and 15.

Table 14 shows, for 1914, 1909, and 1904, by states, the number of establishments, average number of wage earners, primary horsepower, wages, cost of materials, and value of products as reported for the turpentine and rosin industry.

Table 15 presents, for 1914, by states, the more detailed statistics of the industry.

TABLE 14.—COMPARATIVE SUMMARY, BY STATES, FOR 1914, 1909, AND 1904.

STATE.	Census year.	Number of establishments.	Wage earners (average number).	Primary horsepower.	Wages.	Cost of materials.	Value of products.
					Expressed in thousands.		
United States	1914	1,394	34,817	2,478	$8,583	$5,535	$20,990
	1909	1,585	39,511	4,129	9,363	4,911	25,295
	1904	1,287	33,382	1,175	8,383	3,775	23,937
Alabama	1914	160	3,411	164	850	521	2,047
	1909	175	3,519	384	906	486	2,472
	1904	144	2,919	151	745	511	2,434
Florida	1914	508	15,466	913	4,015	2,584	9,573
	1909	593	18,143	1,916	4,316	1,969	11,937
	1904	406	15,541	349	3,714	725	9,902
Georgia	1914	562	9,118	1,158	2,101	1,173	4,608
	1909	592	12,787	1,407	2,931	1,260	6,939
	1904	432	11,736	362	3,041	1,156	7,706
Louisiana	1914	27	2,472	79	689	424	1,858
	1909	23	1,688	105	420	158	1,174
	1904	15	236	.....	70	37	212
Mississippi	1914	61	3,275	108	$669	$580	$1,997
	1909	64	2,573	286	581	349	1,475
	1904	124	2,633	300	737	394	2,366
North Carolina	1914	35	45	33	10	98	147
	1909	79	139	19	28	483	674
	1904	87	148	4	39	578	743
South Carolina	1914	35	221	2	42	57	152
	1909	56	443	2	101	164	406
	1904	79	169	9	37	374	574
Texas	1914	6	809	21	207	98	608
	1909	3	219	10	80	42	218
	1904	.....	.....	.....	.....	.....	.....

TABLE 15.—DETAIL STATISTICS FOR THE TURPENTINE AND ROSIN INDUSTRY, BY STATES: 1914.

STATE.	Number of establishments.	Persons engaged in the industry.								Wage earners Dec. 15, or nearest representative day.					Capital.
		Total.	Proprietors, and firm members.	Salaried officers, superintendents, and managers.	Clerks, etc.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of— Maximum month.	Number, 15th day of— Minimum month.		Male.	Female.	Male.	Female.	
United States	1,394	38,294	1,621	1,305	543	8	34,817	My 37,767	De 30,407	36,504	35,955	68	478	3	$20,744,872
Alabama	160	3,760	214	99	34	2	3,411	Jy 3,815	De 2,799	3,636	3,599	.....	37	.....	1,038,681
Florida	508	16,975	674	565	269	1	15,466	Je 16,088	De 13,289	15,883	15,542	47	291	3	9,894,866
Georgia	562	10,166	569	422	55	2	9,118	My 10,116	De 7,714	9,998	9,933	1	64	.....	4,572,172
Louisiana	27	2,630	16	82	59	1	2,472	Ap 2,571	Oc 2,401	2,537	2,522	.....	15	.....	2,280,190
Mississippi	61	3,506	51	90	89	1	3,275	Jy 3,372	Ja 3,165	3,262	3,200	20	42	.....	2,273,186
North Carolina	35	96	47	2	1	1	45	My[1] 65	Mh[1] 26	65	64	.....	1	.....	66,246
South Carolina	35	281	45	14	1	.....	221	My 303	De 108	302	300	.....	2	.....	62,120
Texas	6	880	5	31	35	.....	809	Au[1] 862	No 731	821	795	.....	26	.....	557,411

STATE.	Expenses.								Value of products.	Value added by manufacture.	Power.			
	Salaries and wages.			For contract work.	Rent and taxes.		For materials.				Primary horsepower.			
	Officials.	Clerks, etc.	Wage earners.		Rent of factory.	Taxes, including internal revenue and corporation income.	Principal materials.	Fuel and rent of power.			Total.	Steam engines.	Internal-combustion engines.	Water wheels and motors.
United States	$1,077,569	$356,846	$8,582,970	$532,143	$15,630	$176,397	$5,431,509	$104,052	$20,990,191	$15,454,630	2,478	1,669	789	20
Alabama	77,046	18,477	850,201	11,592	1,103	7,577	516,511	4,675	2,047,132	1,525,946	164	114	50	.....
Florida	476,594	170,115	4,014,790	372,708	1,814	96,606	2,535,948	47,617	9,573,083	6,989,518	913	588	325	.....
Georgia	275,344	33,568	2,101,320	40,094	6,933	36,874	1,142,356	30,274	4,607,590	3,434,960	1,158	775	363	20
Louisiana	99,337	50,568	688,426	42,626	1,035	13,576	418,852	5,498	1,858,391	1,434,041	79	62	17	.....
Mississippi	99,880	53,145	669,323	60,436	3,870	17,898	569,403	10,776	1,997,139	1,416,960	108	96	12	.....
North Carolina	1,120	1,680	10,202	3,573	220	530	96,989	1,285	146,681	48,407	33	13	20	.....
South Carolina	6,895	960	41,429	465	655	513	55,340	1,761	151,801	94,700	2	.....	2	.....
Texas	40,453	28,333	207,279	649	.....	2,823	96,110	2,166	608,374	510,098	21	21	.....	.....

[1] Same number reported for one or more other months.