
THE WOOLEN INDUSTRY

WOOLEN, WORSTED, AND FELT GOODS AND WOOL HATS
CARPETS AND RUGS, OTHER THAN RAG
SHODDY
WOOL PULLING AND WOOL SCOURING

THE WOOLEN INDUSTRY.

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

GENERAL STATISTICS.

GENERAL SUMMARY.

Scope of the industry.—The industry designated “woolen, worsted, and felt goods, and wool hats” (referred to for brevity as “the woolen industry”) includes four classes of establishments distinguished on the basis of their primary products, as follows: (1) Those producing woolen goods, (2) those producing worsted goods, (3) those producing felt goods, and (4) those producing wool hats. Establishments engaged primarily in manufacturing carpets and rugs have been included in the woolen industry at previous censuses, but it was thought better in 1909 to present statistics for the manufacture of carpets and rugs as a separate industry. It has been possible in most cases, however, to revise the statistics for prior censuses by omitting the figures relating to the manufacture of carpets and rugs, so as to make them comparable with the statistics presented for 1909. The remanufacture of fiber from rags, tailor’s clippings, and all kinds of mill

waste, constituting the shoddy industry, is likewise treated as a separate industry.

It may be noted that the four branches of the woolen industry are coordinate—that is, no branch is engaged primarily in preparing materials for any other branch. Within the woolen goods and worsted goods branches, however, more particularly in the latter, there is duplication in the cost of materials and value of products by reason of the use of some of the products—principally yarn—of certain mills as materials for other mills.

In general, only the totals for the industry as a whole are shown in the tables of Volumes VIII and IX of the Thirteenth Census Reports, and it has been considered unnecessary to show separate figures for the four branches in compiling the majority of the tables of the present report.

Summary for the four branches of the industry: 1909.—Table 1 presents for 1909 a summary for the woolen industry as a whole and for each of its branches.

Table 1

THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS): 1909

	Total for the industry.	Establishments engaged primarily in manufacturing—				Per cent of total contributed by establishments engaged primarily in manufacturing—			
		Woolen goods.	Worsted goods.	Felt goods.	Wool hats.	Woolen goods.	Worsted goods.	Felt goods.	Wool hats.
Number of establishments.....	935	587	324	43	31	59.6	32.9	4.4	3.1
Persons engaged in the industry.....	175,176	54,771	114,422	3,856	2,127	31.3	65.3	2.2	1.2
Proprietors and firm members.....	732	480	197	19	36	65.6	26.0	2.6	4.0
Salaried employees.....	5,722	2,111	3,213	293	105	36.9	58.2	5.1	1.8
Wage earners (average number).....	168,722	52,180	111,012	3,544	1,986	30.9	65.8	2.1	1.2
Primary horsepower.....	362,209	132,830	215,453	11,405	2,521	36.7	59.5	3.1	0.7
Capital.....	\$430,578,574	\$120,320,070	\$295,057,923	\$12,724,833	\$2,475,748	27.9	68.5	3.0	0.6
Expenses.....	387,998,515	98,079,318	275,828,061	10,167,551	3,923,585	25.3	71.1	2.6	1.0
Services.....	82,523,776	25,897,653	53,186,618	2,326,151	1,113,354	31.4	64.5	2.8	1.3
Salaries.....	10,097,167	3,322,478	6,034,747	614,271	125,661	32.0	59.8	6.1	1.2
Wages.....	72,426,619	22,575,175	47,151,871	1,711,880	987,693	31.2	65.1	2.4	1.4
Materials.....	282,878,039	65,651,634	207,786,936	6,967,206	2,472,263	23.2	73.5	2.5	0.9
Miscellaneous.....	22,596,700	6,530,031	14,854,507	874,194	337,968	28.9	65.7	3.9	1.5
Value of products.....	435,978,558	107,118,858	312,624,663	11,852,626	4,382,411	24.6	71.7	2.7	1.0
Value added by manufacture (value of products less cost of materials).....	153,100,519	41,467,224	104,837,727	4,885,420	1,910,148	27.1	68.5	3.2	1.2

Of the 985 establishments reported for 1909 for the industry as a whole, 911, or 92.5 per cent, were woolen or worsted mills. Of the total value of products for the industry, these two classes of establishments together contributed \$419,743,521, or 96.3 per cent, a proportion, however, somewhat exaggerated by reason of the duplication above mentioned.

Of the total value of products for the industry as a whole, 71.7 per cent was reported from worsted mills, 24.6 per cent from woolen mills, 2.7 per cent from mills manufacturing felt goods, and 1 per cent from wool-hat factories. The worsted mills reported 65.8 per cent of the total number of wage earners, the woolen

mills 30.9 per cent, the felt goods establishments 2.1 per cent, and the establishments making wool hats 1.2 per cent.

The establishments in the industry as a whole in 1909 gave occupation to an average of 175,176 persons, of whom 168,722 were wage earners, and paid out \$82,523,776 in salaries and wages.

The cost of the materials used in these branches of the industry in 1909 was \$282,878,039, which was equal to 64.9 per cent of the total value of products (\$435,978,558), and the value added by manufacture (that is, the value of products less cost of materials) was \$153,100,519. Were it not for the duplication in the cost of materials,

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however, that item would represent a somewhat smaller proportion of the value of products.

Comparison with earlier censuses.—Table 2 summarizes the statistics of these four branches of the woolen industry for each census from 1869 to 1909, 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, the figures for that year should be reduced about 20 per cent. Variations from census to census in the relative amount of duplication involved may also affect the comparability of the figures for cost of materials and value of products.

Table 2

THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).

	Number or amount.						Per cent of increase. ¹					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
	Number of establishments.....	985	1,074	1,281	1,520	2,135	2,993	-23.1	-8.3	-16.2	-15.7	-28.8	-28.7
Persons engaged in the industry.....	175,176	152,306	135,504	(²)	(²)	(²)	29.3	15.0	12.4	.....	.....	.....
Proprietors and firm members.....	732	953	999	(²)	(²)	(²)	-26.7	-23.6	-4.1	.....	.....	.....
Salaried employees.....	5,722	4,593	3,808	(²)	(²)	(²)	50.3	24.6	20.6	.....	.....	.....
Wage earners (average number).....	168,722	146,755	130,697	125,535	112,301	92,973	29.1	15.0	12.3	4.1	(³)	(³)
Primary horsepower.....	362,209	288,969	244,825	187,953	129,597	108,910	47.9	25.3	18.0	30.3	45.1	.....
Capital.....	\$430,578,574	\$314,080,617	\$265,730,450	\$207,677,901	\$122,043,691	\$108,910,309	62.0	37.1	18.2	28.0	70.2	12.1
Expenses.....	387,998,515	285,893,406	220,894,992	199,156,253	139,156,253	108,910,309	75.6	35.7	29.4	10.9	.....	.....
Services.....	82,523,776	63,853,945	52,386,531	46,794,354	33,852,394	31,246,432	57.5	29.2	21.9	12.0	38.1	8.3
Salaries.....	10,097,157	6,780,654	5,574,097	(²)	(²)	(²)	81.1	48.9	21.7	.....	.....	.....
Wages.....	72,426,619	57,073,291	46,812,434	(²)	(²)	(²)	64.7	28.0	21.9	.....	.....	.....
Materials.....	282,878,039	204,613,142	153,930,498	138,589,082	130,175,723	110,740,799	83.8	38.2	32.9	11.1	6.5	17.6
Miscellaneous.....	22,596,700	17,426,319	14,578,053	13,892,822	(²)	(²)	55.0	29.7	19.5	.....	.....	.....
Value of products.....	435,978,558	319,347,570	243,798,133	222,757,318	206,292,884	177,495,689	75.2	36.5	28.4	11.7	8.0	16.2
Value added by manufacture (value of products less cost of materials).....	153,100,519	114,734,428	94,867,725	84,168,236	76,117,161	66,754,890	61.4	33.4	20.9	12.7	10.6	14.0

¹ A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.
² Comparable figures not available.
³ Figures not strictly comparable.

The value of products of the woolen industry in 1909 showed an increase of 145.6 per cent over the value in 1869. The number of establishments, however, decreased continuously from 2,993 in 1869 to 985 in 1909. The number of proprietors and firm members also declined from 999 in 1899 (the first census year for which figures are available) to 732 in 1909—a decrease of 26.7 per cent. These decreases are evidently due to the steadily increasing predominance of corporations in the industry and to the consolidation of establishments which has accompanied this movement. During the decade 1899-1909 there was an increase of 29.1 per cent in the number of wage earners employed, an increase of 54.7 per cent in the amount of wages paid, and an increase of 75.2 per

cent in the value of products. The growth of the industry, as measured by the increase in number of wage earners, primary horsepower, and value of products, was greater relatively during this decade than during any other covered by the table.

Comparative statistics for the woolen industry, including the manufacture of carpets and rugs.—At prior censuses, as already stated, the manufacture of carpets and rugs, for which wool forms the chief material, has been associated with the four branches shown in Table 1 as a part of the woolen industry. Table 3, which gives combined statistics for the woolen industry and the carpet and rug industry for each census from 1869 to 1909, is therefore presented for purposes of comparison.

Table 3

THE WOOLEN INDUSTRY AND THE CARPET AND RUG INDUSTRY COMBINED.

	Number or amount.						Per cent of increase. ¹					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
	Number of establishments.....	1,124	1,213	1,414	1,693	2,330	3,208	-20.5	-7.3	-14.2	-16.5	-27.3	-27.4
Persons engaged in the industry.....	209,882	186,699	164,713	(²)	(²)	(²)	27.4	12.4	13.3	.....	.....	.....
Proprietors and firm members.....	866	1,107	1,110	(²)	(²)	(²)	-22.0	-21.8	-0.3	.....	.....	.....
Salaried employees.....	6,987	5,616	4,495	(²)	(²)	(²)	55.4	24.4	24.9	.....	.....	.....
Wage earners (average number).....	202,029	179,976	159,108	154,271	132,672	105,071	27.0	12.3	13.1	(³)	(³)	(³)
Primary horsepower.....	400,762	322,914	271,565	210,642	140,058	121,451,059	47.6	24.1	18.0	28.9	50.4	.....
Capital.....	\$506,205,584	\$370,861,691	\$310,179,749	\$245,886,743	\$143,512,278	\$121,451,059	63.2	36.5	19.6	26.1	71.3	18.2
Expenses.....	450,309,625	343,124,430	262,878,371	241,253,720	140,058	121,451,059	71.3	31.2	30.5	9.0	.....	.....
Services.....	100,268,868	78,974,869	64,389,312	58,397,470	40,657,612	35,928,150	55.7	27.0	22.7	10.3	43.5	13.2
Salaries.....	12,308,199	8,177,845	6,455,495	(²)	(²)	(²)	90.6	50.5	26.7	.....	.....	.....
Wages.....	87,962,669	70,797,524	57,933,817	(²)	(²)	(²)	51.8	24.2	22.2	.....	.....	.....
Materials.....	322,441,043	242,561,096	181,159,127	167,233,987	149,160,600	124,318,792	78.0	32.9	33.9	8.3	12.1	20.0
Miscellaneous.....	27,599,714	21,588,465	17,329,932	15,622,263	(²)	(²)	50.3	27.8	24.6	10.9	.....	.....
Value of products.....	507,166,710	380,034,003	296,990,484	270,527,511	238,055,656	199,257,262	70.8	33.1	28.3	9.8	13.6	19.5
Value added by manufacture (value of products less cost of materials).....	184,725,667	138,372,907	115,831,357	103,293,524	88,925,086	74,938,470	59.5	33.5	19.5	12.1	16.2	18.7

¹ A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.
² Comparable figures not available.
³ Figures not strictly comparable.

Summary, by states.—Table 4 summarizes the more important statistics of the woolen industry as a whole, by states, the states being arranged according to the

value of products reported for 1909. Some states for which figures can not be shown separately ranked higher in certain items than some named in the table.

Table 4 THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. ¹											
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).			Value of products.			Value added by manufacture.		
				1909	1904			1909	1904			1909	1904	1899	1904	1899	1899	1904	1899	1904	1899	1904
		1909	1904	1909	1904	1909	1904	1909	1904	1909	1904	1909	1904	1909	1904	1909	1904	1909	1904	1909	1904	
United States.	985	168,722	100.0	.....	.....	\$435,978,558	100.0	.....	.....	\$153,100,519	100.0	.....	.....	29.1	15.0	12.3	75.2	36.5	28.4	61.4	33.4	20.9
Massachusetts....	183	53,873	31.9	1	1	141,966,882	32.6	1	1	53,990,551	35.3	1	1	43.3	22.3	17.2	91.7	42.9	34.1	86.5	47.8	26.2
Pennsylvania....	217	27,409	16.2	2	2	77,446,996	17.8	2	2	22,812,911	14.9	3	2	11.3	13.0	-1.5	58.8	38.5	14.7	31.1	22.1	7.4
Rhode Island....	88	24,924	14.8	3	3	74,600,240	17.1	3	3	23,574,804	15.4	2	3	.....	15.3	.....	.....	41.7	.....	.....	41.1	.....
New Jersey....	33	12,652	7.5	4	4	33,938,637	7.8	4	0	12,905,758	8.4	4	0	79.3	40.3	27.3	176.6	107.0	33.6	177.9	123.5	24.2
New York....	04	9,400	5.6	6	5	23,739,421	5.4	5	4	8,995,393	5.9	5	4	0.4	5.8	-5.1	50.4	21.9	23.4	26.7	2.7	23.4
Connecticut....	56	7,789	4.6	8	7	19,363,228	4.4	6	7	6,525,086	4.3	7	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maine....	65	8,754	5.2	7	6	18,490,120	4.2	7	5	7,128,523	4.6	6	5	.....	.....	22.2	.....	.....	31.1	.....	.....	23.8
New Hampshire....	39	9,486	5.6	5	8	16,730,652	3.8	8	8	5,635,532	3.7	8	8	.....	44.1	.....	.....	17.1	.....	.....	17.3	.....
Ohio....	20	2,560	1.5	9	10	7,690,149	1.8	9	10	3,074,120	2.0	9	10	107.9	44.7	43.7	172.1	114.4	26.9	168.5	112.0	26.6
Vermont....	17	2,294	1.4	10	9	4,496,903	1.0	10	9	1,617,902	1.0	10	9	.....	2.6	.....	-4.3	.....	.....	.....	.....	.....
Wisconsin....	33	1,046	0.6	12	12	2,229,708	0.5	11	11	853,851	0.6	11	11	-1.6	.....	.....	20.2	.....	.....	23.2	.....	.....
Tennessee....	21	1,654	1.0	11	11	1,802,311	0.4	12	13	676,578	0.4	13	12	1.3	16.9	-13.3	18.8	5.6	12.5	5.0	-11.3	18.4
Michigan....	15	554	0.3	17	18	1,571,304	0.4	13	14	708,525	0.5	12	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
Indiana....	11	776	0.5	14	13	1,569,965	0.4	14	12	514,282	0.3	15	13	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois....	9	499	0.3	19	20	1,314,100	0.3	15	19	540,944	0.3	14	18	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kentucky....	14	818	0.5	13	14	1,277,917	0.3	16	15	419,609	0.3	19	16	.....	-10.8	.....	.....	0.4	.....	.....	-15.7	.....
West Virginia....	13	599	0.4	16	22	1,224,247	0.3	17	22	429,688	0.3	17	22	.....	.....	.....	.....	.....	.....	.....	.....	.....
Virginia....	16	542	0.3	18	16	999,411	0.2	18	16	432,348	0.3	16	17	49.7	-16.5	79.3	59.1	-20.1	99.0	83.0	-11.8	107.6
Oregon....	8	469	0.3	20	19	928,654	0.2	19	18	401,881	0.3	20	15	-30.2	-17.1	-15.8	3.5	-19.2	15.1	-6.9	-25.3	24.5
Georgia....	7	660	0.4	15	17	870,520	0.2	20	23	427,788	0.3	18	23	17.6	2.0	15.3	77.4	32.8	33.6	102.8	84.5	10.0
Minnesota....	16	277	0.2	23	23	698,576	0.2	21	21	269,848	0.2	22	20	-7.7	-19.2	14.3	40.6	-11.6	59.2	20.0	-17.7	45.8
North Carolina....	11	424	0.2	21	23	675,265	0.2	22	25	283,296	0.2	21	26	105.8	23.6	66.5	132.8	21.4	91.7	.....	88.7	.....
California....	5	272	0.2	24	21	585,410	0.1	23	20	206,748	0.2	23	21	-36.7	.....	.....	-14.8	.....	.....	-4.3	.....	.....
Iowa....	8	134	0.1	26	25	349,569	0.1	25	24	121,701	0.1	25	24	-47.7	-45.5	-3.9	17.8	-38.9	92.9	.....	-41.3	70.5
All other states....	16	791	0.5	.....	.....	1,418,283	0.3	.....	.....	493,682	0.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Percentages are based on figures in Table 48. A minus sign (-) denotes decrease. Percentage not shown where base is less than \$100,000 for value added by manufacture, or where comparative figures can not be given without disclosing individual operations.

While the industry is largely concentrated in the New England and Middle Atlantic states, establishments were reported from 34 states of the Union. Massachusetts is by far the most important state in the industry, having reported in 1909, 32.6 per cent of the total value of products and 31.9 per cent of the total number of wage earners. Pennsylvania ranked second both in 1909 and in 1904 in number of wage earners and value of products; in 1909, however, it ranked below Rhode Island in value added by manufacture, whereas it ranked second in this respect in 1904. In 1909 Rhode Island ranked third in number of wage earners employed and in value of products.

Of the states for which the percentages of increase are given in the table, New Jersey shows the greatest relative increase in value of products for the decade (176.6 per cent), Ohio following with 172.1 per cent.

PERSONS ENGAGED IN THE INDUSTRY.

Summary: 1909.—Table 5 shows for 1909 the number of persons engaged in the industry as a whole and in the four branches, classified according to occupational status and sex, and in the case of wage earners according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in the industry as a whole during 1909 was 175,176, of whom 168,722, or 96.3 per cent, were wage earners, 3,192, or 1.8 per cent, proprietors and officials, and 3,262, or 1.9 per cent, clerks, this class including other subordinate salaried employees. Of the total number of persons engaged in the industry, 99,307, or 56.7 per cent, were males, and 75,869, or 43.3 per cent, females. The average number of children employed as wage earners was 9,576, or 5.7 per cent of all the wage earners reported for the industry.

In the woolen mills, 35.8 per cent of the wage earners were females and 3.3 per cent children of both sexes; in the worsted mills, 49.6 per cent were females and 7 per cent children; in the felt goods factories, 20.8 per cent were females and eight-tenths of 1 per cent children; and in the wool hat factories 27.7 per cent were females and 1.6 per cent children.

The average number of wage earners in each state for 1909, 1904, and 1899 is given in Table 48. The average number distributed by sex and age is not shown for the individual states, but Table 49 gives such a distribution for the number employed on December 15, 1909, or the nearest representative day. Of the female wage earners, the largest number, 23,209, was reported from Massachusetts, and the next largest number, 14,545, from Pennsylvania.

	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
The industry as a whole	175,176	99,307	75,869
Proprietors and officials	3,192	3,139	53
Proprietors and firm members.....	732	701	31
Salaried officers of corporations.....	782	773	9
Superintendents and managers.....	1,678	1,665	13
Clerks.....	3,202	2,470	792
Wage earners (average number).....	168,722	93,698	75,024
16 years of age and over.....	159,146	89,403	69,743
Under 16 years of age.....	9,576	4,295	5,281
Woolen goods	54,771	35,815	18,956
Proprietors and officials.....	1,542	1,514	28
Proprietors and firm members.....	480	457	23
Salaried officers of corporations.....	406	402	4
Superintendents and managers.....	656	655	1
Clerks.....	1,049	802	247
Wage earners (average number).....	52,180	33,499	18,681
16 years of age and over.....	50,472	32,547	17,925
Under 16 years of age.....	1,708	952	756
Worsted goods	114,422	58,858	55,564
Proprietors and officials.....	1,431	1,411	20
Proprietors and firm members.....	197	191	6
Salaried officers of corporations.....	309	304	5
Superintendents and managers.....	925	916	9
Clerks.....	1,979	1,490	489
Wage earners (average number).....	111,012	55,957	55,055
16 years of age and over.....	103,203	52,654	50,549
Under 16 years of age.....	7,809	3,303	4,506
Felt goods	3,856	3,076	780
Proprietors and officials.....	134	132	2
Proprietors and firm members.....	19	18	1
Salaried officers of corporations.....	55	55	0
Superintendents and managers.....	60	59	1
Clerks.....	178	137	41
Wage earners (average number).....	3,544	2,807	737
16 years of age and over.....	3,517	2,789	728
Under 16 years of age.....	27	18	9
Wool hats	2,127	1,558	569
Proprietors and officials.....	85	82	3
Proprietors and firm members.....	36	35	1
Salaried officers of corporations.....	12	12	0
Superintendents and managers.....	37	35	2
Clerks.....	50	41	15
Wage earners (average number).....	1,980	1,435	551
16 years of age and over.....	1,954	1,413	541
Under 16 years of age.....	32	22	10

In order to compare the distribution of the persons engaged in the industry according to occupational status in 1909 with that in 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 6.

CLASS.	1909		1904		Per cent of increase: ¹ 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	175,176	100.0	152,306	100.0	15.0
Proprietors and firm members.....	732	0.4	958	0.6	-23.6
Salaried employees.....	5,722	3.3	4,593	3.0	24.6
Wage earners (average number).....	168,722	96.3	146,755	96.4	15.0

¹ A minus sign (-) denotes decrease.

Table 7 shows the average number of wage earners in the industry as a whole, distributed according to age, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899.

CLASS.	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total	168,722	100.0	146,755	100.0	130,697	100.0
16 years of age and over.....	159,146	94.3	135,725	92.5	121,184	92.7
Male.....	89,403	53.0	77,911	53.1	69,511	53.2
Female.....	69,743	41.3	57,814	39.4	51,673	39.5
Under 16 years of age.....	9,576	5.7	11,030	7.5	9,513	7.3

The proportion of female wage earners 16 years of age and over in 1909 was slightly larger than that in 1904 and 1899, while the proportion of wage earners under 16 years of age shows a decline for the five-year period 1904-1909, this decrease being sufficiently great to result in a decrease for the decade as a whole.

Wage earners classified according to nature of employment.—Table 8 shows, for the United States for 1909 and 1904, and for selected states for 1909, the distribution by sex and age of spinners, weavers, and all other wage earners. It should be noted that the absolute figures for the two censuses are not strictly comparable, owing to the fact that the numbers shown for 1904 are computed averages for the entire year, while those for 1909 are the numbers reported for December 15, or the nearest representative day. The difference between the number of wage earners on this day and the average number for the year 1909, however, was only 6,449, or about 4 per cent of the total; and since there is little variation from month to month in the proportion of the different classes of employees the figures representing the per cent distribution may be taken as fairly comparable.

In 1909, of the 175,171 wage earners 13 per cent were employed as spinners, 22.2 per cent as weavers, and 64.7 per cent in other capacities. In 1904 the percentage of spinners was 13.6, but weavers constituted 27.5 per cent of the total number—a somewhat larger proportion than in 1909.

The proportion of spinners and of weavers is largely indicative of the character of the work which predominates in the mills of the respective states. Of the states represented in the table, Maine shows the highest percentage of weavers (29.6), though the proportion represented by this class of operatives was also large (23 per cent) in Massachusetts. Pennsylvania reported a larger proportion of spinners and a smaller proportion of weavers than any of the other leading states, being the only state shown in which the spinners outnumbered the weavers.

Table 8	WAGE EARNERS IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS). ¹							WAGE EARNERS IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS). ¹								
	CLASS.	Total.	Spinners.		Weavers.		All other.		CLASS.	Total.	Spinners.		Weavers.		All other.	
			Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.			Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.
United States:	175,171	22,829	13.0	38,968	22.2	113,376	64.7	Selected states, 1909—Con.								
1909	146,755	20,006	13.6	40,420	27.5	86,329	58.8	Rhode Island—Continued.								
1904								Under 16 years of age...	1,543	421	27.3	43	2.8	1,079	69.9	
16 years of age and over:								Male	726	191	26.3	32	4.4	503	69.3	
1909	165,229	19,824	12.0	38,727	23.4	106,078	64.6	Female	817	230	28.2	11	1.3	576	70.5	
1904	135,725	16,598	12.2	39,961	29.4	79,166	58.3	New Jersey	13,716	1,581	11.5	2,911	21.2	9,224	67.2	
Male								16 years of age and over.	13,094	1,302	10.6	2,894	22.1	8,808	67.3	
1909	82,820	9,562	10.3	20,017	21.6	63,241	68.1	Male	6,110	559	9.1	794	13.0	4,757	77.9	
1904	77,911	9,332	12.0	20,108	25.8	48,471	62.2	Female	6,984	833	11.9	2,100	30.1	4,051	58.0	
Female								Under 16 years of age	622	189	30.4	17	2.7	416	66.9	
1909	72,409	10,262	14.2	18,710	25.8	43,437	60.0	Male	326	92	28.2	14	4.3	287	67.5	
1904	57,814	7,266	12.6	19,853	34.3	30,695	53.1	Female	296	97	32.8	3	1.0	196	66.2	
Under 16 years of age:								New Hampshire	9,752	623	6.4	1,276	13.1	7,853	80.5	
1909	9,942	3,005	30.2	239	2.4	6,698	67.4	16 years of age and over.	9,600	585	6.1	1,276	13.3	7,739	80.6	
1904	11,030	3,408	30.9	459	4.2	7,163	64.9	Male	5,488	375	6.8	637	11.6	4,476	81.6	
Male, 1909	4,459	1,142	25.6	124	2.8	3,193	71.6	Female	4,112	210	5.1	639	15.5	3,263	79.4	
Female, 1909	5,483	1,863	34.0	115	2.1	3,505	63.9	Under 16 years of age	152	38	25.0			114	75.0	
Male, 1904								Male	73	5	6.8			68	93.2	
Female, 1904								Female	79	33	41.8			46	58.2	
Selected states, 1909:								New York	9,596	1,227	12.8	1,807	19.9	6,462	67.3	
Massachusetts	50,182	5,425	9.7	12,911	23.0	37,846	67.4	16 years of age and over.	9,401	1,159	12.3	1,862	20.1	6,350	67.5	
16 years of age and over	52,921	4,835	9.1	12,833	24.2	35,253	66.6	Male	5,333	425	8.0	829	15.5	4,076	76.4	
Male	31,553	2,261	7.2	6,860	21.7	22,432	71.1	Female	4,068	731	18.0	1,003	28.1	2,274	55.9	
Female	21,368	2,574	12.0	5,973	27.9	12,821	60.0	Under 16 years of age	195	68	34.9	15	7.7	112	57.4	
Under 16 years of age	3,261	590	18.1	78	2.4	2,593	79.5	Male	85	17	20.0	6	7.1	62	72.9	
Male	1,420	195	13.7	30	2.1	1,195	84.2	Female	110	51	46.4	9	8.2	50	45.5	
Female	1,841	395	21.5	48	2.6	1,398	75.9	Maine	9,397	1,010	10.7	2,778	29.6	5,609	59.7	
Pennsylvania	28,226	7,272	25.8	5,267	18.7	15,687	55.6	16 years of age and over.	9,200	934	10.2	2,776	30.2	5,490	59.7	
16 years of age and over	25,547	6,083	23.8	5,231	20.5	14,233	55.7	Male	5,868	661	11.3	1,522	25.9	3,685	62.8	
Male	12,494	2,646	21.2	2,630	21.1	7,218	57.8	Female	3,332	273	8.2	1,254	37.6	1,805	54.2	
Female	13,053	3,437	26.3	2,601	19.9	7,015	53.7	Under 16 years of age	197	78	38.6	2	1.0	119	60.4	
Under 16 years of age	2,679	1,189	44.4	36	1.3	1,454	54.3	Male	86	26	30.2	1	1.2	59	68.6	
Male	1,187	443	37.3	30	2.5	714	60.2	Female	111	50	45.0	1	0.9	60	54.1	
Female	1,492	746	50.0	6	0.4	740	49.6									
Rhode Island	24,739	2,970	12.0	4,983	20.1	16,786	67.9									
16 years of age and over	23,196	2,549	10.9	4,940	21.3	15,707	67.7									
Male	12,879	1,241	9.6	3,366	26.1	8,272	64.2									
Female	10,317	1,308	12.7	1,574	15.3	7,435	72.1									

¹ For 1909 the figures are those reported for the 15th day of December, or the nearest representative day; for 1904 the average number is given.

Table 9 gives, in percentages, for the United States for 1909 and 1904, the distribution of the wage earners employed as spinners, as weavers, and in other capacities, according to age, and of those 16 years of age or over according to sex, together with similar statistics for 1909 only for selected states.

A considerable proportion of the spinners employed in each of the states shown in the table were children, although the proportion which children constituted of the total number of spinners in the industry declined from 17 per cent in 1904 to 13.2 per cent in 1909. Children constituted a larger proportion (16.4 per cent) of the total number of spinners in Pennsylvania than in any of the other individual states shown in the table.

The proportion of women employed as spinners in the country as a whole advanced from 36.3 per cent in 1904 to 45 per cent in 1909, while the proportion of women employed as weavers declined slightly during the five-year period.

Men formed a larger proportion of the total number of weavers than women in each of the states shown in the table except New York. In Rhode Island, 67.5 per cent of the weavers were males 16 years of age or over. Among spinners, on the other hand, the number of women exceeded the number of men in every state shown except Maine.

Table 9	CLASS.	PER CENT OF TOTAL NUMBER EMPLOYED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).		
		16 years of age and over.		Under 16 years of age.
		Male.	Female.	
United States:				
1909		53.0	41.3	5.7
1904		53.1	39.4	7.5
Spinners:				
1909		41.9	45.0	13.2
1904		46.6	36.3	17.0
Weavers:				
1909		51.4	48.0	0.6
1904		49.7	49.1	1.1
All other:				
1909		55.8	38.3	5.9
1904		56.1	35.6	8.3
Selected states, 1909:				
Massachusetts		56.2	38.0	5.8
Spinners		41.7	47.4	10.9
Weavers		53.1	46.3	0.6
All other		59.3	33.9	6.8
Pennsylvania		44.3	46.2	9.5
Spinners		36.4	47.3	16.4
Weavers		49.9	49.4	0.7
All other		46.0	44.7	9.3
Rhode Island		52.1	41.7	6.2
Spinners		41.8	44.0	14.2
Weavers		67.5	31.6	0.9
All other		49.3	44.3	6.4
New York		55.6	42.4	2.0
Spinners		34.9	59.6	5.5
Weavers		43.5	55.7	0.8
All other		63.1	35.2	1.7
Maine		62.4	35.5	2.1
Spinners		65.4	27.0	7.5
Weavers		54.8	45.1	0.1
All other		65.7	32.2	2.1

Wage earners employed, by months.—Table 10 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each

month during the year 1909 for the 18 states in which an average of 500 or more wage earners were employed during the year.

Table 10

STATE.	Average number during the year.	WAGE EARNERS EMPLOYED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS): 1909											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States.....	168,722	158,318	161,120	165,585	166,851	168,015	171,946	170,818	170,295	171,747	173,321	173,943	172,693
Connecticut.....	7,789	<i>7,110</i>	7,483	7,639	7,633	7,855	8,069	7,923	7,758	7,922	7,949	8,061	8,071
Georgia.....	660	643	657	651	647	659	641	649	665	676	688	675	670
Indiana.....	776	<i>727</i>	737	743	745	774	821	830	805	794	788	787	761
Kentucky.....	818	<i>680</i>	775	799	803	836	838	844	850	830	842	873	850
Maine.....	8,754	<i>8,021</i>	8,313	8,509	8,589	8,643	8,768	8,846	8,665	8,896	9,111	9,307	9,373
Massachusetts.....	53,873	<i>49,715</i>	50,868	52,063	52,968	53,426	54,665	54,944	54,017	55,439	55,879	55,845	55,153
Michigan.....	554	516	524	555	550	552	565	515	524	560	585	580	606
New Hampshire.....	9,486	9,440	<i>9,237</i>	9,409	9,425	9,567	9,648	9,408	9,694	9,289	9,457	9,604	9,651
New Jersey.....	12,652	<i>11,316</i>	11,995	12,122	12,171	12,190	12,586	12,755	12,858	13,022	13,262	13,329	13,712
New York.....	9,460	<i>8,771</i>	8,893	9,312	9,376	9,358	9,950	9,678	9,578	9,670	9,769	9,647	9,538
Ohio.....	2,566	<i>2,358</i>	2,394	2,452	2,481	2,544	2,597	2,683	2,724	2,666	2,626	2,621	2,650
Pennsylvania.....	27,409	<i>25,796</i>	26,140	26,495	27,767	27,449	28,214	27,842	27,376	27,510	27,950	28,383	27,938
Rhode Island.....	24,924	<i>24,072</i>	24,480	25,429	24,880	25,128	25,203	24,811	24,800	25,604	25,365	25,011	24,302
Tennessee.....	1,654	<i>1,609</i>	1,576	1,598	1,591	1,681	1,746	1,729	1,741	1,666	1,675	1,644	1,637
Vermont.....	2,294	2,263	2,245	2,271	2,245	2,282	2,351	2,149	<i>2,143</i>	2,222	2,359	2,492	2,508
Virginia.....	542	526	<i>515</i>	529	554	552	564	549	549	538	530	549	545
West Virginia.....	599	615	612	599	608	622	597	595	602	<i>552</i>	601	596	589
Wisconsin.....	1,046	1,012	1,028	1,050	1,065	1,089	1,116	1,036	1,057	1,036	<i>975</i>	1,025	1,062

¹ The month of maximum employment for each state is indicated by boldface figures, and that of minimum employment by italic figures.

The largest number of wage earners employed during any month of 1909 was 173,943, in November, and the smallest number, 158,318, in January, the minimum number being equal to 91 per cent of the maximum. In 1904 the maximum number, 151,383, was shown for November, and the minimum number, 143,178, for July, the latter number being equal to 94.6 per cent of the former.

The months of maximum and minimum employment for 1909, and the number of wage earners reported for both months, are given for a larger number of states in Table 49.

Prevailing hours of labor.—In Table 11 the wage earners in the industry as a whole in 1909 have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

More than seven-tenths (71 per cent) of the wage earners employed in the industry as a whole in 1909 were in establishments where the prevailing hours were more than 54 but less than 60 per week. Most of the remaining wage earners (26.8 per cent of the total number) were in establishments where the prevailing hours were 60 per week.

In Massachusetts, Rhode Island, New Jersey, and New Hampshire nearly all the wage earners in 1909 were employed in establishments where the prevailing hours were between 54 and 60 per week. In Maine and Vermont, however, among the more important states, more than nine-tenths of the total number were in establishments where the prevailing hours were 60 per week; and in New York and Pennsylvania approximately 45 per cent of the wage earners worked 60 hours per week.

Table 11

STATE.	AVERAGE NUMBER OF WAGE EARNERS IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS): 1909							
	Total.	In establishments with prevailing hours—						
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States.....	168,722	423	1,092	1,102	119,728	45,300	1,075	2
Connecticut.....	7,789			87	4,741	2,961		
Georgia.....	660				15	306	339	
Indiana.....	776			2		774		
Kentucky.....	818		0			738	70	1
Maine.....	8,754			2	701	8,050		1
Massachusetts.....	53,873	359	138	255	48,567	4,554		
Michigan.....	554			25	51	478		
New Hampshire.....	9,486				8,889	597		
New Jersey.....	12,652		153	8	11,747	744		
New York.....	9,460	30	649		4,570	4,211		
Ohio.....	2,566		6		1,990	568		
Pennsylvania.....	27,409	2		77	14,819	12,511		
Rhode Island.....	24,924	2	95	284	22,748	1,795		
Tennessee.....	1,654	1			67	1,029	557	
Vermont.....	2,294		39		26	2,229		
Virginia.....	542					542		
West Virginia.....	599			4	1	594		
Wisconsin.....	1,046	2		3	376	665		

THE WOOLEN INDUSTRY.

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CHARACTER OF OWNERSHIP.

Table 12 presents statistics with respect to the character of ownership of the establishments in the woolen industry in the United States.

CHARACTER OF OWNERSHIP.	THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	985	1,074	\$435,978,558	\$319,347,570
Individual.....	212	289	22,400,903	31,835,941
Firm.....	1,195	2,287	150,293,809	247,694,692
Corporation.....	578	518	363,283,846	239,816,937
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	21.5	26.9	5.1	10.0
Firm.....	119.8	224.9	111.5	14.9
Corporation.....	58.7	48.2	83.3	75.1

¹ Includes one establishment under an unclassified form of ownership, to avoid the disclosure of individual operations.
² Includes two establishments under unclassified forms of ownership, to avoid the disclosure of individual operations.

In 1909, of the total number of mills reported for the industry, 58.7 per cent were under corporate owner-

ship, as compared with 48.2 per cent in 1904. In 1909 the total value of products of these establishments represented 83.3 per cent of the total, and in 1904 75.1 per cent.

Table 13 gives statistics for establishments classified according to form of ownership for the 18 states employing an average of more than 500 wage earners in 1909.

In 1909, 8,746 wage earners, or 5.2 per cent of the total, were employed in establishments under individual ownership; 18,978, or 11.2 per cent, in those under firm ownership (including one under "other" ownership), and 140,998, or 83.6 per cent, in those owned by corporations.

In all the states establishments owned by corporations predominated, both in number of wage earners and in value of products; but as between those owned by individuals and those owned by firms there were some variations, the former outranking the latter in Connecticut and New Hampshire, while in Vermont there were no establishments under firm ownership.

STATE.	THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS): 1909											
	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	212	195	578	8,746	18,978	140,998	\$22,400,903	\$50,293,809	\$363,283,846	\$7,204,230	\$17,168,229	\$128,728,080
Connecticut.....	9	7	40	665	395	6,729	1,484,710	972,985	10,905,533	520,444	448,798	5,555,844
Georgia.....	2	1	4	16	(X)	644	16,087	(X)	853,563	8,185	(X)	419,603
Indiana.....	5	5	6	49	49	727	1,466,442	103,523	1,466,442	29,937	29,937	484,345
Kentucky.....	4	2	8	8	(X)	810	8,845	(X)	1,268,072	3,822	(X)	416,447
Maine.....	10	5	50	108	251	8,395	173,162	448,497	17,868,521	73,280	195,934	6,850,309
Massachusetts.....	20	27	180	2,262	4,810	46,801	5,822,008	11,885,145	124,259,729	2,001,336	4,658,985	47,330,230
Michigan.....	4	5	6	12	250	292	24,839	767,005	779,520	10,669	360,381	337,475
New Hampshire.....	8	6	25	470	381	8,035	919,166	786,874	15,024,612	304,469	340,152	4,990,961
New Jersey.....	6	7	20	50	2,184	10,418	144,354	6,220,059	27,574,224	43,636	1,615,370	11,246,752
New York.....	14	17	33	96	1,433	7,931	200,029	3,773,116	19,766,276	104,695	1,504,913	7,385,785
Ohio.....	2	7	11	(X)	176	2,390	(X)	494,641	7,195,508	(X)	218,705	2,855,415
Pennsylvania.....	50	73	85	4,340	7,942	15,127	12,195,424	22,867,665	42,383,907	3,570,306	7,006,445	12,230,160
Rhode Island.....	10	6	72	456	573	23,895	806,531	1,009,431	72,784,273	345,100	387,133	22,842,631
Tennessee.....	9	4	8	16	79	1,559	27,134	82,746	1,662,431	10,028	46,626	618,924
Vermont.....	4	.....	13	148	.....	2,146	253,503	.....	4,243,400	91,021	.....	1,526,881
Virginia.....	4	6	6	24	172	346	29,434	263,462	706,545	12,046	97,659	322,643
West Virginia.....	2	3	8	(X)	13	581	(X)	33,297	1,190,950	(X)	13,924	410,764
Wisconsin.....	13	3	17	22	76	948	82,985	134,917	2,011,806	25,146	71,672	757,033

NOTE.—In some states, in order to avoid disclosing individual operations, the figures for one group have been consolidated with those for establishments under some other form of ownership. In such case an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics. The figures for establishments under firm ownership include those for one establishment under an unclassified form of ownership.

SIZE OF ESTABLISHMENT.

Classification by value of products.—Table 14 presents statistics for 1909 and 1904 for establishments in the woolen industry grouped according to the value of their products.

In 1909, 8.7 per cent of the establishments manufactured products valued at \$1,000,000 or over, as against 5.9 per cent in 1904. While such establishments represented but a small proportion of the total number at both censuses, they reported 57 per cent of the total value of products in 1909 and 42.6 per cent in 1904. Included in this group in 1909 were nine woolen

and worsted mills with products valued at \$5,000,000 or over, the aggregate value of their products exceeding \$90,000,000. Establishments with products valued at \$100,000 but less than \$1,000,000, which constituted the most important group as measured by value of products in 1904, had dropped to second place in 1909.

The average value of products per establishment increased from \$297,344 in 1904 to \$442,618 in 1909, the average value added by manufacture, as computed from the figures in Table 2, from \$106,829 to \$155,432, and the average number of wage earners employed from 137 to 171.

The average number of wage earners per establishment in the woolen goods branch of the industry in 1909 was 89; in the worsted goods branch, 343; in the felt goods establishments, 82; and in the wool hat factories, 64.

VALUE OF PRODUCTS PER ESTABLISHMENT.	THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	985	1,074	\$435,978,558	\$319,347,570
Less than \$5,000.....	111	127	221,621	309,667
\$5,000 and less than \$20,000.....	75	95	838,181	1,984,002
\$20,000 and less than \$100,000.....	203	245	11,083,690	2,13,519,045
\$100,000 and less than \$1,000,000.....	510	544	175,491,081	168,540,375
\$1,000,000 and over.....	88	63	248,343,985	135,993,881
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	11.3	11.8	0.1	0.1
\$5,000 and less than \$20,000.....	7.6	8.8	0.2	10.3
\$20,000 and less than \$100,000.....	20.6	22.8	2.5	24.2
\$100,000 and less than \$1,000,000.....	51.8	50.7	40.3	52.8
\$1,000,000 and over.....	8.7	5.9	57.0	42.6

¹ Includes one establishment with products valued at less than \$5,000.
² Includes one establishment with products valued at less than \$5,000 and three establishments with products valued at \$5,000 but less than \$20,000.

Table 15 gives for 1909, 1904, and 1899 the average value of products per establishment for the woolen industry as a whole and for each of the four branches.

BRANCH OF THE INDUSTRY.	AVERAGE VALUE OF PRODUCTS PER ESTABLISHMENT.		
	1909	1904	1899
The industry as a whole.....	\$442,618	\$297,344	\$194,222
Woolen goods.....	182,485	179,541	114,425
Worsted goods.....	964,891	733,385	646,851
Felt goods.....	275,642	229,451	179,491
Wool hats.....	141,368	144,545	149,664

Classification by number of wage earners.—Table 16 classifies the establishments in 18 of the leading states according to the number of wage earners employed.

Of the 985 establishments reported in 1909, 3 per cent employed no wage earners, 22.2 per cent employed from 1 to 20 wage earners each, 15.6 per cent from 21 to 50, 45.1 per cent from 51 to 250, 11.6 per cent from 251 to 1,000, and only 2.4 per cent over 1,000. Of the total number of wage earners, however, only 4.1 per cent were reported by establishments employing from 1 to 50, 32.1 per cent by establishments employing from 51 to 250, 30.6 per cent by establishments employing from 251 to 1,000, and 33.1 per cent by establishments employing 1,000 or more. In Massachusetts, New Hampshire, New Jersey, Ohio, and Vermont, approximately one-half the wage earners were in establishments employing over 1,000.

STATE.	THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).																		
	Total.		Establishments employing in 1909—																
			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.	
Es-tab-lish-ments.	Wage earners (average number).	Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	
United States..	985	168,722	30	118	264	101	1,314	154	5,358	192	14,566	252	39,607	82	27,853	32	23,848	24	55,912
Connecticut.....	56	7,789	1	2	2	2	14	11	404	10	804	25	3,560	6	1,655			1	1,292
Georgia.....	7	660		2	2	1	14			1	87	2	305	1	252				
Indiana.....	11	776		2	2	3	47	1	44	1	99	4	584						
Kentucky.....	14	818		7	13	1	9			3	206	3	500						
Maine.....	65	8,754	1	12	25	2	34	2	66	21	1,747	22	3,422	3	987			2	2,493
Massachusetts.....	183	53,873	1	5	17	8	121	31	1,117	37	2,687	60	9,698	26	9,033	7	5,420	8	25,780
Michigan.....	15	554	1	5	9	2	26	2	59	4	317	1	143						
New Hampshire.....	39	9,486	2		2	2	22	5	207	10	720	14	1,927	5	1,610			1	5,000
New Jersey.....	33	12,652		3	7	4	44	7	274			7	1,049	6	2,305	4	3,074	2	5,889
New York.....	64	9,460	5	7	21	9	116	11	344	9	711	12	2,067	7	2,290	3	2,260	1	1,651
Ohio.....	20	2,566		4	8	5	54	3	76	2	168	5	951					1	1,309
Pennsylvania.....	217	27,409	3	16	35	31	408	48	1,659	49	3,595	47	7,481	10	3,575	10	7,299	3	3,357
Rhode Island.....	88	24,924		4	8	5	75	8	293	16	1,172	28	4,764	16	5,467	7	5,288	4	7,857
Tennessee.....	21	1,654	6	4	4	2	24	1	36	3	245	3	409	1	429				
Vermont.....	17	2,294	1					6	193	7	483	2	344					1	1,274
Virginia.....	16	842		7	25	4	69	1	23	1	54	3	371						
West Virginia.....	13	599		4	6	5	81	1	41	1	100	1	101	1	270				
Wisconsin.....	33	1,046	2	13	24	4	42	3	110	10	720	1	150						

EXPENSES.

As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative im-

portance of the different classes of expenses which were reported.

Table 17 shows, for the woolen industry as a whole and for each of its four branches, the percentage of the total reported expenses which was represented, respectively, by cost of materials, salaries, wages, and miscellaneous expenses.

Table 17

CLASS.	PER CENT OF TOTAL REPORTED EXPENSES: 1909				
	The woolen industry.	Woolen goods.	Worsted goods.	Felt goods.	Wool hats.
Total.....	100.0	100.0	100.0	100.0	100.0
Cost of materials.....	72.0	66.9	75.3	68.5	63.0
Salaries.....	2.6	3.4	2.2	6.0	3.2
Wages.....	18.7	23.0	17.1	16.8	25.2
Miscellaneous.....	5.8	6.7	5.4	8.6	8.6

There is considerable variation in the percentages for the several branches of the industry, due partly to the fact that there is relatively more duplication in cost of materials in some branches than in others. These variations among the branches explain in part the variations among the states with respect to the distribution of expenses for the industry as a whole, as shown in Table 18.

Table 18

STATE.	PER CENT OF TOTAL EXPENSES REPORTED FOR THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS): 1909			
	Cost of materials.	Salaries.	Wages.	Miscellaneous expenses.
United States.....	72.9	2.6	18.7	5.8
California.....	54.1	11.2	22.0	12.7
Connecticut.....	73.3	3.2	10.9	3.6
Georgia.....	62.4	5.0	24.7	7.8
Illinois.....	65.0	6.3	19.0	8.8
Indiana.....	68.5	4.6	19.0	7.9
Iowa.....	73.9	3.0	17.5	5.1
Kentucky.....	69.2	4.5	19.5	6.9
Maine.....	68.2	2.5	23.2	6.0
Massachusetts.....	71.2	2.4	19.9	6.5
Michigan.....	69.1	4.3	18.8	7.8
Minnesota.....	69.0	4.1	19.8	7.1
New Hampshire.....	69.6	1.8	22.9	5.8
New Jersey.....	74.9	3.1	17.7	4.3
New York.....	69.0	3.8	19.4	7.8
North Carolina.....	66.0	6.2	19.6	8.1
Ohio.....	68.2	3.1	13.7	15.1
Oregon.....	64.1	5.1	24.6	6.2
Pennsylvania.....	76.8	2.5	15.4	5.4
Rhode Island.....	76.5	2.0	17.8	4.2
Tennessee.....	64.5	4.2	24.0	7.3
Vermont.....	66.5	2.0	24.1	7.3
Virginia.....	69.4	4.1	21.5	5.0
West Virginia.....	71.2	2.8	19.9	6.2
Wisconsin.....	68.8	6.3	19.0	5.8
All other states.....	69.0	4.1	19.9	6.5

Among the individual states, California shows the lowest proportion of the total reported expenses for cost of materials (54.1 per cent), and Pennsylvania the highest (76.8 per cent); for wages the percentages ranged from 13.7 in Ohio to 24.7 in Georgia; for salaries, from 1.8 in New Hampshire to 11.2 in California; and for miscellaneous expenses, from 3.6 in Connecticut to 15.1 in Ohio.

ENGINES, POWER, AND FUEL.

Engines and power.—Table 2 shows that the total horsepower used in the woolen industry increased from 129,567 in 1879 to 362,209 in 1909. Table 19 shows statistics of power, as reported at the censuses of 1909, 1904, and 1899.

The total primary power used in the industry as a whole increased from 244,825 horsepower in 1899 to 362,209 horsepower in 1909, or 47.9 per cent. In 1909 the power generated by steam engines constituted 72.2 per cent of the total primary power, as compared with 69.1 per cent in 1904 and 66.6 per cent in 1899. The absolute increase in steam power from 1899 to 1909 was 98,203 horsepower, or 60.2 per cent. Water power, which shows but a slight increase for the decade, formed 21.9 per cent of the total in 1909, as compared with 31 per cent in 1899. There was an increase in the relative importance of the power generated by gas engines and by electric motors operated by purchased current (rented electric power). The latter represented 3.8 per cent of the primary power in 1909.

The number and horsepower of electric motors used for distributing power by means of current generated in the same establishment show a large increase.

Table 19

POWER.	THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	2,666	2,518	2,525	362,209	288,969	244,825	100.0	100.0	100.0
Owned.....	2,237	2,376	2,525	342,691	278,106	230,492	94.6	96.2	97.8
Steam.....	1,304	1,394	1,370	261,364	199,615	163,161	72.2	69.1	66.6
Gas.....	53	41	16	2,077	1,705	411	0.6	0.6	0.2
Water wheels.....	816	940	1,139	78,909	76,356	75,911	21.8	26.4	31.0
Water motors.....	4	1	(¹)	341	10	(²)	0.1	(²)	(²)
Other.....				420	9	9	0.1	(²)	(²)
Rented.....	429	142	(¹)	19,518	10,863	5,333	5.4	3.8	2.2
Electric.....	429	142	(¹)	13,783	3,930	2,534	3.8	1.4	1.0
Other.....				5,735	6,933	2,799	1.6	2.4	1.1
Electric motors	3,385	556	84	79,223	22,222	5,039	100.0	100.0	100.0
Run by current generated by establishment.....	2,950	414	84	65,440	18,202	2,505	82.6	82.3	49.7
Run by rented power.....	429	142	(¹)	13,783	3,930	2,534	17.4	17.7	50.3

¹ Not reported.

² Less than one-tenth of 1 per cent.

Table 20 shows, for 1909, the amount of the several kinds of power and of the different kinds of fuel used in 18 of the leading states.

Massachusetts, Pennsylvania, Rhode Island, and New Hampshire together reported 241,724 horsepower, or 66.7 per cent of the aggregate for the industry. Steam power was the most important form of power in all of the states shown separately, with the exception of Maine and Virginia, where water power ranked first. Massachusetts reported the largest amount both of steam power (89,876 horsepower) and of water power (23,384 horsepower). Pennsylvania reported the largest amount of rented electric power, as well as of the power developed by gas engines.

STATE.	Primary horsepower.									Electric horsepower.		Fuel used.					
	Number of establishments reporting.	Total horsepower.	Owned by establishments reporting.					Rented.		Total, rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasolins (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).				
United States..	971	362,209	342,691	261,364	2,077	78,250	.....	13,783	5,735	79,223	65,440	277,755	1,525,988	6,985	34,843	26,611	104,746
Connecticut.....	56	17,518	17,310	10,431	50	6,829	.....	158	50	2,157	2,042	1,993	76,533	.....	14,684	131	229
Georgia.....	7	1,437	1,437	1,225	.....	212	.....	.....	.....	426	426	.....	8,536	.....	.....	.....	.....
Indiana.....	11	1,678	1,677	1,507	.....	170	.....	.....	.....	61	60	.....	14,427	.....	.....	.....	.....
Kentucky.....	14	2,506	2,481	2,417	.....	64	.....	25	.....	137	112	.....	11,671	.....	200	.....	.....
Maine.....	65	22,299	19,715	7,905	87	11,723	.....	2,578	6	3,799	1,221	3,170	82,605	.....	2,779	825	.....
Massachusetts.....	182	117,119	114,095	89,876	745	23,384	.....	2,497	617	39,945	37,448	43,709	550,938	253	1,260	1,636	3,536
Michigan.....	15	1,900	1,815	1,657	50	108	.....	85	.....	272	187	.....	13,127	.....	.....	44	.....
New Hampshire.....	39	30,485	29,023	16,395	5	12,623	.....	1,457	5	4,880	3,423	805	91,829	208	1,886	500	6,866
New Jersey.....	33	20,254	19,883	19,435	10	438	.....	8	363	4,709	4,701	126,841	26,436	.....	.....	1,358	.....
New York.....	60	22,374	20,607	13,306	8	7,293	.....	1,575	192	5,665	4,090	30,972	99,821	.....	153	18	889
Ohio.....	18	6,504	5,686	5,397	150	139	.....	818	.....	2,340	1,531	.....	25,634	6,044	.....	.....	9,212
Pennsylvania.....	215	50,405	43,636	41,320	769	1,547	.....	2,917	3,852	5,711	2,794	53,238	210,160	.....	25	1,448	63,302
Rhode Island.....	88	43,715	42,631	37,321	90	5,220	.....	571	513	7,295	6,724	16,867	198,684	.....	1,108	127	.....
Tennessee.....	21	2,371	2,282	17	72	.....	.....	.....	.....	412	412	.....	26,591	.....	2,873	10	.....
Vermont.....	17	7,213	7,213	3,885	3	3,235	.....	.....	.....	55	55	.....	35,788	480	2,175	.....	.....
Virginia.....	16	1,352	1,092	388	20	684	.....	260	.....	260	.....	62	3,471	.....	278	.....	.....
West Virginia.....	13	1,327	980	902	20	58	.....	347	.....	387	40	.....	7,126	.....	.....	.....	9,028
Wisconsin.....	33	3,059	3,045	1,047	13	1,385	.....	14	.....	19	5	16	13,838	.....	452	56	.....
All other states.....	68	8,693	8,084	4,068	40	3,976	.....	472	137	684	169	82	23,773	.....	6,970	20,458	12,185

Fuel consumed.—Owing to the extensive use of water power in the woolen industry, less fuel is consumed in generating power than would otherwise be required. In 1909 bituminous coal was by far the principal class of fuel used, 1,525,988 short tons being reported, of which 550,938, or 36.1 per cent, were consumed in

Massachusetts. The largest quantity of anthracite coal, 126,841 long tons, or nearly one-half of the total reported for the industry, is shown for New Jersey. Gas, oil, and wood were used to some extent, the largest quantity of gas being reported for Pennsylvania, and of wood for Connecticut.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

MATERIALS.

Summary for the industry as a whole.—Table 21 shows the quantity and cost of the principal materials used in the woolen industry as a whole for 1909, and the quantity for 1904 and 1899.

The increase during the decade 1899-1909 in the consumption of wool, in condition purchased, amounted to 145,870,501 pounds, or 42.6 per cent, and in the consumption on the scoured equivalent basis to 99,932,031 pounds, or 49.7 per cent. The greater part of the increase was in foreign wool, which formed 24.7 per cent of all wool in condition purchased in 1899 and a slightly smaller proportion in 1904, but had increased to 34.4 per cent of the total in 1909. The percentage for domestic wool, on the other hand, decreased from 75.3 per cent in 1899 to 65.6 per cent in 1909, while the consumption decreased 3 per cent between 1904 and 1909, although showing an increase of 28 per cent between 1899 and 1904. The quantity of mohair and camel,

alpaca, and vicuna hair used increased 53.8 per cent during the decade, while that of "other" animal hair increased but 9.5 per cent, although the quantities of mohair and "other" animal hair used in 1904 were materially greater than in either 1909 or 1899. The quantity of cotton and shoddy used materially decreased, the former 48.4 per cent and the latter 28.7 per cent. The quantity of purchased waste and noils of wool, mohair, camel hair, etc., used increased 69.7 per cent, and that of purchased tops increased 257.9 per cent.

Of the several classes of purchased yarns listed in the table, worsted yarns show the greatest rate of increase in consumption for the decade, the quantity used in 1909 being 135.1 per cent greater than that used in 1899. Silk and spun silk yarns show an increase of 114.2 per cent, and cotton yarns an increase of 11.4 per cent. On the other hand, woolen yarns and merino yarns show a decrease of 84.2 per cent and 43.1 per cent, respectively, for the decade.

Table 21

MATERIAL.	MATERIALS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).				MATERIAL.	MATERIALS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).			
	Cost: 1909	Quantity.				Cost: 1909	Quantity.		
		1909	1904	1899			1909	1904	1899
Wool:		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
In condition purchased.....	\$140,998,437	488,368,690	432,205,574	342,498,189	Tops, purchased.....	14,716,142	20,991,962	9,236,266	
Domestic.....	88,187,604	320,298,910	330,106,095	257,824,751	Yarns, purchased.....	68,679,447	103,045,808	73,410,671	
Foreign.....	52,810,833	168,069,774	102,098,870	84,673,438	Woolen.....	558,270	931,222	5,750,088	
Equivalent in scoured condition.....		301,004,252	250,642,723	201,072,221	Worsted.....	56,033,701	59,148,771	31,047,712	
Hair:					Merino.....	341,679	2,087,824	2,582,269	
Camel, alpaca, and vicuana.....	3,851,412	33,447,534	36,679,624	28,480,048	Cotton.....	10,557,098	30,432,613	33,007,525	
Mohair.....	1,421,778	4,659,409	1,578,800	2,078,820	Silk and spun silk.....	1,142,663	282,536	412,326	
Domestic.....	989,650	3,137,950	5,620,196	3,023,146	Silk.....	675,124	128,122	202,578	
Foreign (Turkish, etc.).....	622,748	2,444,561	2,684,573	(1)	Spun silk.....	467,539	154,414	209,748	
Other animal hair.....	1,439,984	25,600,175	29,480,628	23,378,082	Linen.....	14,742	14,463	24,320	
Cotton:					Jute, ramie, and other vegetable fiber yarns.....	31,394	1,148,389	586,422	
Domestic.....	2,671,224	21,399,731	34,596,032	41,470,560	Hat bodies and hats in the rough:				
Foreign (Egyptian, etc.).....	2,195,924	18,412,493	30,853,432	(1)	Wool.....	83,620	21,864	12,089	
Tailors' clippings, rags, etc.:					Fur felt.....	8,882	1,108	(1)	
Shoddy, mungo, and wool extract, purchased.....	2,914,324	41,517,562	80,687,714	(1)	Chemicals and dyestuffs.....	\$9,145,322			
Waste and noils of wool, mohair, camel hair, etc., purchased:					All other materials (exclusive of fuel and rent of power).....	\$4,14,670			
Wool waste and noils.....	9,404,571	32,629,812	28,269,460	19,230,743					
Mohair noils.....	9,281,604	31,957,327	27,189,632	18,875,593					
Camel, alpaca, and vicuana noils.....	110,309	604,985	398,627	113,502					
	12,658	67,500	681,201	241,588					

¹ Figures not available.

Summary for the woolen goods and worsted goods branches.—By reason of the close relation between the woolen goods and worsted goods branches of the industry, the similarity in machinery, materials, and products, and the overlapping of products, with occasional changes by individual mills from woolen to worsted

fabrics, or vice versa, the statistics of materials and products for these two branches of the industry are best presented in combination. Table 22 gives the quantity and cost of the principal materials used in these two branches of the woolen industry for 1909, 1904, and 1899.

Table 22

MATERIAL.	MATERIALS USED IN THE WOOLEN GOODS AND WORSTED GOODS BRANCHES OF THE WOOLEN INDUSTRY.				MATERIAL.	MATERIALS USED IN THE WOOLEN GOODS AND WORSTED GOODS BRANCHES OF THE WOOLEN INDUSTRY.			
	1909	1904	1899	Percent of increase: ¹ 1899-1909		1909	1904	1899	Percent of increase: ¹ 1899-1909
Total cost.....	\$273,438,570	\$197,489,306	\$148,087,178	84.6	Waste and noils of wool, mohair, camel hair, etc., purchased:				
Wool:					Pounds.....	26,473,311	26,032,838	15,714,171	68.5
In condition purchased—					Cost.....	\$7,523,283	\$6,056,227	\$3,891,369	95.3
Pounds.....	474,755,366	418,703,811	330,178,552	43.8	Tops, purchased:				
Cost.....	\$136,600,617	\$105,493,451	\$78,803,830	73.4	Pounds.....	20,828,245	9,180,929	5,506,108	274.2
Domestic.....	310,602,279	319,800,490	250,393,205	24.0	Cost.....	\$14,614,527	\$5,073,078	\$2,865,546	410.0
Foreign.....	\$85,018,238	\$78,673,136	\$59,046,158	44.0	Yarns, purchased:				
Equivalent in scoured condition, pounds.....	290,706,970	241,280,065	192,705,519	50.9	Woolen—				
Mohair and camel, alpaca, and vicuana hair:					Pounds.....	931,222	5,750,088	5,906,862	-84.2
Pounds.....	7,805,422	6,507,631	5,003,966	56.0	Cost.....	\$558,270	\$2,622,882	\$2,676,143	108.7
Cost.....	\$2,399,123	\$1,957,681	\$1,857,707	29.1	Worsted—				
Other animal hair:					Pounds.....	59,148,771	31,047,516	25,110,930	135.5
Pounds.....	17,356,100	22,987,332	20,535,079	-15.5	Cost.....	\$56,033,701	\$24,904,511	\$19,495,251	187.4
Cost.....	\$932,911	\$1,369,776	\$1,170,756	-20.3	Merino—				
Cotton:					Pounds.....	1,971,709	2,458,085	3,634,679	-45.8
Pounds.....	20,024,061	32,613,408	40,244,710	-50.2	Cost.....	\$318,456	\$664,527	\$604,527	-52.1
Cost.....	\$2,515,409	\$4,072,907	\$3,280,000	-23.3	Cotton—				
Tailors' clippings, rags, etc.:					Pounds.....	30,169,388	32,598,072	35,342,726	10.8
Pounds.....	40,402,460	79,367,290	(2)		Cost.....	\$10,492,185	\$8,032,773	\$6,814,279	54.0
Cost.....	\$2,856,966	\$5,668,634	(2)		Silk and spun silk—				
Shoddy, mungo, and wool extract, purchased:					Pounds.....	282,536	412,307	181,915	114.2
Pounds.....	21,454,187	31,919,456	33,036,767	-35.1	Cost.....	\$1,142,663	\$1,679,883	\$529,789	115.7
Cost.....	\$3,058,214	\$4,472,668	\$4,070,836	-24.9	All other—				
					Pounds.....	1,046,735	411,779	1,127,926	-7.2
					Cost.....	\$40,739	\$21,118	\$65,434	-37.7
					Chemicals and dyestuffs.....	\$8,820,928	\$7,456,550	\$6,595,160	33.7
					All other materials.....	\$25,464,278	\$18,086,162	\$16,307,551	66.4

¹ A minus sign (-) denotes decrease.

² Not reported separately.

In the woolen and worsted goods branches of the industry there was an increase of \$125,351,397, or 88 per cent, in the cost of materials between 1899 and 1909. The increase in the consumption of foreign wool during the decade was 84,367,740 pounds, or

105.7 per cent, and in that of domestic wool, 60,209,074 pounds, or 24 per cent. From 1904 to 1909, however, there was a decrease of 2.9 per cent in the quantity of domestic wool used. The increase in the total consumption of wool from 1899 to 1909, based upon the

figures representing equivalent weight in scoured condition, was 98,001,451 pounds, or 50.9 per cent.

The table gives the percentages of increase or decrease in the quantity and value of the various materials for the decade 1899-1909. In general these percentages conform to those shown in Table 21 for the woolen industry as a whole.

Summary for the felt goods branch of the industry.—Table 23 gives the quantity and cost of the materials used in the manufacture of felt goods for 1909, 1904, and 1899.

MATERIAL.	MATERIALS USED IN THE FELT GOODS BRANCH OF THE WOOLEN INDUSTRY.			Percent of increase: 1899-1909
	1909	1904	1899	
Total cost	\$6,967,206	\$5,754,028	\$3,801,028	83.3
Wool:				
In condition purchased—				
Pounds	12,409,826	11,868,238	9,606,263	29.2
Cost	\$3,927,393	\$3,388,688	\$2,196,440	78.8
Equivalent of above in scoured condition, pounds.	9,308,172	8,131,082	6,468,097	43.9
Animal hair, etc.:				
Pounds	8,144,011	6,974,634	2,819,521	188.8
Cost	\$239,244	\$373,797	\$125,803	90.2
Cotton:				
Pounds	1,375,670	1,082,624	1,225,850	12.2
Cost	\$155,815	\$217,200	\$77,683	100.6
Shoddy, mungo, and wool extract, purchased.				
Pounds	2,536,243	1,532,127	712,373	256.0
Cost	\$261,878	\$157,031	\$80,737	224.4
Waste and noils, purchased.				
Pounds	4,874,712	1,948,969	2,653,590	83.7
Cost	\$1,229,110	\$452,509	\$552,992	120.6
Chemicals and dyestuffs	\$219,891	\$189,750	\$128,296	71.4
All other materials	\$942,875	\$976,151	\$639,077	47.5

The cost of wool in this branch of the industry represented 56.4 per cent of the total cost of materials in 1909, and 57.8 per cent in 1899. Of the increase of \$3,166,178 in cost of materials between 1899 and 1909, \$2,398,071, or 75.7 per cent, represented the increase in the cost of wool and of waste and noils, though the relative increase for most of the other materials was large.

Summary for the wool hat branch of the industry.—Table 24 gives the quantity and cost of the materials used in the manufacture of wool hats for 1909, 1904, and 1899.

The quantity of wool used in the manufacture of wool-felt hats in 1909 was less than half the quantity used in 1899, and while the quantity of waste and noils increased 48.5 per cent during the decade, this increase was not sufficient to offset the decrease in the consumption of wool. The cost of hat bodies and

hats in the rough purchased as materials in 1909 was nearly six times as great as in 1899.

MATERIAL.	MATERIALS USED IN THE WOOL HAT BRANCH OF THE WOOLEN INDUSTRY.			Per cent of increase: 1899-1909
	1909	1904	1899	
Total cost	\$2,472,263	\$1,369,810	\$2,042,202	21.1
Wool:				
In condition purchased—				
Pounds	1,203,498	1,633,525	2,713,374	-55.6
Cost	\$404,127	\$495,594	\$788,978	-48.8
Equivalent of above in scoured condition, pounds.	989,110	1,231,576	1,898,605	-47.0
Wool waste and noils, purchased:				
Pounds	1,281,764	287,363	862,982	48.5
Cost	\$861,172	\$119,407	\$370,792	78.3
Wool-felt hat bodies and hats in the rough:				
Dozens	21,864	12,089	4,939	342.7
Cost	\$82,020	\$25,997	\$13,920	496.4
Chemicals and dyestuffs	\$104,503	\$83,905	\$108,502	-3.7
All other materials	\$1,219,441	\$664,907	\$760,015	60.4

¹ A minus sign (-) denotes decrease.

Materials used in the woolen industry, by states.—Table 25 gives the quantity and cost of the principal materials used in the woolen industry (all four branches combined) in 1909, and the quantity for 1904 and 1899.

In 1909 Massachusetts reported 32 per cent of the wool used in the industry, Pennsylvania 20.7 per cent, and Rhode Island 16.2 per cent, as compared with 30.6 per cent, 18 per cent, and 14.8 per cent, respectively, in 1899. All of the states listed in the table except Connecticut and Maine show an increase between 1899 and 1909 in the quantity of wool used, New Jersey showing the greatest relative increase (145.2 per cent).

The quantity of cotton used in the woolen industry in 1909 was only a little more than half the quantity used in 1899; and of the total for 1909, Massachusetts reported 32.1 per cent and Pennsylvania 23.4 per cent.

In the quantity of purchased worsted yarn used, every state listed in the table shows a large gain for the decade. Massachusetts reported 29.7 per cent of the total quantity used in 1909, Rhode Island 22.7 per cent, and Pennsylvania 21.5 per cent. On the other hand, each state for which the totals are given shows a large decrease during the decade in the quantity of woolen yarn used. Maine, Massachusetts, and Rhode Island were the only states showing an increased quantity of cotton yarns in 1909 as compared with 1899, the gain being most pronounced in Massachusetts.

Table 25	PRINCIPAL MATERIALS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).				MATERIAL AND STATE.	PRINCIPAL MATERIALS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).			
	MATERIAL AND STATE.		Quantity.			MATERIAL AND STATE.		Quantity.	
	Cost: 1909	1909	1904	1899		Cost: 1909	1909	1904	1899
Wool:		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>		<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>	
In condition purchased...	\$140,998,437	488,368,690	432,205,574	342,498,189	Shoddy, mungo, and wool extract, purchased—Con.				
Connecticut.....	3,767,739	10,172,622	12,765,250	11,203,573	New York.....	\$135,921	939,539	2,209,909	
Maine.....	5,074,148	13,782,594	15,114,848	19,294,305	Pennsylvania.....	499,133	4,645,405	5,070,444	
Massachusetts.....	44,803,728	156,338,534	127,507,629	104,935,180	Rhode Island.....	259,829	1,546,464	4,273,269	
New Jersey.....	11,673,250	44,150,167	37,371,456	18,005,603	All other states.....	1,067,422	7,257,727	6,094,790	
New York.....	8,462,790	26,651,580	26,056,151	20,942,082					
Pennsylvania.....	27,262,676	101,256,902	90,180,229	61,504,080	Waste and nolls of wool, mohair, camel hair, etc., purchased.	\$4,404,571	32,629,812	28,269,460	
Rhode Island.....	22,768,723	79,082,314	66,069,085	50,857,087	Wool waste and nolls.....	9,281,604	31,957,327	27,189,632	
All other states.....	17,185,383	56,933,937	57,140,926	56,666,279	Mohair nolls.....	110,309	604,985	393,627	
					Camel, alpaca, and vicuna nolls.....	12,658	67,500	681,201	
Domestic.....	88,187,504	320,298,916	330,106,695	257,824,751	Connecticut.....	466,078	1,871,548	2,263,438	
Connecticut.....	3,474,052	9,084,587	11,831,199	9,709,648	Maine.....	721,825	2,399,147	1,850,039	
Maine.....	3,781,852	10,193,888	12,390,314	16,172,948	Massachusetts.....	2,671,684	9,501,027	8,518,733	
Massachusetts.....	25,774,777	96,701,973	91,212,818	76,095,595	New Jersey.....	557,593	1,586,752	9,973,898	
New Jersey.....	6,896,485	31,109,309	33,963,274	13,023,301	New York.....	960,628	2,908,692	1,710,008	
New York.....	6,784,854	22,392,412	22,456,770	18,692,443	Pennsylvania.....	1,448,961	5,716,904	4,360,585	
Pennsylvania.....	15,634,908	56,681,445	52,543,133	32,609,085	Rhode Island.....	839,389	2,578,085	3,160,012	
Rhode Island.....	15,468,437	58,103,445	50,776,005	41,014,744	All other states.....	1,738,413	6,067,657	5,425,547	
All other states.....	10,402,139	36,056,697	48,933,177	50,617,087					
Foreign.....	52,810,933	168,069,774	102,098,879	84,673,438	Tops, purchased.....	14,716,142	20,991,962	9,236,266	
Connecticut.....	233,687	1,083,035	934,051	1,493,925	Massachusetts.....	3,466,257	5,045,561	2,999,927	
Maine.....	1,392,296	3,588,708	2,724,534	3,121,357	Pennsylvania.....	1,530,899	2,445,813	1,183,036	
Massachusetts.....	19,028,951	59,639,561	36,204,811	28,339,585	Rhode Island.....	7,887,543	10,406,834	4,150,072	
New Jersey.....	4,778,765	13,040,848	3,408,132	4,983,302	All other states.....	1,831,443	3,063,754	923,231	
New York.....	1,707,936	4,289,168	3,699,381	2,249,639					
Pennsylvania.....	11,627,768	44,575,257	37,637,091	28,094,095	Yarns, purchased.....	68,679,447	103,045,808	73,410,671	
Rhode Island.....	7,300,286	20,973,869	9,293,080	9,842,348	Connecticut.....	6,050,001	6,372,748	4,583,783	
All other states.....	6,783,244	20,877,330	8,207,749	5,149,192	Maine.....	1,612,220	3,430,561	3,676,924	
					Massachusetts.....	20,937,624	29,947,889	18,806,047	
Equivalent in scoured condition.....	301,004,252	250,642,723	201,072,221	7,271,894	Massachusetts.....	6,117,547	6,799,219	2,780,554	
Connecticut.....	7,045,156	8,205,794	10,567,069	57,347,362	New Jersey.....	1,718,630	2,829,406	1,594,097	
Maine.....	10,763,685	11,016,422	10,567,069	9,728,167	New York.....	15,299,783	27,549,062	17,295,339	
Massachusetts.....	99,133,605	59,639,561	74,265,049	57,347,362	Pennsylvania.....	13,915,166	19,267,818	17,756,202	
New Jersey.....	22,346,674	14,859,789	9,728,167	11,830,370	Rhode Island.....	3,022,478	6,848,905	6,937,725	
New York.....	15,858,034	15,010,370	11,830,370	11,830,370					
Pennsylvania.....	65,555,136	55,790,525	48,302,782	48,302,782	Woolen.....	558,270	931,222	5,750,088	
Rhode Island.....	43,153,225	36,551,598	32,884,049	32,884,049	Massachusetts.....	30,522	53,324	1,120,010	
All other states.....	37,148,837	34,343,176	32,140,548	32,140,548	Pennsylvania.....	106,540	143,884	1,303,215	
					Rhode Island.....	143,015	273,926	1,233,801	
Hair.....	3,851,412	33,447,534	36,679,624	28,480,048	All other states.....	278,193	460,088	2,093,062	
Camel, alpaca, and vicuna	1,421,778	4,659,409	1,578,800	2,078,820					
Massachusetts.....	572,466	1,587,596	(2)	1,591,990	Worsted.....	59,033,701	59,148,771	31,047,712	
All other states.....	849,312	3,071,813	1,578,800	480,830	Connecticut.....	5,629,603	5,113,219	2,558,669	
					Massachusetts.....	16,905,864	17,569,506	7,988,500	
Mohair.....	989,550	3,187,950	5,620,196	3,023,146	New Jersey.....	5,823,416	5,869,766	1,307,443	
Domestic.....	622,748	2,444,561	2,684,573	(1)	New York.....	1,227,155	1,412,237	318,244	
Foreign (Turkish, etc.)	366,802	743,389	2,935,623	1,286,845	Pennsylvania.....	11,868,802	12,728,111	6,605,049	
Maine.....	343,843	1,293,072	(2)	913,101	Rhode Island.....	11,987,111	13,403,194	10,382,578	
Massachusetts.....	448,060	1,203,263	(2)	14,233	All other states.....	2,591,750	3,052,718	1,886,929	
Pennsylvania.....	82,002	251,178	615,845	14,233					
All other states.....	115,145	470,437	4,704,351	808,967	Merino.....	341,579	2,087,824	2,682,269	
					Pennsylvania.....	223,853	1,658,124	1,779,505	
Other animal hair.....	1,439,984	25,600,175	29,480,628	23,378,082	All other states.....	117,726	429,700	802,464	
Connecticut.....	101,921	1,088,682	(3)	164,331					
Massachusetts.....	716,130	834,960	(3)	1,126,520	Cotton.....	10,557,088	39,482,613	33,007,525	
New Jersey.....	118,047	2,694,355	(3)	814,920	Connecticut.....	291,770	1,163,566	1,680,875	
New York.....	269,744	1,280,094	1,291,461	19,513,071	Maine.....	813,996	2,453,858	2,005,774	
Pennsylvania.....	817,786	18,525,185	25,364,033	17,759,240	Massachusetts.....	3,624,646	12,116,277	9,375,588	
All other states.....	65,556	1,146,890	2,825,134	1,759,291	New Jersey.....	189,702	833,227	1,319,443	
					New York.....	300,706	990,264	937,927	
Cotton.....	2,671,224	21,399,731	34,596,032	41,470,560	Pennsylvania.....	2,801,570	11,060,645	7,191,952	
Domestic.....	2,105,824	18,412,493	30,853,432	(1)	Rhode Island.....	1,630,130	5,479,701	5,590,723	
Foreign (Egyptian, etc.)	475,300	2,987,238	3,742,600	(1)	All other states.....	1,004,578	4,386,155	4,390,243	
Connecticut.....	82,852	558,585	1,504,567	1,697,350					
Maine.....	263,408	1,986,953	3,132,243	2,298,770	Silk and spun silk.....	1,142,663	282,536	412,326	
Massachusetts.....	896,281	6,899,651	9,287,173	8,123,310	Silk.....	675,124	128,122	202,578	
New Jersey.....	26,541	228,378	625,301	1,519,668	Spun silk.....	467,539	154,414	209,748	
New York.....	83,276	599,698	1,326,455	1,009,766	Massachusetts.....	366,604	104,861	146,673	
Pennsylvania.....	536,262	5,017,601	5,659,285	12,322,620	New Jersey.....	31,284	6,122	5,855	
Rhode Island.....	96,882	679,139	1,847,500	3,535,333	New York.....	49,493	13,913	21,018	
All other states.....	705,722	5,659,726	11,243,499	10,064,354	Pennsylvania.....	278,289	50,698	50,132	
					Rhode Island.....	222,473	45,567	137,468	
Tailors' clippings, rags, etc.	2,914,324	41,517,552	80,687,714	(1)	All other states.....	194,020	61,275	51,190	
Connecticut.....	138,259	1,846,055	5,473,695	(1)					
Maine.....	73,465	1,019,778	1,496,440	(1)	Linen.....	14,742	14,453	24,329	
Massachusetts.....	1,500,644	13,835,046	34,370,271	(1)					
New Hampshire.....	403,774	4,337,235	9,930,014	(1)	Jute, ramie, and other vegetable fiber.....	31,894	1,148,389	596,422	
Ohio.....	100,706	1,214,924	14,781,589	(1)					
Pennsylvania.....	239,012	7,794,621	2,120,824	(1)					
Vermont.....	140,386	1,823,286	12,514,881	(1)					
All other states.....	309,078	5,396,707	(1)	(1)					
					Hat bodies and hats in the rough:				
Shoddy, mungo, and wool extract, purchased.....	3,330,810	24,052,730	33,484,250	33,752,275	Wool.....	83,020	21,804	12,089	
Connecticut.....	295,442	1,593,181	2,457,223	4,461,072	New York.....	47,616	16,057	(1)	
Maine.....	487,099	4,110,846	4,114,911	3,094,185	All other states.....	35,404	5,807	12,089	
Massachusetts.....	547,990	3,687,530	8,398,040	9,808,403					
New Jersey.....	37,074	272,038	264,764	185,983	Fur felt.....	8,882	1,108	(1)	

¹ Figures not available.

² Figures can not be shown without disclosing individual operations.

Table 26 gives, by states, the total quantity of yarns and of shoddy, mungo, and wool extract used in the woolen industry in 1909, including stock made by mills for their own consumption and stock purchased.

MATERIAL AND STATE.	YARNS, SHODDY, MUNGO, AND WOOL EXTRACT USED IN THE WOOLEN INDUSTRY, EXCLUSIVE OF CARPETS AND RUGS (POUNDS): 1909		
	Total.	Purchased.	Made in establishments using.
Yarns.....	313,540,058	101,600,430	211,939,628
All wool.....	235,683,072	60,079,993	175,603,079
Woolen.....	96,979,261	931,222	96,048,039
Connecticut.....	8,141,019	17,605	8,123,414
Maine.....	11,150,892	100,373	11,044,519
Massachusetts.....	31,855,997	53,324	31,802,673
New Hampshire.....	8,874,453	118,038	8,756,415
New Jersey.....	3,506,872	90,084	3,416,788
New York.....	7,025,032	126,489	6,898,543
Pennsylvania.....	7,319,127	143,884	7,175,243
Rhode Island.....	2,829,787	273,926	2,555,861
All other states.....	16,276,082	699	16,275,483
Worsted.....	138,703,811	59,148,771	79,555,040
Connecticut.....	5,133,219	5,113,219	20,000
Maine.....	3,147,750	840,970	2,306,780
Massachusetts.....	55,749,732	17,569,506	38,180,226
New Hampshire.....	6,537,894	407,894	6,130,000
New Jersey.....	9,843,072	5,869,786	3,973,286
New York.....	7,320,882	1,412,237	5,908,645
Pennsylvania.....	15,701,529	12,728,111	2,973,418
Rhode Island.....	28,265,879	13,403,194	14,862,685
All other states.....	7,003,854	1,803,854	5,200,000
Merino.....	33,406,724	2,087,824	31,318,900
Connecticut.....	2,364,499	13,423	2,351,076
Maine.....	3,293,738	.....	3,293,738
Massachusetts.....	7,919,052	33,115	7,885,937
New Hampshire.....	2,782,311	30,000	2,752,311
New York.....	993,875	266,000	727,875
Pennsylvania.....	7,347,596	1,658,124	5,689,472
Rhode Island.....	1,881,088	65,430	1,815,658
All other states.....	6,824,517	21,732	6,802,785
Cotton.....	44,450,262	39,432,613	5,017,649
Connecticut.....	1,194,956	1,193,956	1,000
Maine.....	3,031,856	2,453,388	578,467
Massachusetts.....	14,889,027	12,118,277	2,770,750
New Hampshire.....	1,183,680	1,183,680	.....
New Jersey.....	938,227	833,227	105,000
New York.....	1,116,264	990,264	126,000
Pennsylvania.....	12,668,645	11,969,645	699,000
Rhode Island.....	5,538,110	5,470,701	67,409
All other states.....	3,909,298	3,212,475	696,823
Shoddy, mungo, and wool extract	56,994,363	24,082,730	32,911,633
Connecticut.....	2,544,412	1,563,181	981,231
Maine.....	4,880,846	4,110,846	770,000
Massachusetts.....	18,448,639	3,687,530	14,761,109
New Hampshire.....	5,798,570	2,423,570	3,375,000
New Jersey.....	1,117,038	272,038	845,000
New York.....	1,963,059	939,539	1,023,520
Pennsylvania.....	11,740,378	4,645,405	7,094,973
Rhode Island.....	1,546,464	1,546,464	.....
All other states.....	8,954,957	4,834,187	4,120,800

The greater portion of the woolen and worsted yarns were manufactured in the establishment where used—99 per cent of the woolen and 57.4 per cent of the worsted. Most of the merino yarns also were manufactured in the plant where used, only 6.2 per cent being purchased stock; but of the total quantity of cotton yarns used in the woolen industry, 88.7 per cent was purchased. Approximately three-fifths (57.8 per cent) of the shoddy, mungo, and wool extract was manufactured in the mills where used.

Wool used in the woolen industry.—Table 27 gives the quantity of wool in condition purchased, the equivalent weight in scoured condition, the total cost, and the average cost per pound on a scoured basis for each of the four branches of the woolen industry for each census from 1879 to 1909.

The total equivalent amount of scoured wool used in 1909 in the woolen industry was 301,004,252 pounds,

representing an increase of 49.7 per cent over the quantity reported in 1899. The same industry reported 488,368,690 pounds of wool "in condition purchased," but it is impossible from these figures to determine the percentage of loss in weight from scouring greasy wool, because the wool reported "in condition purchased" includes a large amount of scoured wool, and, moreover, the scoured equivalents are to a considerable extent estimated.

BRANCH OF INDUSTRY AND YEAR.	WOOL USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS): 1909			
	Quantity (pounds).		Cost.	
	In condition purchased.	Equivalent in scoured condition.	Total.	Average per pound on scoured basis (cents).
The industry as a whole:				
1909.....	488,368,690	301,004,252	\$140,998,437	46.84
1904.....	432,205,574	250,642,723	109,317,633	43.61
1899.....	342,498,189	201,072,221	81,789,243	40.68
1889.....	294,276,464	162,447,184	80,430,279	49.51
1879.....	251,559,764	142,389,923	86,885,292	61.02
Worsted goods:				
1909.....	387,717,415	230,580,497	109,237,887	47.38
1904.....	261,368,084	130,173,774	62,734,716	45.08
1899.....	179,977,936	103,338,616	44,306,141	42.87
1889.....	97,701,474	54,989,746	28,280,287	51.43
1879.....	41,149,326	26,334,635	15,235,878	57.85
Woolen goods:				
1909.....	87,037,951	60,126,473	27,429,030	45.82
1904.....	157,335,727	102,106,291	42,608,735	41.82
1899.....	150,200,616	89,366,903	34,497,689	38.60
1889.....	186,307,944	100,226,094	48,850,811	48.75
1879.....	197,524,955	109,724,213	67,380,250	61.41
Felt goods:				
1909.....	12,409,826	9,308,172	3,927,393	42.19
1904.....	11,868,238	8,131,032	3,388,588	41.67
1899.....	9,606,263	6,408,097	2,196,440	33.96
1889.....	6,729,083	4,213,230	1,841,382	43.70
1879.....	4,913,873	2,733,796	1,624,871	59.44
Wool hats:				
1909.....	1,203,498	989,110	404,127	40.86
1904.....	1,635,525	1,231,576	495,594	40.24
1899.....	2,713,374	1,898,605	788,973	41.56
1889.....	4,537,953	3,018,114	1,448,799	48.00
1879.....	7,971,610	3,597,279	2,644,293	73.51

The rise in the price of wool since 1899 is clearly brought out in Table 27. In each branch of the industry except the minor branch devoted to the manufacture of wool hats the average cost of wool per pound was higher in 1904 than in 1899, and in every branch it was higher in 1909 than in 1904. It will be noticed that in 1909 the average cost per pound was highest in the worsted-goods branch (47.4 cents), but that the woolen-goods branch shows the greatest relative increase in the average cost from 1904 to 1909 (9.1 per cent).

Fibers used in the woolen industry.—Table 28 shows the quantity of the several classes of raw fibers and of shoddy used in the woolen industry in 1909, 1904, 1899, and 1889, together with the proportion which each formed of the total consumption of all fibers.

One of the most interesting features in the development of the woolen industry during the five years from 1904 to 1909 is the decrease in the amount of shoddy used. It must be explained, however, that the answers to the inquiry relating to the amount of shoddy produced in woolen mills for their own use were, in some instances, based upon estimates.

Table 28

MATERIAL.	PRINCIPAL FIBERS USED IN THE WOOLEN INDUSTRY, EXCLUSIVE OF CARPETS AND RUGS (POUNDS).			
	1909	1904	1899	1889
Total	412,845,880	426,204,623	341,650,104	281,528,623
Scoured wool.....	301,004,252	250,642,723	201,072,221	162,447,184
Mohair, and camel, alpaca, and vicuna hair.....	7,847,359	7,198,996	5,101,966	8,376,494
Other animal hair.....	25,600,175	29,480,628	23,378,082	13,206,495
Shoddy.....	56,994,363	104,286,244	70,627,275	56,227,963
Purchased.....	24,052,730	33,484,250	33,752,275	(1)
Made for consumption.....	32,941,633	70,801,994	36,875,000	(1)
Cotton.....	21,399,731	34,506,032	41,470,560	41,270,487
Per cent of total	100.0	100.0	100.0	100.0
Scoured wool.....	72.9	58.8	58.9	57.7
Mohair, and camel, alpaca, and vicuna hair.....	1.9	1.7	1.5	3.0
Other animal hair.....	6.2	6.9	6.8	4.7
Shoddy.....	13.8	24.5	20.7	20.0
Purchased.....	5.8	7.9	9.9	.....
Made for consumption.....	8.0	16.6	10.8	.....
Cotton.....	5.2	8.1	12.1	14.7
Scoured wool and shoddy, total	357,998,615	354,928,967	271,699,496	218,675,147
Per cent of total.....	100.0	100.0	100.0	100.0
Scoured wool.....	84.1	70.6	74.0	74.3
Shoddy.....	15.9	29.4	26.0	25.7
Purchased.....	6.7	9.4	12.4	.....
Made for consumption.....	9.2	19.9	13.6	.....

¹ Not reported separately.

Imports of wool.—Table 29 presents statistics for the imports of wool into the United States in 1909, 1904, and 1899 from the several continental districts, and for the imports of each of the three classes or grades of wool (clothing wool, combing wool, and carpet wool) from the more important countries contributing to the total.

The figures are taken from the report on "Commerce and Navigation of the United States," issued by the Bureau of Foreign and Domestic Commerce of the Department of Commerce. This table covers the total quantity of wool imported.

The imports of wool for the fiscal year 1909 exceeded those for 1899 by approximately 190,000,000 pounds, or 247.2 per cent, the gains being large in the imports from all continental districts except Africa. South America furnished 20.8 per cent of all imports in 1909, as compared with 13.2 per cent in 1899, and Oceania 13.3 per cent in 1909, as compared with 3.6 per cent in 1899.

Table 29

	IMPORTS OF WOOL INTO THE UNITED STATES (POUNDS).		
	1909 ¹	1904 ¹	1899 ¹
All classes	266,409,304	173,742,834	76,736,209
Imported from—			
Europe.....	126,156,163	95,450,635	44,093,670
South America.....	55,412,106	28,171,843	10,113,649
Asia.....	47,490,140	37,530,053	19,143,913
Oceania.....	35,382,010	10,937,498	2,792,019
North America.....	1,837,340	1,511,852	208,697
Africa.....	125,639	140,953	384,261
Per cent of total	100.0	100.0	100.0
Europe.....	47.4	54.9	57.5
South America.....	20.8	16.2	13.2
Asia.....	17.8	21.6	24.9
Oceania.....	13.3	6.3	3.6
North America.....	0.7	0.9	0.3
Africa.....	(²)	0.1	0.5
By class or grade:			
Clothing wool (class 1).....	142,580,993	45,575,993	12,976,999
Combing wool (class 2).....	21,952,259	12,934,143	2,155,419
Carpet wool (class 3).....	101,876,052	115,232,698	61,603,791
Per cent of total	100.0	100.0	100.0
Clothing wool (class 1).....	53.5	26.2	16.9
Combing wool (class 2).....	8.2	7.4	2.8
Carpet wool (class 3).....	38.2	66.3	80.3

¹ Year ending June 30.

The most remarkable gain was in clothing wool (class 1), which increased from 12,976,999 pounds in 1899 to 142,580,993 pounds, or almost eleven times as much, in 1909. This class constituted 53.5 per cent of the total imports of wool in 1909, as compared with 16.9 per cent in 1899. The quantity of combing wool (class 2) imported in 1909 was more than ten times the quantity imported in 1899.

Supply of wool available for manufacture.—Table 30 shows the estimated net supply of wool available for manufacture for each year from 1900 to 1909, inclusive. The figures for domestic production are the estimates of the National Association of Wool Manufacturers, and the figures for imports are taken from the report on "Commerce and Navigation of the United States."

	IMPORTS OF WOOL INTO THE UNITED STATES (POUNDS).		
	1909 ¹	1904 ¹	1899 ¹
By class or grade—Continued.			
Clothing wool, class 1, imported from—			
United Kingdom.....	142,580,993	45,575,993	12,976,999
Argentina.....	54,606,609	17,335,314	4,502,541
Australia and Tasmania.....	41,442,475	16,014,308	2,693,426
Uruguay.....	30,617,828	10,937,498	.....
Belgium.....	4,911,914	112,208	9,045
New Zealand.....	4,723,078	305,343	557,733
All other countries.....	4,780,498	871,322	5,214,254
Combing wool class 2 imported from—			
United Kingdom.....	21,952,259	12,934,143	2,155,419
Argentina.....	18,334,147	9,443,853	2,111,028
Canada.....	1,590,188	100,548	.....
All other countries.....	1,494,641	1,419,151	36,971
Carpet wool class 3 imported from—			
Chinese Empire.....	101,876,052	115,232,698	61,603,791
United Kingdom.....	32,272,952	23,581,814	14,264,551
Russia (European and Asiatic).....	31,103,417	31,531,212	19,294,414
Turkey (European and Asiatic).....	7,930,404	13,342,730	4,717,245
Germany.....	9,490,741	24,929,977	13,304,601
British India.....	4,471,951	2,661,793	816,122
Argentina.....	2,891,902	1,531,864	721,358
All other countries.....	6,672,175	9,988,356	4,880,175
All other countries.....	7,042,480	7,664,952	3,605,325

² Less than one-tenth of 1 per cent.

Imports for consumption include imports direct for consumption and withdrawals for consumption of wool held in bond. The statistics for imported wool as here presented represent the quantities of foreign duty-paid wool available for consumption, whereas the wool imports as given in Table 29 are total imports. The increase in bonded warehouse stocks during the fiscal year ending June 30, 1909, over 1908 was more than 50,000,000 pounds.

The estimated supply of wool of all classes in 1909, figured on the basis of imports, exports, and estimated domestic production, was 537,298,699 pounds—an amount larger than that in any previous year except 1895 and 1897. Inasmuch as the textile industries reported the consumption of 559,850,995 pounds of wool (in condition in which purchased) during the

calendar year 1909, there is a fair degree of correspondence between the figures for supply and the consumption of wool for that year. It should be noted that in drawing comparisons between consumption and supply cognizance should be taken of the

stocks held in the mill warehouses, which may vary greatly in different years; but statistics for such stocks are, however, not available. For the five years from 1905 to 1909, inclusive, the average estimated annual supply was somewhat over 500,000,000 pounds.

YEAR.	WOOL SUPPLY (POUNDS).								
	Domestic production. ¹	Imports for consumption. ²			Domestic exports. ²	Net supply.		Ratio of imports to net supply (per cent).	
		Total.	Clothing and combing wool.	Carpet wool.		All classes.	Clothing and combing wool.	All classes.	Clothing and combing wool.
1909.....	328,110,749	209,216,326	117,850,771	91,865,555	28,376	537,298,609	445,033,144	38.9	26.4
1908.....	311,138,321	135,970,907	72,117,429	63,853,478	182,458	446,926,770	383,073,292	30.4	18.8
1907.....	298,294,750	196,035,251	103,582,132	92,453,119	214,840	494,115,161	401,082,042	39.7	25.8
1906.....	298,915,130	219,495,010	109,875,744	109,875,744	192,481	518,217,650	408,598,393	42.4	26.0
1905.....	295,488,438	211,287,432	98,691,605	112,595,877	128,961	506,651,969	394,050,092	41.7	25.0
1904.....	291,783,032	161,720,007	53,586,970	108,133,037	319,750	453,183,288	345,050,252	35.7	15.5
1903.....	287,450,000	179,651,038	60,408,820	119,245,218	518,919	466,582,119	347,330,901	38.5	17.4
1902.....	316,841,032	100,437,130	61,949,400	98,487,730	123,278	476,064,834	378,167,154	33.7	16.4
1901.....	302,502,382	124,803,051	43,140,108	81,722,943	199,565	427,105,868	348,442,925	29.2	12.5
1900.....	288,030,621	128,250,945	29,280,601	98,970,344	2,200,309	414,087,257	315,716,913	30.9	9.8

¹ Estimates of the National Association of Wool Manufacturers.

² Fiscal year ending June 30.

It will be observed that during each year from 1905 to 1909, with the exception of 1908, the proportion of foreign wool in the net supply was considerably higher than for any one of the five years ending with 1904. In 1906 the imports amounted to 42.4 per cent of the supply—the highest proportion for any year shown.

Practically all of the domestic wool is of the finer grades—clothing wool, and combing wool, designated in the statistics of imports and exports as class 1 and class 2, respectively.

Foreign wool in 1909 constituted only 26.4 per cent of the total net supply of classes 1 and 2, but this proportion was considerably higher than the corresponding proportion in any year prior to 1905. The domestic production responded somewhat to the increased demand, however, especially in the years 1908 and 1909, the production of the latter year being, with the exception of the years 1892 and 1893, the largest in the history of wool growing in this country.

PRODUCTS.

Summary for the United States: 1909.—Table 31 shows the quantity and value of the leading products made by establishments in the woolen industry, and of similar products made by establishments in other industries, with the combined totals. Statistics for many classes of goods not separately shown in this table are given in later tables. The products made

by establishments in other industries, however, do not enter into the statistics presented in other tables in this report.

The value of all products of the industry in 1909 was \$435,978,558. In addition, woolen, worsted, and felt goods and wool hats to the value of \$3,862,340 were reported as subsidiary products by establishments engaged primarily in the manufacture of other products, including a small amount received for contract work, this figure including the value of the upholstery goods made in carpet and rug establishments. On the other hand the products reported for the woolen industry include some products other than woolen, worsted, and felt goods and wool hats, while \$3,132,283 was received for contract work, this amount representing chiefly duplication, as the value of the products on which the work was done is included in the main in the value of the products of the establishments within the industry for which it was done. The total value of woolen, worsted, and felt goods and wool hats manufactured (including that of yarns and other partly manufactured products made for sale) was therefore approximately \$439,840,898, although the actual figure probably differs somewhat from this, as some woolen products made by establishments outside the woolen industry may not have been separately reported, while the establishments in the woolen industry may not in all cases have made separate reports of the products primarily manufactured in other industries.

Table 31		Production in the woolen industry (exclusive of carpets and rugs).		Production in other industries. ¹		Production in the woolen industry (exclusive of carpets and rugs).		Production in other industries.	
PRODUCT.	Total production.	Production in the woolen industry (exclusive of carpets and rugs).	Production in other industries. ¹	PRODUCT.	Total production.	Production in the woolen industry (exclusive of carpets and rugs).	Production in other industries.		
All products of the woolen industry, total value.....	\$439,840,898	\$435,978,558	\$3,862,340	Union or cotton mixed woven goods—Continued.					
All-wool woven goods:				Horse blankets—					
Square yards.....	324,436,603	323,444,896	991,707	Square yards.....	750,176	694,176	56,000		
Value.....	\$220,659,988	\$220,079,555	\$580,433	Value.....	\$214,378	\$186,238	\$28,140		
Wool cloths, doeskins, cassimeres, chevots, etc.—				All other—					
Square yards.....	40,845,464	40,843,979	1,485	Square yards.....	11,804,400	11,804,400	.....	
Value.....	\$29,292,445	\$29,291,059	\$1,386	Value.....	\$3,933,446	\$3,933,446	.....	
Worsted coatings, serges, and suitings—				Cotton-warp woven goods:					
Square yards.....	119,680,955	119,655,060	25,886	Square yards.....	211,653,600	210,452,401	1,201,199		
Value.....	\$101,926,782	\$101,908,153	\$23,629	Value.....	\$62,662,058	\$62,323,086	\$338,972		
Wool dress goods, sackings, tricots, etc., and opera or similar flannels—				Worsted filling cassimeres, doeskins, jeans, tweeds, coatings, etc.—					
Square yards.....	29,166,880	29,099,956	66,924	Square yards.....	29,628,199	29,220,252	407,947		
Value.....	\$16,408,898	\$16,385,498	\$23,400	Value.....	\$15,160,952	\$15,009,081	\$151,871		
Worsted dress goods, cashimeres, serges, mohair, bunting, etc.—				Worsted filling dress goods, cashimeres, serges, mohairs, etc.—					
Square yards.....	106,697,261	105,801,349	895,912	Square yards.....	65,666,233	65,112,981	553,252		
Value.....	\$54,561,794	\$54,030,376	\$531,418	Value.....	\$14,926,066	\$14,798,965	\$127,101		
Blankets—				Wool filling dress goods and repellants—					
Square yards.....	5,639,934	5,638,434	1,500	Square yards.....	13,156,060	12,916,060	240,000		
Value.....	\$3,455,185	\$3,454,585	\$800	Value.....	\$2,801,810	\$2,741,816	\$60,000		
All other—				All other—					
Square yards.....	22,406,109	22,406,109	.....	Square yards.....	103,203,108	103,203,108	.....	
Value.....	\$15,014,884	\$15,014,884	.....	Value.....	\$29,778,224	\$29,778,224	.....	
Union or cotton mixed woven goods:				Upholstery goods and sundries.....	\$3,785,229	\$1,986,330	\$1,798,899		
Square yards.....	37,783,813	37,453,351	330,462	Tapestry, terry, plush, rep, etc.—					
Value.....	\$14,418,128	\$14,327,973	\$90,155	Square yards.....	4,380,460	1,176,542	3,203,918		
Unions, tweeds, chevots, cassimeres, etc.—				Value.....	\$3,227,547	\$1,528,648	\$1,798,899		
Square yards.....	18,921,290	18,917,478	3,812	All other.....	\$457,682	\$457,682	.....	
Value.....	\$7,782,462	\$7,780,854	\$1,608	Wool felt hats:					
Sackings, tricots, dress goods, and opera and similar flannels—				Dozens.....	658,528	590,957	67,571		
Square yards.....	4,564,539	4,319,539	245,000	Value.....	\$4,551,430	\$3,646,787	\$904,643		
Value.....	\$1,827,153	\$1,776,721	\$50,432	Yarns, woolen, worsted, and merino:					
Blankets—				Pounds.....	131,430,238	130,855,808	574,430		
Square yards.....	1,743,408	1,717,758	25,650	Value.....	\$93,701,641	\$93,567,183	\$134,458		
Value.....	\$660,689	\$650,714	\$9,975	All other products.....	\$36,918,521	\$36,915,361	\$3,160		
				Contract work.....	\$3,143,903	\$3,132,283	\$11,620		

¹ Includes products made by establishments in the following industries: Carpets and rugs, other than rag; carriages and wagons and materials; clothing, men's, including shirts; cotton goods, including cotton small wares; dyeing and finishing textiles; flour-mill and gristmill products; hats and caps, other than felt, straw, and wool; hats, fur-felt; hats, straw; hosiery and knit goods; millinery and lace goods; silk and silk goods, including throwsters; and waste.

² Includes products manufactured primarily in the following industries: Carpets and rugs, other than rag; clothing, horse; clothing, men's, including shirts; cotton goods, including cotton small wares; foundry and machine-shop products; hats, fur-felt; hats, straw; hosiery and knit goods; house-furnishing goods, not elsewhere specified; and leather goods.

Summary for the woolen goods and worsted goods branches of the industry.—Table 32 gives the quantity and value of the different products of the woolen goods and worsted goods branches of the industry for 1909, 1904, and 1899.

In comparing the percentages of increase (or decrease) in quantity shown in this table with those in value, it should be borne in mind that each of the separate classes of products listed includes a variety of grades and styles differing from one another in value. Consequently no definite conclusions as to changes in prices can be drawn from this comparison. A change in the relative importance of the different grades and styles within a given class might result in a greater average value per yard for the class as a whole at one census than at another, without any corresponding increase in the prices of any of the specific kinds of goods covered. In view of these conditions, the Census Bureau has not deemed it desirable to compute average values for any of the classes of products shown.

All-wool woven goods contributed somewhat over half (52.4 per cent) of the total value of products of the woolen and worsted mills in 1909; union or cotton-mixed woven goods contributed 3.4 per cent; cotton-warp woven goods, 14.8 per cent; upholstering goods, five-tenths of 1 per cent; yarn and other partly manu-

factured products made for sale, 27.4 per cent; and all other products, eight-tenths of 1 per cent.

The amount of duplication involved in the use of the products of one mill as material for others can not be accurately determined, as it is impossible to distinguish the materials purchased from other mills in the industry from similar materials purchased from abroad or from establishments in other industries. It is probable, however, that most of the woolen, worsted, and merino yarns purchased by the mills in the woolen industry are purchased from other mills in the same industry. The total cost of purchased yarns of these classes used in 1909 was \$56,910,427. A further duplication of several million dollars is undoubtedly involved in the use of purchased waste, noils, tops, etc.

In 1909 the establishments in the woolen goods and worsted goods branches of the industry produced 570,743,797 square yards of woven goods, exclusive of upholstery goods and sundries. To this total all-wool woven goods contributed 322,944,365 square yards, or 56.6 per cent; union or cotton-mixed woven goods, 37,453,351 square yards, or 6.6 per cent; and cotton-warp woven goods, 210,346,081 square yards, or 36.9 per cent.

The production of woven goods in 1904 (exclusive of upholstery goods and sundries) amounted to

Of the three main groups of woven goods the all wool group shows the highest rate of increase, the output having increased 49.3 per cent in quantity and 86.7 per cent in value from 1899 to 1909. The value of this class of goods constituted 74.2 per cent of the total for all woven goods in 1909, as compared with 64.2 per cent in 1899. Worsted coatings, serges, suitings, overcoatings, cloakings, dress goods, cashmeres, and bunting together formed 70 per cent of the all-wool woven goods manufactured in 1909. The total number of square yards of these worsted fabrics manufactured in 1909 was a little more than double that in 1899.

The production of union or cotton-mixed goods in 1909 was much less than in 1904 or 1899. The production of "unions, tweeds, chevots, cashmeres, etc.," which comprised more than half of the union or cotton-mixed woven goods produced, decreased 38.5 per cent during the decade. The output of overcoatings and that of cloakings of this class decreased 29.7 per cent, and sackings, tricots, dress goods, etc., decreased 61.4 per cent during this period. The production of flannels for underwear and cotton mixed blankets increased 13.6 per cent from 1899 to 1909, although there was a decrease between 1904 and 1909.

Cotton-warp woven goods show an increase from 1899 to 1909 of 57,467,497 square yards, or 37.6 per cent. The value of such goods reported was 21 per cent of the value of all woven goods (not including upholstery goods and sundries) in 1909 and 23.2 per cent in 1899. The production of wool filling overcoatings, cloakings, etc., however, shows a marked decrease, as does that of satinets and linseys. Blankets and horse blankets also show decreases in quantity during the decade. The production of linings, Italian cloths, etc., on the other hand, increased 184.8 per cent during the 10 years. The output of woolen and worsted upholstery goods in 1909 was more than twice as great as in 1899.

The yarns shown in Table 30 include only those produced for sale. The total quantity increased from 96,213,866 pounds in 1899 to 134,051,361 pounds in 1909, or 39.3 per cent. In 1909, worsted yarn formed 65.9 per cent of the total quantity, the output having increased 105.4 per cent during the decade, while the quantity of both woolen and merino yarns decreased.

Table 33 shows the quantity of all-wool, cotton-mixed, and cotton-warp fabrics produced in the woolen goods and worsted goods branches of the industry in 1909, 1904, and 1899.

Table 33	PRODUCTION OF ALL-WOOL, COTTON-MIXED, AND COTTON-WARP FABRICS IN THE WOOLEN GOODS AND WORSTED GOODS BRANCHES OF THE WOOLEN INDUSTRY (SQUARE YARDS).				PRODUCT.	PRODUCTION OF ALL-WOOL, COTTON-MIXED, AND COTTON-WARP FABRICS IN THE WOOLEN GOODS AND WORSTED GOODS BRANCHES OF THE WOOLEN INDUSTRY (SQUARE YARDS).			
	1909	1904	1899	Per cent of increase: 1899-1909		1909	1904	1899	Percent of increase: 1899-1909
					Total production	571,350,648	506,013,537	426,949,136	33.8
					All wool.....	323,444,836	260,681,119	216,683,554	49.3
					Union or cotton mixed.....	37,453,351	63,197,407	57,334,570	-34.7
					Cotton warp.....	210,452,401	182,135,011	152,931,012	37.6
					Per cent of total	100.0	100.0	100.0	
					All wool.....	56.8	51.5	50.8	
					Union or cotton mixed.....	6.8	12.5	13.4	
					Cotton warp.....	36.8	36.0	35.8	
					Cassimeres, tweeds, chevots, etc., for men's wear	253,881,644	188,474,272	169,177,028	50.1
					All wool.....	160,498,048	102,080,377	88,584,945	81.2
					• Union or cotton mixed.....	18,917,478	35,103,110	30,767,915	-38.5
					Cotton warp.....	74,466,118	51,290,785	49,824,168	49.5
					Per cent of total	100.0	100.0	100.0	
					All wool.....	63.2	54.2	52.4	
					Union or cotton mixed.....	7.5	18.6	18.2	
					Cotton warp.....	29.3	27.2	29.4	
					Overcoatings, cloakings, etc.	22,019,309	37,040,657	29,614,919	-25.6
					All wool.....	15,352,174	23,469,198	19,610,055	-21.7
					Union or cotton mixed.....	4,281,739	5,373,053	6,087,366	-29.7
					Cotton warp.....	2,385,486	8,198,406	3,917,498	-39.1
					Per cent of total	100.0	100.0	100.0	
					All wool.....	69.7	63.4	66.2	
					Union or cotton mixed.....	19.4	14.5	20.6	
					Cotton warp.....	10.8	22.1	13.2	
					Dress goods, sackings, tricots, etc.	217,627,885	188,717,073	155,767,439	39.7
					All wool.....	135,270,305	115,586,884	91,309,778	48.2
					Union or cotton mixed.....	4,310,539	11,690,740	11,176,752	-61.4
					Cotton warp.....	78,029,041	61,439,449	53,280,909	46.4
					Per cent of total	100.0	100.0	100.0	
					All wool.....	62.2	61.2	58.6	
					Union or cotton mixed.....	2.0	6.2	7.2	
					Cotton warp.....	35.9	32.6	34.2	
					Carriage cloths (all wool)	1,782,855	1,741,765	1,220,408	46.1
					Flannels for underwear	15,491,690	20,269,730	20,117,663	-23.0
					All wool.....	3,856,353	8,710,131	9,345,556	-58.7
					Union or cotton mixed.....	7,063,572	7,273,761	6,217,094	13.6
					Cotton warp.....	4,571,765	4,285,833	4,556,013	0.4
					Flannels for underwear—Contd.				
					Per cent of total.....	100.0	100.0	100.0	
					All wool.....	24.9	43.0	46.5	
					Union or cotton mixed.....	45.6	35.9	30.9	
					Cotton warp.....	29.5	21.1	22.6	
					Astrakhan (cotton warp)	17,680	(a)	32,576	-45.7
					Satinets and linseys (cotton warp).....	5,102,460	22,343,617	13,051,729	-60.9
					Linings, Italian cloths, and lastings (cotton warp).....	28,828,148	17,619,325	10,157,039	184.8
					Blankets	17,209,353	19,869,262	18,155,505	-5.2
					All wool.....	5,638,434	7,414,563	5,465,277	3.2
					Union or cotton mixed.....	1,717,758	3,114,110	1,530,696	12.2
					Cotton warp.....	9,853,161	9,340,589	11,159,532	-11.7
					Per cent of total	100.0	100.0	100.0	
					All wool.....	32.7	37.3	30.1	
					Union or cotton mixed.....	10.0	15.7	8.4	
					Cotton warp.....	57.3	47.0	61.5	
					Horse blankets	5,151,669	7,966,873	7,315,304	-29.6
					All wool.....	247,395	749,237	518,452	-52.3
					Union or cotton mixed.....	694,176	618,800	1,094,537	-36.6
					Cotton warp.....	4,210,098	6,307,836	5,702,315	-26.2
					Per cent of total	100.0	100.0	100.0	
					All wool.....	4.8	9.7	7.1	
					Union or cotton mixed.....	13.5	8.1	15.0	
					Cotton warp.....	81.7	82.3	78.0	
					Carriage robes	3,433,712	1,375,186	1,739,422	97.4
					All wool.....	85,179	42,187	28,979	198.9
					Union or cotton mixed.....	459,059	23,833	460,210	-0.2
					Cotton warp.....	2,889,444	1,309,166	1,250,233	131.1
					Per cent of total	100.0	100.0	100.0	
					All wool.....	2.5	3.1	1.7	
					Union or cotton mixed.....	13.4	1.7	26.5	
					Cotton warp.....	84.1	95.2	71.9	
					Woven shawls (all wool)	704,153	895,777	600,104	17.3

1. Number of yards of dress goods.

2. Tricot, domestic flannels and shirtings.

3. Not reported.

The table also shows the percentage of the total quantity of the principal classes of fabrics which was reported as all-wool, cotton-mixed, and cotton-warp, respectively, and the percentage of increase in each case for the decade 1899-1909. Upholstery goods and sundries have not been included in this table, because these products were not classified according to character—whether all-wool or not. The "all-wool" classification is not intended to include fabrics having any admixture of cotton or other fiber (aside from animal hair) except such as may have been used to bring up a pattern or design. The "cotton-warp" classification includes goods woven with cotton weft on warp of woolen or worsted yarn, as well as goods woven on cotton warps, with weft partly or wholly of wool, worsted, or hair.

In the case of cassimeres, tweeds, chevots, etc., and of dress goods, sackings, tricots, etc., all-wool fabrics formed a larger proportion of the total in 1909 than in 1904 and 1899, while cotton-mixed fabrics formed a considerably smaller proportion. In the case of flannels for underwear, on the other hand, cotton-mixed goods constituted a much larger proportion in 1909 than at either of the preceding censuses and all-wool goods a smaller proportion.

Summary for the felt goods branch of the industry.—Table 34 shows the quantity and value of the principal products of the felt goods branch of the woolen industry for 1909, 1904, and 1899, together with the percentage of increase for the decade 1899-1909.

The value of products reported for this branch of the industry increased from \$6,461,691 in 1899 to \$11,852,626 in 1909, or 83.4 per cent, with especially large gains in both quantity and value of the products classified as trimming and lining felts, felt skirts, etc., and of hair felting.

Summary for the wool hat branch of the industry.—Table 35 presents statistics of the products of the wool hat branch of the industry for 1909, 1904, and 1899.

The total value of products for this branch of the industry shows an increase of 22 per cent for the decade 1899-1909. The number of wool-felt hats reported for 1909, though greater than that shown for 1904, was materially less than that for 1899.

Table 34

PRODUCT.	PRODUCTS OF THE FELT GOODS BRANCH OF THE WOOLEN INDUSTRY.			
	1909	1904	1899	Percent of increase: 1899-1909
Total value.....	\$11,852,626	\$8,948,594	\$6,461,691	83.4
Felt cloths:				
Square yards.....	3,764,468	3,889,610	2,056,002	83.1
Value.....	\$1,381,854	\$1,830,627	\$548,543	151.9
Trimming and lining felts, felt skirts, etc.:				
Square yards.....	5,953,410			
Value.....	\$1,329,686	5,145,340	2,469,830	.....
Saddle felts:				
Pounds.....	1,650,991	\$1,188,908	\$790,718	.....
Value.....	\$575,849			
Endless belts:				
Pounds.....	3,243,034	1,770,124	2,114,357	(3)
Value.....	\$3,417,822	\$1,707,216	\$1,084,835	215.1
Boot and shoe linings:				
Square yards.....	1,661,000	2,823,137	1,052,538	57.8
Value.....	\$514,456	\$781,450	\$540,110	-5.8
Hair felting:				
Square yards.....	1,159,999	605,214	125,000	828.0
Value.....	\$531,045	\$191,998	\$56,960	832.5
All other felts.....	\$3,549,876	\$2,592,894	\$2,261,918	(3)
All other products.....	\$552,038	\$655,501	\$1,172,617	-62.9

¹ A minus sign (-) denotes decrease. ² Square yards. ³ Comparable figures not available.

Table 35

PRODUCT.	PRODUCTS OF THE WOOL HAT BRANCH OF THE WOOLEN INDUSTRY.			
	1909	1904	1899	Percent of increase: 1899-1909
Total value.....	² \$4,382,411	\$2,457,266	\$3,691,940	22.0
Wool-felt hats:				
Dozens.....	590,957	440,121	811,425	-27.2
Value.....	\$3,046,787	\$2,290,070	\$3,161,361	15.4
Wool-felt hat bodies and hats in the rough:				
Dozens.....	53,896	18,587	56,006	-3.8
Value.....	\$309,492	\$100,491	\$120,262	157.3
All other products.....	\$426,132	\$66,705	\$310,317	37.3

¹ A minus sign (-) denotes decrease. ² In addition, 67,571 dozen wool-felt hats, valued at \$804,643, were made by establishments engaged primarily in other industries.

Total production of yarns and shoddy in the woolen industry (exclusive of carpets and rugs).—The total production of yarns and of shoddy, mungo, and wool extract in the four branches of the industry combined in 1909 is given in Table 36, the figures covering stock made for use in further processes of manufacture in the same mill, as well as that made for sale.

Table 36

PRODUCT.	TOTAL PRODUCTION OF YARNS, SHODDY, ETC., IN THE WOOLEN INDUSTRY, EXCLUSIVE OF CARPETS AND RUGS (POUNDS): 1909					
	Total.	For sale.	For use in the same establishment.			Total.
			Made in woolen mills.	Made in worsted mills.	Made in felt mills.	
Yarns.....	345,990,979	134,051,361	211,939,618	116,623,156	90,742,195	4,574,287
Woolen.....	124,568,522	28,520,493	96,048,029	80,761,458	10,743,304	4,643,287
Worsted.....	108,748,960	¹ 89,193,920	79,555,040	3,097,658	76,457,382	.....
Merino.....	45,330,262	14,011,362	31,318,900	30,124,141	1,163,759	31,000
Cotton.....	7,343,235	2,325,586	5,017,649	2,639,899	2,377,750	.....
Shoddy, mungo, and wool extract.....	33,378,690	437,057	32,941,633	31,021,323	1,045,310	875,000

¹ Includes 869,967 pounds of mohair yarn.

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Products of the woolen industry as a whole, by states.—
Table 37 shows, by states, the quantities and values of

the different products of the woolen industry as a whole
in 1909, and the quantities produced in 1904 and 1899.

Table 37	PRINCIPAL PRODUCTS OF THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).				PRODUCT AND STATE.	PRINCIPAL PRODUCTS OF THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).			
	1909		1904	1899		1909	1904	1899	
	Value.	Quantity.	Quantity.	Quantity.		Value.	Quantity.	Quantity.	Quantity.
All-wool woven goods.....	\$220, 079, 555	Square yds. 323, 444, 896	Square yds. 260, 681, 119	Square yds. 216, 683, 554	Cotton-warp woven goods—				
Connecticut.....	15, 103, 628	17, 987, 303	18, 377, 887	11, 549, 809	Continued.				
Maine.....	8, 007, 710	15, 089, 920	12, 999, 162	15, 213, 365	Wool-filling cassimeres, dog-		<i>Square yds.</i>	<i>Square yds.</i>	<i>Square yds.</i>
Massachusetts.....	78, 873, 571	109, 221, 437	85, 615, 420	72, 351, 333	skins, jeans, tweeds, coat-	12, 107, 320	45, 244, 866	34, 602, 165	37, 160, 449
New Jersey.....	18, 921, 354	26, 793, 087	16, 804, 826	8, 178, 522	ings, etc.....	544, 425	2, 108, 671	1, 760, 051	1, 927, 154
New York.....	12, 830, 093	17, 243, 627	12, 459, 972	9, 464, 705	Connecticut.....	4, 229, 797	18, 793, 980	11, 003, 728	7, 416, 602
Pennsylvania.....	22, 053, 317	33, 149, 873	26, 022, 510	19, 498, 412	Massachusetts.....	3, 562, 508	10, 080, 033	4, 813, 757	8, 162, 477
Rhode Island.....	36, 055, 800	53, 061, 591	43, 831, 236	30, 698, 062	Pennsylvania.....	3, 770, 570	14, 262, 182	17, 016, 629	19, 654, 216
All other states.....	27, 034, 022	50, 298, 049	43, 970, 116	49, 729, 341	All other states.....				
Wool cloths, doeskins, cassi-					Worsted-filling cassimeres,				
meres, chevots, etc., for					doeskins, jeans, tweeds,				
men's wear.....	29, 201, 059	40, 843, 979	42, 487, 566	34, 551, 266	coatings, etc.....	15, 009, 081	29, 220, 252	16, 688, 620	12, 668, 719
Connecticut.....	3, 834, 073	4, 371, 262	4, 318, 678	2, 201, 081	Massachusetts.....	3, 132, 629	6, 936, 133	2, 890, 672	2, 574, 582
Maine.....	3, 546, 999	6, 189, 031	2, 925, 363	4, 175, 688	Pennsylvania.....	3, 996, 018	8, 347, 362	3, 859, 898	631, 131
Massachusetts.....	9, 156, 065	13, 096, 953	14, 308, 537	12, 830, 426	Rhode Island.....	5, 030, 840	8, 453, 778	6, 772, 247	6, 738, 436
New York.....	1, 460, 578	1, 702, 748	4, 427, 304	2, 026, 699	All other states.....	2, 849, 794	5, 482, 979	3, 175, 803	2, 719, 670
Rhode Island.....	3, 436, 215	4, 716, 866	4, 555, 010	2, 394, 323	Wool-filling overcoatings				
All other states.....	7, 806, 729	10, 707, 119	11, 952, 674	10, 323, 249	and cloakings.....	771, 879	2, 075, 502	8, 198, 406	3, 917, 498
Worsted coatings, serges,					Massachusetts.....	448, 995	1, 050, 017	3, 870, 781	1, 050, 017
and suitings, for men's					All other states.....	322, 884	525, 485	4, 327, 625	2, 861, 637
year.....	101, 903, 153	119, 655, 069	59, 562, 811	54, 033, 679	Worsted-filling dress goods,				
Connecticut.....	6, 783, 552	6, 993, 858	3, 078, 070	2, 975, 355	cashmeres, serges, mo-				
Massachusetts.....	48, 051, 832	50, 772, 066	20, 514, 811	22, 055, 157	hairs, etc.....	14, 798, 965	65, 112, 981	49, 300, 369	45, 784, 011
New Jersey.....	3, 643, 739	2, 000, 339	1, 370, 951	868, 859	Massachusetts.....	10, 140, 751	51, 588, 003	34, 683, 359	21, 794, 250
New York.....	6, 420, 930	6, 823, 360	3, 105, 395	3, 132, 310	New York.....	1, 050, 731	3, 376, 396	1, 518, 326	4, 914, 479
Rhode Island.....	24, 280, 705	30, 517, 866	18, 793, 540	16, 629, 693	Rhode Island.....	2, 275, 346	7, 187, 938	2, 995, 144	8, 835, 833
All other states.....	12, 722, 395	15, 887, 280	12, 640, 035	8, 872, 305	All other states.....	1, 328, 137	2, 960, 644	10, 103, 540	10, 239, 449
Woolen overcoatings, cloak-					Wool-felt hats.....	3, 646, 787	590, 957	446, 121	Dozens. 823, 425
ings, kerseys, etc.....	11, 230, 356	14, 697, 770	22, 411, 530	18, 732, 922	Massachusetts.....	941, 502	145, 457	(2)	247, 163
Connecticut.....	2, 018, 255	2, 827, 661	1, 905, 798	2, 213, 987	New York.....	1, 185, 298	133, 678	136, 481	284, 494
Maine.....	1, 490, 455	1, 857, 948	1, 406, 334	1, 779, 389	Pennsylvania.....	1, 431, 342	303, 398	158, 585	279, 768
Massachusetts.....	3, 648, 648	4, 538, 769	10, 570, 499	7, 517, 646	All other states.....	88, 645	5, 424	151, 055	12, 000
Rhode Island.....	120, 488	178, 227	592, 199	810, 894	Yarns for sale.....	94, 541, 753	Pounds. 134, 051, 361	Pounds. 113, 314, 731	Pounds. 96, 252, 866
All other states.....	3, 353, 010	5, 295, 165	7, 936, 700	6, 411, 006	Connecticut.....	675, 155	751, 185	413, 581	801, 629
Wool dress goods, sackings,					Maine.....	1, 211, 143	1, 477, 360	639, 615	655, 237
tricot, and opera					Massachusetts.....	22, 770, 827	20, 970, 327	16, 779, 465	11, 510, 222
and similar flannels.....	10, 385, 498	20, 099, 950	48, 889, 643	33, 597, 692	New Jersey.....	11, 594, 086	11, 242, 062	5, 904, 987	4, 744, 938
Connecticut.....	902, 806	1, 610, 089	4, 171, 581	2, 301, 173	New York.....	1, 187, 300	1, 241, 041	2, 206, 680	1, 822, 410
Maine.....	1, 954, 016	4, 354, 196	5, 870, 735	5, 403, 046	Pennsylvania.....	34, 372, 739	67, 310, 683	66, 082, 601	60, 641, 607
Massachusetts.....	0, 220, 727	11, 731, 023	24, 017, 924	12, 606, 040	Rhode Island.....	19, 259, 262	19, 630, 045	15, 724, 189	11, 229, 808
All other states.....	7, 307, 949	11, 404, 048	14, 825, 423	13, 286, 533	All other states.....	3, 471, 241	5, 528, 658	5, 773, 613	4, 845, 957
Worsted dress goods, cash-					Woolen.....	7, 505, 412	28, 520, 493	42, 901, 823	32, 738, 851
meres, serges, bunting,					Maine.....	12, 181	16, 779	95, 531	30, 100
etc.....	54, 630, 376	105, 801, 349	66, 428, 825	57, 712, 086	Massachusetts.....	333, 397	929, 184	1, 333, 033	1, 110, 332
Massachusetts.....	10, 856, 014	21, 469, 961	13, 559, 320	14, 112, 645	New Jersey.....	26, 910	55, 772	(2)	79, 255
New Jersey.....	10, 855, 092	19, 120, 851	13, 692, 773	4, 308, 475	New York.....	2, 779	3, 949	(2)	491, 900
New York.....	2, 728, 242	5, 375, 780	3, 857, 323	740, 724	Pennsylvania.....	5, 965, 431	25, 211, 815	37, 044, 638	29, 161, 975
Pennsylvania.....	11, 247, 377	18, 492, 868	11, 662, 226	5, 812, 516	Rhode Island.....	368, 165	661, 234	1, 339, 608	579, 528
Rhode Island.....	8, 096, 724	18, 069, 251	18, 276, 957	9, 850, 120	All other states.....	746, 019	1, 641, 760	3, 089, 013	1, 285, 761
All other states.....	10, 247, 827	23, 266, 648	7, 370, 220	22, 827, 806	Worsted.....	80, 395, 543	88, 323, 953	55, 475, 235	43, 003, 343
Carriage cloths.....	940, 922	1, 782, 855	1, 741, 765	1, 220, 408	Maine.....	1, 156, 075	1, 353, 545	366, 715	358, 500
Massachusetts.....	1, 257, 371	3, 856, 353	8, 710, 131	9, 345, 556	Massachusetts.....	20, 858, 951	24, 106, 586	13, 834, 224	8, 738, 568
Massachusetts.....	207, 183	506, 182	1, 349, 300	2, 219, 593	New Jersey.....	11, 517, 331	11, 100, 625	5, 676, 075	4, 665, 688
Pennsylvania.....	430, 876	796, 097	1, 436, 723	638, 091	New York.....	1, 184, 521	1, 237, 092	1, 051, 528	980, 510
All other states.....	619, 212	2, 554, 074	6, 924, 108	6, 492, 902	Pennsylvania.....	23, 978, 942	28, 656, 142	23, 371, 803	16, 813, 647
Blankets.....	3, 454, 585	5, 638, 434	7, 414, 593	5, 465, 277	Rhode Island.....	18, 634, 773	18, 264, 920	9, 155, 469	8, 789, 306
Pennsylvania.....	1, 153, 048	1, 424, 062	1, 395, 707	1, 463, 544	All other states.....	3, 064, 960	3, 604, 743	2, 019, 421	2, 517, 129
All other states.....	2, 801, 537	4, 214, 372	6, 018, 886	4, 001, 733	Woolen, union or merino				
Union or cotton-mixed					Massachusetts.....	2, 143, 416	10, 249, 625	8, 224, 054	15, 974, 567
woven goods.....	14, 327, 973	37, 453, 351	63, 197, 407	57, 334, 570	Massachusetts.....	205, 288	579, 958	(2)	1, 075, 706
Connecticut.....	1, 105, 097	2, 108, 484	4, 178, 500	3, 376, 032	Pennsylvania.....	1, 438, 774	8, 725, 070	5, 013, 928	12, 294, 674
Maine.....	1, 019, 118	3, 996, 585	6, 224, 365	4, 086, 466	Rhode Island.....	228, 317	534, 654	2, 341, 087	1, 187, 639
Massachusetts.....	3, 332, 690	10, 230, 830	13, 401, 999	13, 706, 236	All other states.....	164, 037	409, 934	1, 469, 049	1, 416, 548
New Jersey.....	2, 070, 069	5, 104, 428	14, 026, 477	17, 389, 245	Worsted, union or merino				
Pennsylvania.....	1, 044, 706	1, 966, 140	4, 030, 440	1, 800, 201	Massachusetts.....	3, 522, 812	3, 761, 737	3, 314, 549	(6)
Rhode Island.....	4, 855, 123	13, 950, 878	21, 335, 626	16, 376, 360	Massachusetts.....	778, 405	703, 303	483, 127	.....
All other states.....					Pennsylvania.....	2, 692, 200	2, 985, 877	(2)	.....
Unions, tweeds, chevots;					All other states.....	52, 207	72, 587	2, 831, 422	.....
cassimeres, etc.....	7, 780, 854	18, 917, 478	35, 103, 110	30, 767, 915	Wools.....	8, 938, 589	27, 479, 283	15, 379, 600	12, 176, 843
Connecticut.....	305, 593	890, 666	2, 821, 517	2, 001, 035	Massachusetts.....	3, 670, 221	10, 894, 622	4, 835, 934	4, 880, 617
Maine.....	1, 283, 515	2, 682, 255	3, 810, 292	2, 664, 583	New Jersey.....	688, 740	1, 628, 352	879, 838	708, 793
Massachusetts.....	1, 631, 006	4, 837, 123	7, 130, 838	3, 849, 310	New York.....	531, 897	1, 798, 580	358, 972	529, 925
Pennsylvania.....	1, 285, 914	3, 244, 826	8, 058, 592	12, 049, 057	Pennsylvania.....	1, 895, 601	6, 006, 239	3, 888, 629	2, 984, 381
Rhode Island.....	984, 481	1, 831, 040	3, 708, 784	1, 244, 332	Rhode Island.....	1, 819, 094	5, 196, 661	3, 310, 117	2, 009, 777
All other states.....	2, 254, 345	5, 360, 928	9, 567, 087	8, 959, 598	All other states.....	527, 036	1, 956, 839	1, 598, 110	976, 350
Overcoatings and cloakings.					Waste.....	3, 539, 812	24, 327, 757	18, 317, 326	8, 181, 554
Massachusetts.....	2, 363, 381	4, 281, 739	5, 373, 053	6, 087, 366	Massachusetts.....	711, 529	6, 476, 439	4, 802, 626	1, 576, 293
Massachusetts.....	678, 910	1, 241, 172	1, 369, 028	1, 439, 838	New Jersey.....	528, 524	2, 102, 373	1, 136, 229	702, 392
All other states.....	1, 6								

Of the total number of square yards of all-wool woven goods, Massachusetts produced 33.8 per cent in 1909, Rhode Island 16.6 per cent, and Pennsylvania 10.2 per cent, these proportions differing but little from those in 1899. In the total production of union or cotton-mixed goods also Massachusetts ranked first in 1909, while Pennsylvania ranked second and Maine third. Of the total quantity of cotton-warp goods, Massachusetts reported 49.6 per cent in 1909, as compared with 36.1 per cent in 1899, Pennsylvania and Rhode Island ranking second and third, respectively, at both censuses.

Pennsylvania reported 51.3 per cent of the total production of wool-felt hats in 1909, and ranked first also in the quantity of yarns made for sale, with 50.2 per cent of the total for the United States.

EQUIPMENT.

Summary for the United States.—Table 38 shows the number of sets of woolen cards and the number of combing machines, spindles, and looms used in the woolen industry, as reported at the censuses of 1909, 1904, and 1899.

	EQUIPMENT USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).					
	Number.			Per cent of increase. ¹		
	1909	1904	1899	1899-1909	1904-1909	1899-1904
Woolen cards (sets) ² ...	5,099	5,753	6,137	-16.0	-11.4	-6.3
Combing machines.....	1,978	1,440	1,317	50.2	37.4	9.3
Spindles.....	4,317,993	3,765,751	3,361,893	30.8	14.7	14.0
Looms ³	72,940	64,132	61,537	18.5	13.7	4.2

¹ A minus sign (-) denotes decrease. ² Includes shoddy cards.
³ Exclusive of carpet looms.

The number of sets of woolen cards decreased steadily between 1899 and 1909, this decrease resulting in part from the relative decline in the carded-woolen branch of the industry. The growth of the worsted branch is indicated by the increase of 50.2 per cent during the decade in the number of combing machines. The increase in the number of spindles between 1899 and 1909 was 30.8 per cent, and in the number of looms 18.5 per cent.

Sets of cards.—Table 39 gives for the United States, and for each of the leading states, the number of sets of woolen cards used in 1909 and 1904.

With the woolen cards, as given in the table, are included the shoddy cards which were in operation in the various mills manufacturing woolen, worsted, and felt goods, and wool hats. The decrease in the number of sets of woolen cards, including such shoddy cards, was 654, or 11.4 per cent. It must be remembered, however, that the card is not in any case an absolutely accurate standard, because of variations in the

width of the cards, the diameter of the cylinders, and the speed at which they are operated.

STATE AND YEAR.	Sets of woolen cards used in the woolen industry (exclusive of carpets and rugs). ¹	STATE AND YEAR.	Sets of woolen cards used in the woolen industry (exclusive of carpets and rugs). ¹
United States:		New York:	
1909.....	5,099	1909.....	364
1904.....	5,753	1904.....	452
Connecticut:		Pennsylvania:	
1909.....	408	1909.....	840
1904.....	442	1904.....	856
Maine:		Rhode Island:	
1909.....	441	1909.....	305
1904.....	456	1904.....	360
Massachusetts:		Wisconsin:	
1909.....	1,403	1909.....	84
1904.....	1,587	1904.....	78
New Hampshire:		All other states:	
1909.....	357	1909.....	766
1904.....	393	1904.....	950
New Jersey:			
1909.....	131		
1904.....	179		

¹ Includes shoddy cards.

Table 40 shows the number of sets of cards reported in 1909, 1904, and 1899, classified according to width.

CLASS.	SETS OF WOOLEN CARDS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS). ¹		
	1909	1904	1899
Total number.....	5,099	5,753	6,498
Classified according to width:			
24 inches.....	92	85	290
30 inches.....	23	53	126
36 inches.....	26	32	56
40 inches.....	702	1,118	1,176
42 inches.....	9	12	23
44 inches.....	108	140	133
46 inches.....		16	67
48 inches.....	2,624	2,806	3,372
54 inches.....	8	9	22
60 inches.....	1,320	1,287	1,136
72 inches.....	53	51	29
All other (including unspecified).....	129	144	68

¹ Includes shoddy cards.
² Does not include sets of cards for which the width was not reported, but includes cards used in the carpet and rug industry.

The decrease which has already been spoken of took place principally among the narrower cards, those 60 and 72 inches in width showing an increase. The decrease in capacity, therefore, was not as great as would be inferred from the decrease in the number of sets of cards.

Table 41 shows, by states, for 1909, the distribution of woolen cards according to width.

The 40, 48, and 60 inch cards are the most important, representing over 90 per cent of the total number of sets. Of these, the 48-inch cards are by far the most generally used, forming 51.4 per cent of the entire number in 1909. Pennsylvania is the only state of importance in the industry in which more 60-inch cards were used than 48-inch.

Table 41

SETS OF WOOLEN CARDS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS): 1909

STATE.	Total.	Widths.										
		24-inch.	30-inch.	36-inch.	40-inch.	42-inch.	44-inch.	48-inch.	54-inch.	60-inch.	72-inch.	All other widths.
United States..	5,099	92	28	26	702	9	108	2,624	8	1,320	53	129
Connecticut.....	408				76		14	260		41	14	3
Maine.....	441	7	3	3	66		14	285	2	54		7
Massachusetts.....	1,403	23		12	270	4	65	706		259	27	32
New Hampshire.....	357	2			146			197		7		5
New Jersey.....	131							78		50	1	2
New York.....	364		1	2	34	1	2	213		56	10	45
Pennsylvania.....	840	30	2	1	7		2	274		503		12
Rhode Island.....	305				4			234	6	61		7
Wisconsin.....	84	3	1	4	18			44		7		16
All other states.....	766	13	21	4	81	4	11	333		282	1	16

Combing machines.—Table 42 shows the distribution of the wool-combing machines by states for 1909, 1904, and 1899.

Table 42

COMBING MACHINES USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).

STATE.	Number.			Per cent distribution.		
	1909	1904	1899	1909	1904	1899
United States.....	1,978	1,440	1,317	100.0	100.0	100.0
Connecticut.....	33	18	40	1.7	1.2	3.0
Maine.....	29	26	19	1.5	1.8	1.4
Massachusetts.....	657	450	377	33.0	31.2	28.6
New Hampshire.....	52	24	34	2.6	1.7	2.6
New Jersey.....	265	166	125	13.3	11.5	9.5
New York.....	89	62	66	4.5	4.3	5.0
Pennsylvania.....	342	349	340	17.2	24.2	25.8
Rhode Island.....	401	291	287	23.2	20.2	21.8
Wisconsin.....	13	8	(1)	0.7	0.6	0.5
All other states.....	37	46	29	2.4	3.2	2.2

¹ Included under "all other states."

Massachusetts at all three censuses reported more combing machines than any other state, and shows the greatest absolute increase during the decade 1899-1909, reporting 657 machines in 1909 as compared with 377 in 1899. Pennsylvania ranked second in 1904 and 1899 in the number of combing machines reported, but was outranked by Rhode Island in 1909, the latter state reporting 23.2 per cent of the total in that year as compared with 21.8 per cent in 1899. New Jersey reported 13.3 per cent of the combing machines used in the industry in 1909, as compared with 9.5 per cent in 1899, and shows the greatest relative increase for the decade, 112 per cent.

Table 43 shows the number of combing machines of domestic manufacture and of foreign manufacture, respectively, for the two branches of the industry in which these machines are used.

The proportion of combing machines of American manufacture has decreased somewhat since 1899, such

machines forming 22.1 per cent of the total in that year and only 20.3 per cent in 1909.

Table 43

COMBING MACHINES USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).

CLASS.	1909			1904			1899		
	Number	Per cent	Total	Number	Per cent	Total	Number	Per cent	Total
Total.....	1,978	20.3	9,778	1,440	23.6	6,038	1,317	22.1	5,921
Of domestic manufacture.....	402	20.3	1,978	340	23.6	1,440	291	22.1	1,026
Of foreign manufacture.....	1,576	79.7	7,800	1,100	76.4	4,598	1,026	77.9	4,895
In worsted mills.....	1,925	97.3	9,623	1,312	91.1	5,921	1,194	83.3	5,727
Of domestic manufacture.....	370	18.7	1,925	259	18.0	1,440	214	15.5	1,026
Of foreign manufacture.....	1,555	78.6	7,700	1,053	73.1	4,471	980	71.8	4,703
In woolen mills.....	53	2.7	2,555	128	8.9	1,117	123	9.0	694
Of domestic manufacture.....	32	1.6	1,576	81	5.6	1,026	77	5.7	694
Of foreign manufacture.....	21	1.1	929	47	3.3	421	46	3.3	400

Spindles.—Table 44 gives the number of spindles used in the woolen industry as reported for 1909, 1904, and 1899, with separate figures for producing spindles (mule and frame) and doubling and twisting spindles employed, respectively, upon woolen, worsted, and cotton yarns.

As a standard of capacity the spindle is not altogether satisfactory, as the output of a spindle varies with the kind and size of yarn spun. The number of spindles, however, serves as a rough measure of the growth of the industry.

The total number of spindles of all kinds was 3,301,893 in 1899 and 4,317,993 in 1909, an increase of 1,016,100, or 30.8 per cent. The percentage of increase in producing spindles was somewhat lower. The increase was practically all in worsted spindles, as there was a decline during the decade in the number of woolen and cotton producing spindles, and but a small increase in the number of woolen and cotton doubling and twisting spindles.

The number of mule spindles declined between the censuses of 1904 and 1909, 7.7, per cent, but the number of frame spindles increased 62.1 per cent and was more than half as great as that of mule spindles in 1909.

The number of doubling and twisting spindles increased from 405,130 in 1899 to 735,336 in 1909, or 81.5 per cent. Since a large number of doubling and twisting spindles implies a greater use of 2-ply yarns and a higher grade of manufacture, the ratio of doubling and twisting spindles to producing spindles is of interest. For woolen spindles the ratio was 1 to 16.8 in 1909, as compared with 1 to 19.1 in 1904 and 1 to 20.3 in 1899. In the case of worsted spindles the ratio was 1 to 2.7 in 1909 and 1904, and 1 to 2.9 in 1899.

Table 44 SPINDLES USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).

CLASS.	SPINDLES USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).										
	United States.	Connecticut.	Maine.	Massachusetts.	New Hampshire.	New Jersey.	New York.	Pennsylvania.	Rhode Island.	Wisconsin.	All other states.
All classes:											
1909.....	4,317,993	198,042	235,960	1,382,856	193,704	277,458	189,783	784,347	632,537	36,991	406,315
1904.....	3,765,751	182,390	210,992	1,063,025	234,974	216,598	213,292	709,093	469,340	37,398	408,779
1899.....	3,301,693	196,722	178,215	902,510	215,532	172,996	184,027	598,731	527,099	25,904	390,157
Producing spindles:											
1909.....	3,582,657	179,688	214,584	1,121,303	177,800	230,714	154,359	642,430	450,127	32,734	300,858
1904.....	3,245,880	166,422	189,684	917,873	222,054	181,293	177,487	590,916	379,374	32,558	388,219
1899.....	2,890,763	176,892	162,921	790,898	119,204	147,084	152,369	521,726	419,844	23,672	373,153
Woolen—											
1909.....	1,814,668	166,768	161,568	490,252	115,600	51,218	73,629	302,000	124,720	25,974	302,930
1904.....	2,078,721	159,666	169,560	541,930	178,630	70,276	100,401	329,276	151,860	28,438	348,684
1899.....	1,871,091	152,678	145,853	470,620	113,604	64,158	97,451	323,700	144,078	22,760	330,789
Worsted—											
1909.....	1,655,400	12,920	48,920	544,334	61,924	179,496	80,410	337,630	333,246	6,700	49,700
1904.....	1,077,561	6,756	17,060	320,941	43,424	111,017	76,706	255,840	227,514	4,120	14,123
1899.....	883,644	14,214	13,484	271,946	45,600	82,926	54,918	184,566	224,046	4,912	30,432
Cotton—											
1909.....	112,589	.....	4,096	86,717	336	.....	320	2,800	1,152	.....	17,168
1904.....	89,598	.....	3,064	55,002	.....	.....	320	5,800	.....	.....	25,412
1899.....	141,428	10,000	3,584	51,332	.....	.....	.....	13,400	51,120	.....	11,932
Mule spindles:											
1909.....	2,218,152	172,768	161,304	549,052	125,576	152,318	93,144	416,330	218,224	26,864	302,582
1904.....	2,404,240	159,366	180,908	612,624	180,010	125,070	124,661	440,122	215,920	28,058	357,495
Woolen—											
1909.....	1,791,303	166,768	161,304	477,508	115,600	51,218	65,889	300,796	124,104	25,534	302,582
1904.....	2,050,058	159,366	159,408	536,778	176,370	64,276	100,401	327,846	151,860	28,058	345,695
Worsted—											
1909.....	423,393	6,000	.....	71,544	9,640	101,100	26,935	112,734	94,120	1,320	.....
1904.....	313,862	.....	1,500	53,146	3,640	60,800	23,940	106,476	64,000	.....	300
Cotton—											
1909.....	3,456	.....	.....	.....	336	.....	320	2,800	.....	.....	11,500
1904.....	40,320	.....	.....	22,700	.....	.....	.....	5,800	.....	.....	.....
Frame spindles:											
1909.....	1,364,505	6,920	53,280	572,251	52,284	78,396	61,215	226,100	240,903	5,880	67,276
1904.....	841,640	7,056	28,776	305,249	42,044	56,217	52,820	150,794	163,454	4,500	80,724
Woolen—											
1909.....	23,365	.....	264	12,744	.....	.....	7,740	1,204	625	440	348
1904.....	28,663	300	10,152	5,152	2,260	6,000	.....	1,430	.....	380	2,989
Worsted—											
1909.....	1,232,007	6,920	48,920	472,790	52,284	78,396	53,475	224,896	239,126	5,440	49,760
1904.....	763,699	6,756	15,560	267,795	39,784	50,217	52,820	140,364	163,454	4,120	13,823
Cotton—											
1909.....	109,133	.....	4,096	86,717	.....	.....	.....	.....	1,152	.....	17,168
1904.....	49,278	.....	3,064	32,302	.....	.....	.....	.....	.....	.....	13,912
Doubling and twisting spindles:											
1909.....	735,336	18,354	21,376	241,553	15,844	46,744	35,424	141,917	173,410	4,257	36,457
1904.....	519,871	15,638	21,308	145,152	12,920	35,305	35,805	118,177	109,966	4,840	20,550
1899.....	405,130	19,830	15,294	102,012	6,328	25,912	31,658	77,005	107,255	2,232	17,004
Woolen—											
1909.....	107,804	13,550	6,684	23,053	2,836	.....	5,567	24,656	15,040	2,041	14,467
1904.....	108,838	12,278	16,530	18,986	4,400	2,420	7,377	16,301	13,874	2,374	14,298
1899.....	92,304	9,290	7,206	18,502	3,320	1,056	5,534	14,313	15,121	1,878	13,084
Worsted—											
1909.....	616,800	4,804	14,692	212,580	13,008	46,744	29,857	116,439	156,870	2,216	19,590
1904.....	402,310	3,560	4,778	110,223	8,520	32,835	28,428	100,406	96,092	2,466	5,182
1899.....	307,762	10,540	8,088	84,062	43,008	24,856	23,124	61,832	87,978	4,854	3,920
Cotton—											
1909.....	10,642	.....	.....	5,920	.....	.....	.....	822	1,500	.....	2,400
1904.....	8,723	.....	.....	6,243	.....	.....	.....	1,380	.....	.....	1,100
1899.....	5,064	.....	.....	48	.....	.....	.....	860	4,156	.....	.....

¹ In addition, there were 3,406 spindles, not classified, included under "all other states."
² In addition, there were 20,760 spindles, not classified, included under "all other states."
³ A few spindles in felt mills for which separate figures are not available are included in the figures for "all other states."
⁴ Worsted spindles in worsted mills for which separate figures are not available are included in the figures for "all other states."

Looms.—Table 45 gives for the United States and for the leading states the total number of looms in operation in the industry in 1909, 1904, and 1899, with separate figures for broad and narrow looms and hand looms.

Table 45 LOOMS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).

STATE.	LOOMS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).				STATE.	LOOMS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).			
	Total.	Broad. ¹	Narrow. ²	Hand.		Total.	Broad. ¹	Narrow. ²	Hand.
United States:					New Jersey—				
1909.....	72,940	53,893	19,066	41	1909.....	4,991	4,887	102	2
1904.....	64,132	46,088	17,978	66	1904.....	3,799	3,519	280	.....
1899.....	61,537	38,280	23,243	34	1899.....	2,639	2,205	434	.....
Connecticut—					New York—				
1909.....	3,409	3,145	264	.....	1909.....	3,035	2,534	475	26
1904.....	3,201	2,581	610	1	1904.....	2,899	2,334	514	51
1899.....	3,108	2,595	512	1	1899.....	3,033	2,300	718	15
Maine—					Pennsylvania—				
1909.....	4,024	2,967	1,057	.....	1909.....	11,420	7,624	3,786	10
1904.....	3,689	2,993	696	.....	1904.....	9,848	6,474	3,363	11
1899.....	3,646	2,516	130	.....	1899.....	10,681	5,116	5,555	10
Massachusetts—					Rhode Island—				
1909.....	25,185	16,572	8,612	1	1909.....	9,252	7,210	2,042	.....
1904.....	20,588	13,734	6,853	1	1904.....	8,103	6,455	1,648	.....
1899.....	18,523	10,818	7,705	.....	1899.....	8,007	5,811	2,195	1
New Hampshire—					Wisconsin—				
1909.....	4,230	3,743	487	.....	1909.....	327	309	18	.....
1904.....	4,397	3,198	1,199	.....	1904.....	297	277	20	.....
1899.....	4,071	1,738	333	.....	1899.....	272	236	36	.....
					All other states—				
					1909.....	7,067	4,902	2,163	2
					1904.....	7,311	4,523	2,786	2
					1899.....	10,557	4,925	5,625	7

¹ Fifty inches reed space or over.
² Under 50 inches reed space.
³ In addition, there were 156 looms, not classified, included in "all other states."
⁴ In addition, there were 3,241 looms, not classified, included in "all other states."

The total number of looms in the industry increased from 61,537 in 1899 to 72,940 in 1909, or 18.5 per cent. The broad looms (that is, those with 50 inches or more of reed space) increased in number 15,633, or 40.9 per cent, while in the number of narrow looms there was a decrease of 4,237, or 18.2 per cent. Of the states listed in the table, New Jersey shows the highest rate of increase in the total number of looms (89.1 per cent).

Table 46 gives for 1909, 1904, and 1899 the number of looms employed on woolen goods and on worsted goods, respectively, classified as broad looms, narrow looms, and hand looms.

CLASS.	LOOMS USED IN THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).		
	1909	1904	1899
Total.....	72,590	64,132	61,537
Broad looms: ¹			
On woolen goods.....	24,956	26,493	21,567
On worsted goods.....	28,796	19,595	16,693
Narrow looms: ²			
On woolen goods.....	8,117	10,107	13,618
On worsted goods.....	10,680	7,871	9,825
Hand looms.....	41	66	34

¹ Fifty inches reed space or over.

² Under 50 inches reed space.

The number of narrow looms employed in weaving woolen goods decreased between 1899 and 1909, while the number employed in weaving worsted goods increased. The number of broad looms on both woolen

and worsted goods shows an increase for the decade, the greatest gain being in the number of broad looms used in weaving worsted goods.

Table 47 gives, by states, the number of pickers and garnet machines used in the industry in 1909 and 1904.

STATE.	Census.	THE WOOLEN INDUSTRY (EXCLUSIVE OF CARPETS AND RUGS).	
		Number of pickers.	Number of garnet machines.
United States	1909 1904	1,425 1,733	224 227
Connecticut	1909 1904	100 124	18 16
Maine	1909 1904	105 135	18 17
Massachusetts	1909 1904	370 404	45 34
New Hampshire	1909 1904	98 127	12 17
New Jersey	1909 1904	59 71	1 3
New York	1909 1904	73 92	20 18
Pennsylvania	1909 1904	242 293	44 53
Rhode Island	1909 1904	72 94	15 24
Wisconsin	1909 1904	35 32	8 6
All other states	1909 1904	271 361	43 39

DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the four branches of the woolen industry are presented, by states, in Tables 48 and 49.

Table 48 shows for 1909, 1904, and 1899 the number of establishments, number of persons engaged in the

industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture.

Table 49 gives more detailed statistics for the industry for 1909 only.

MANUFACTURES.

WOOLEN, WORSTED, AND FELT GOODS, AND WOOL HATS—COMPARATIVE STATISTICS, BY STATES:
1909, 1904, AND 1899.

Table 48	STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.			Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
				Total.	Proprietors and firm members.	Salaried employees.								Wage earners (average number).
													Expressed in thousands.
United States.....													\$153,101
	1909	985	175,176	732	5,722	168,722	362,209	\$430,579	\$10,097	\$72,427	\$282,878	\$435,979	\$153,101
	1904	1,074	162,306	958	4,593	146,755	288,989	314,081	6,781	57,073	204,613	319,348	114,735
	1899	1,281			3,808	130,697	244,825	265,730	5,574	46,812	153,930	248,798	94,868
California.....													266
	1909	5	324	2	50	272	495	1,504	66	130	319	585	266
	1904	17	450	1	25	430	1,025	901	33	159	467	754	287
	1899	5	449	1	18	430	500	1,050	25	160	409	637	278
Connecticut.....													6,525
	1909	56	8,140	31	320	7,789	17,518	20,011	564	3,485	12,838	19,363	6,525
	1904	59	7,748	39	280	7,429	14,949	15,031	416	2,998	10,073	15,483	5,410
	1899	61	7,113	47	200	6,866	15,454	15,195	313	2,608	7,923	12,037	4,714
Georgia.....													428
	1909	7	692	4	28	660	1,437	1,415	36	175	443	871	428
	1904	8	668	4	17	647	1,181	815	22	129	424	656	232
	1899	14	575	1	13	551	715	455	17	97	280	491	211
Illinois.....													541
	1909	9	543	6	33	499	1,342	1,063	75	237	773	1,314	541
	1904	19	491	8	37	446	1,150	1,030	53	162	495	783	288
	1899	13	747	4	50	693	1,229	1,572	69	210	492	933	441
Indiana.....													514
	1909	11	825	12	37	776	1,678	1,555	71	293	1,056	1,570	514
	1904	13	1,038	10	35	993	1,945	1,645	49	306	997	1,597	600
	1899	20	1,118	12	58	1,048	1,945	1,849	68	307	877	1,491	614
Iowa.....													122
	1909	8	148	5	9	134	922	519	11	54	228	350	122
	1904	10	208	5	17	246	1,101	713	16	89	365	573	208
	1899	12	293	11	26	256	485	494	17	65	175	287	122
Kentucky.....													420
	1909	14	858	8	33	818	2,506	1,646	56	241	858	1,278	420
	1904	21	990	28	47	917	2,016	1,936	69	261	775	1,273	498
	1899	36	656	18	20	618	1,232	1,589	29	145	406	747	341
Maine.....													7,128
	1909	65	9,070	22	294	8,754	22,299	19,834	424	3,870	11,362	18,490	7,128
	1904	72	9,062	36	283	8,743	18,226	17,552	391	3,514	10,811	17,580	6,789
	1899	70	7,409	37	217	7,155	15,170	14,129	269	2,689	7,945	13,413	5,468
Massachusetts.....													53,961
	1909	183	55,533	103	1,557	53,873	117,119	133,955	2,964	24,593	87,976	141,967	53,961
	1904	190	45,264	141	1,073	44,050	88,896	104,257	1,759	18,137	62,778	90,314	30,536
	1899	187			977	37,589	76,279	80,728	1,583	14,338	45,130	74,075	28,945
Michigan.....													708
	1909	15	610	18	38	554	1,900	1,421	53	235	863	1,571	708
	1904	15	529	20	27	482	1,186	767	24	170	595	977	382
	1899	16	376	16	23	337	1,076	776	18	108	407	627	220
Minnesota.....													270
	1909	16	306	13	16	277	642	957	26	123	429	699	270
	1904	16	386	15	28	343	941	634	34	129	463	791	328
	1899	19	326	6	20	300	941	763	23	91	272	497	225
New Hampshire.....													5,636
	1909	39	9,701	21	194	9,496	30,485	15,103	289	3,049	11,095	16,731	5,636
	1904	44	6,820	32	207	6,581	18,437	14,411	257	2,755	9,479	14,284	4,805
	1899	43	4,208	37	129	4,042	10,106	8,161	153	1,572	4,741	7,624	2,883
New Jersey.....													12,906
	1909	33	13,119	28	439	12,652	20,254	36,391	885	4,904	21,033	33,939	12,906
	1904	35	9,301	38	280	8,983	14,008	18,979	485	2,951	10,623	16,394	5,766
	1899	28	7,235	14	163	7,058	11,326	17,437	303	2,194	7,626	12,270	4,644
New York.....													8,995
	1909	64	9,907	66	381	9,460	22,374	25,208	819	4,145	14,744	23,739	8,995
	1904	67	9,435	74	419	8,942	21,738	20,516	668	3,520	10,715	19,477	8,762
	1899	88	9,923	91	408	9,424	19,180	19,228	615	3,302	8,684	15,784	7,100
North Carolina.....													283
	1909	11	461	12	25	424	968	1,159	37	116	392	675	283
	1904	12	381	15	23	343	849	419	21	71	408	556	150
	1899	16	234	11	17	206	608	348	9	39	205	290	85
Ohio.....													3,074
	1909	20	2,711	23	122	2,566	6,504	7,159	207	925	4,616	7,090	3,074
	1904	27	1,886	38	75	1,773	3,178	3,585	92	503	2,137	3,587	1,450
	1899	38			84	1,234	1,783	2,710	95	384	1,681	2,826	1,145
Oregon.....													402
	1909	8	508	2	37	469	1,028	1,265	42	202	527	929	402
	1904	7	594	3	25	568	955	1,272	43	220	466	1,034	538
	1899	11	704	3	29	672	1,113	1,176	33	209	466	898	432
Pennsylvania.....													22,813
	1909	217	28,692	245	1,038	27,409	50,405	75,170	1,746	10,947	54,034	77,447	22,813
	1904	232	25,307	291	825	24,251	39,682	45,193	1,151	8,791	37,247	55,934	18,687
	1899	260	25,496	301	504	24,631	36,013	39,739	692	8,715	31,364	48,765	17,401
Rhode Island.....													23,575
	1909	88	25,673	26	723	24,924	43,715	68,867	1,322	11,538	51,025	74,600	23,575
	1904	82	22,090	44	430	21,610	35,981	45,000	654	9,102	35,930	52,641	16,765
	1899	77	18,069	62	401	17,606	28,420	41,018	737	6,641	24,378	38,672	13,794
Tennessee.....													675
	1909	21	1,737	21	62	1,654	2,371	2,515	78	419	1,127	1,802	675
	1904	27	1,431	22	44	1,415	2,590	2,310	54	327	945	1,700	761
	1899	51	1,725	29	64	1,632	2,692	2,400	68	294	874	1,517	643
Vermont.....													1,618
	1909	17	2,371	4	73	2,294	7,213	6,906	88	1,043	2,879	4,497	1,618
	1904	17	2,350	17	98	2,235	7,120	5,650	153	923	2,794	4,698	1,904
	1899	23	1,556	21	51	1,484	4,509	3,001	71	577	1,555	2,573	1,018
Virginia.....													432
	1909	16	590	18	30	542	1,352	1,101	33	176	567	999	432
	1904	24	701	23	29	649	1,656	1,046	29	179	760	1,250	490
	1899	28	416	15	39	362	937	784	38	104	392	628	236
West Virginia.....													429
	1909	13	640	10	31	599	1,327	1,106	31	222	795	1,224	429
	1904	12	324	13	21	290	726	426	24	106	218	469	251
	1899	33	412	12	16	384	1,118	684	17	99	319	507	188
Wisconsin.....													854
	1909	33	1,178	23	109	1,046	3,059	2,574	127	381	1,376	2,230	854
	1904	29	1,228	27	64	1,137	2,476	2,346	84	351	1,400	2,298	898
	1899	35			65	1,063	2,076	2,396	87	316	1,163	1,856	693
All other states.....													496
	1909	16	839	9	39	791	2,696	2,115	52	264	923	1,419	496
	1904	39	3,448	16	178	3,254	6,957	6,977	220	1,130	3,209	5,239	2,030
	1899	88			156	5,046	9,858	9,048	225	1,548	5,666	8,693	3,027

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

THE WOOLEN INDUSTRY.

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WOOLEN, WORSTED, AND FELT GOODS, AND WOOL HATS—DETAILED STATISTICS, BY STATES: 1909.

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.								WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Primary horse-power.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		Female.
								Maximum month.	Minimum month.						
United States...	985	175,176	722	2,460	2,470	792	168,722	No 173,943	Ja 158,318	175,171	92,820	72,409	4,459	5,483	362,209
California.....	5	324	2	0	34	7	272	Jy 357	Se 238	356	262	88	2	4	495
Connecticut.....	56	8,140	31	196	96	23	7,789	De 8,071	Ja 7,110	8,179	5,434	2,361	178	206	17,618
Georgia.....	7	692	4	17	7	4	660	Oc 699	My 639	672	347	257	44	24	1,437
Illinois.....	9	543	6	22	13	3	499	No 518	Ap 482	513	333	154	4	2	1,842
Indiana.....	11	825	12	23	12	2	776	Jy 830	Ja 727	810	344	431	12	23	1,678
Iowa.....	8	148	5	3	4	2	134	No 159	Mh 109	156	96	50	.....	1	922
Kentucky.....	14	858	8	23	5	4	818	No 873	Ja 680	873	308	501	46	18	2,506
Maine.....	65	9,070	22	160	94	40	8,754	De 9,373	Ja 8,021	9,397	5,868	3,332	86	111	22,299
Massachusetts.....	183	55,633	103	634	593	325	53,873	Oc 55,879	Ja 49,715	56,182	31,553	21,368	1,420	1,841	117,119
Michigan.....	15	610	18	26	9	3	554	De 606	Jy 515	607	344	261	.....	2	1,900
Minnesota.....	16	306	13	8	7	1	277	Oc 306	Ja 224	293	156	135	2	.....	642
New Hampshire.....	39	9,701	21	102	59	33	9,488	Au 9,694	Fe 9,237	9,752	5,488	4,112	73	79	30,485
New Jersey.....	33	13,119	28	96	324	19	12,652	De 13,712	Ja 11,816	13,716	6,110	6,984	326	206	20,254
New York.....	64	9,007	66	154	185	42	9,460	Je 9,950	Ja 8,771	9,596	5,333	4,068	85	110	27,374
North Carolina.....	11	461	12	17	7	1	424	Au 461	Ap 392	481	253	193	13	22	968
Ohio.....	20	2,711	23	41	65	16	2,566	Au 2,724	Ja 2,358	2,688	857	1,594	42	195	6,504
Oregon.....	8	608	2	12	22	3	469	De 573	My 420	573	339	214	16	4	1,628
Pennsylvania.....	217	28,692	245	422	475	141	27,409	No 28,383	Ja 25,796	28,226	12,494	13,053	1,187	1,492	50,405
Rhode Island.....	88	25,873	26	330	311	82	24,924	Se 25,604	Ja 24,072	24,739	12,879	10,317	726	817	43,715
Tennessee.....	21	1,737	21	27	30	5	1,654	Je 1,746	Ja 1,569	1,686	751	753	38	94	2,371
Vermont.....	17	2,371	4	30	29	14	2,294	De 2,508	Au 2,143	2,507	1,528	943	9	27	7,213
Virginia.....	16	690	18	22	7	1	542	Je 564	Fe 515	579	378	183	12	8	1,352
West Virginia.....	13	640	10	17	11	3	599	My 622	Se 552	629	370	231	15	13	1,327
Wisconsin.....	33	1,178	23	47	53	9	1,046	Je 1,116	Oc 975	1,116	452	597	25	42	3,050
All other states.....	16	839	9	22	13	4	791	.....	.....	845	525	220	48	52	2,696

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.			Miscellaneous.				
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States...	\$430,578,574	\$387,998,515	\$6,706,353	\$3,390,804	\$72,426,619	\$6,489,196	\$276,388,843	\$759,373	\$1,672,165	\$3,456,384	\$16,708,778	\$435,978,558	\$153,100,519
California.....	1,563,715	588,741	31,647	34,279	129,566	27,619	291,043	1,454	6,648	.....	66,485	585,410	266,748
Connecticut.....	20,011,122	17,514,370	417,619	145,959	3,485,157	329,872	12,508,270	42,873	68,644	5,782	510,803	19,363,228	6,525,086
Georgia.....	1,415,021	708,904	29,676	6,100	175,221	18,559	424,173	.....	3,586	5,472	40,178	870,520	427,788
Illinois.....	1,063,075	1,190,230	60,938	14,054	236,760	21,119	752,037	2,720	5,917	.....	96,085	1,314,100	540,944
Indiana.....	1,555,245	1,541,216	59,650	11,531	293,317	30,040	1,025,643	450	10,027	12,317	98,241	1,569,965	514,282
Iowa.....	518,751	308,495	6,020	5,031	53,869	11,406	216,462	.....	3,015	.....	12,692	349,569	121,701
Kentucky.....	1,045,642	1,241,089	49,165	6,816	241,467	24,433	833,815	2,250	6,028	.....	77,115	1,277,917	419,669
Maine.....	19,833,906	16,654,798	313,740	110,442	3,869,785	397,760	10,963,837	12,750	90,967	23,704	871,764	18,490,120	7,128,523
Massachusetts.....	133,955,422	123,597,298	2,147,773	815,986	24,592,763	2,360,970	85,615,361	183,864	773,888	1,524,423	5,682,821	141,966,882	53,990,551
Michigan.....	1,421,040	1,248,058	41,650	11,807	234,657	34,899	827,940	4,140	11,603	.....	81,362	1,571,364	708,525
Minnesota.....	956,714	621,754	18,000	6,760	123,368	13,424	415,304	1,500	5,532	1,200	35,766	698,576	289,848
New Hampshire.....	15,102,739	15,950,440	197,755	91,460	3,648,713	365,525	10,729,545	3,757	114,331	2,274	797,036	16,730,552	5,635,582
New Jersey.....	36,390,714	28,095,452	447,612	437,315	4,964,290	403,317	20,629,592	7,715	98,267	41,626	1,065,739	33,938,037	12,905,758
New York.....	25,207,821	21,379,217	468,652	349,907	4,144,918	370,969	14,373,059	31,722	79,239	170,876	1,389,825	23,739,421	8,995,393
North Carolina.....	1,159,005	593,465	31,110	5,700	116,331	14,431	377,538	50	6,265	.....	42,040	675,265	283,296
Ohio.....	7,158,812	6,767,443	115,080	91,688	924,844	61,360	4,554,669	2,785	32,612	479,818	504,567	7,690,149	3,074,120
Oregon.....	1,264,624	822,127	18,240	23,696	202,461	32,320	494,453	675	7,449	.....	42,833	928,654	401,881
Pennsylvania.....	75,170,431	71,177,842	1,091,736	654,062	10,947,225	789,043	53,845,402	255,773	99,864	802,120	2,692,977	77,446,996	22,812,911
Rhode Island.....	68,866,620	66,663,375	879,448	443,019	11,537,699	906,926	50,118,450	197,913	187,959	304,260	2,027,701	74,600,240	23,574,864
Tennessee.....	2,515,275	1,745,636	55,842	16,764	410,233	29,476	1,097,267	450	10,660	.....	115,954	1,802,311	675,578
Vermont.....	6,906,319	4,326,842	59,817	28,199	1,042,769	145,331	2,733,670	.....	22,013	22,075	272,968	4,496,903	1,617,902
Virginia.....	1,100,760	816,757	28,353	4,850	175,659	12,819	554,274	450	2,195	131	38,026	999,441	432,348
West Virginia.....	1,105,810	1,116,167	21,159	9,756	221,613	18,301	776,258	70	3,135	.....	65,875	1,224,247	429,688
Wisconsin.....	2,573,827	2,006,125	73,570	52,981	380,927	47,291	1,328,566	3,812	14,852	.....	98,126	2,229,708	853,851
All other states.....	2,116,164	1,328,638	41,193	12,642	263,998	21,936	902,615	2,200	8,019	306	75,679	1,418,283	493,682

1 All other states embrace: Alabama, 2 establishments; Arkansas, 2; Delaware, 2; Idaho, 1; Kansas, 2; Maryland, 2; Missouri, 2; South Carolina, 1; Texas, 1; Utah, 1.

THE CARPET AND RUG INDUSTRY.

GENERAL STATISTICS.

Scope of the industry.—This section of the report covers the operations of establishments which manufacture woven carpets and rugs from materials other than rags. The formal designation of the industry is "carpets and rugs, other than rag," the manufacture of rag carpets (as a primary product) being treated as a separate industry.

Although the most important material of the carpet and rug industry is wool, and the machinery employed is similar in general character to that used in the manufacture of other woolen products, this industry has been given a separate classification because of the importance and the distinctive characteristics of the carpet mills and their products. For purposes of comparison with previous censuses, the combined totals for the wool industry proper and the carpet and rug

industry are given in the preceding section on wool manufactures.

Comparative summary for the United States.—At the census of 1849, 116 establishments were reported as engaged in the manufacture of carpets and rugs, these establishments giving employment to an average of 6,186 hands and manufacturing products valued at \$5,401,234. At the census of 1859, 213 establishments were reported, giving employment to an average of 6,681 hands and manufacturing products to the value of \$7,857,636. Table 50 summarizes the statistics of the industry for each census from 1869 to 1909, 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, the financial figures for that year should be reduced about 20 per cent.

Table 50

	THE CARPET AND RUG INDUSTRY.											
	Number or amount.						Per cent of increase. ¹					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
Number of establishments.....	139	139	133	173	195	215	4.5	.....	4.5	-23.1	-11.3	-9.3
Persons engaged in the industry...	34,706	34,393	29,209	(²)	(²)	(²)	18.8	0.9	17.7	.....	.....	.....
Proprietors and firm members.....	134	149	111	(²)	(²)	(²)	20.7	-10.1	34.2	.....	.....	.....
Salaried employees.....	1,265	1,023	687	(²)	(²)	(²)	84.1	23.7	48.9	.....	.....	.....
Wage earners (average number)	33,307	33,221	28,411	28,736	20,371	12,098	17.2	0.3	16.9	(³)	(³)	(³)
Primary horsepower.....	38,553	33,945	26,740	22,684	10,491	3,719	44.2	13.6	26.9	17.9	116.2	182.1
Capital.....	\$75,627,010	\$56,781,074	\$44,449,299	\$38,208,842	\$21,468,587	\$12,540,750	70.1	33.2	27.7	16.3	78.0	71.2
Expenses.....	62,311,110	57,231,024	41,983,379	42,097,462	(²)	(²)	48.4	8.9	36.3	-0.3	.....	.....
Services.....	17,745,092	15,120,924	12,002,781	11,633,116	6,335,218	4,681,718	47.8	17.4	26.0	3.2	70.2	46.0
Salaries.....	2,209,042	1,396,691	881,398	(²)	(²)	(²)	150.6	58.2	58.5	.....	.....	.....
Wages.....	15,536,050	13,724,233	11,121,383	(²)	(²)	(²)	39.7	13.2	23.4	.....	.....	.....
Materials.....	39,563,004	37,947,954	27,228,719	28,644,905	18,984,877	13,577,993	45.3	4.3	39.4	-4.9	50.9	39.8
Miscellaneous.....	5,003,014	4,162,146	2,751,879	1,819,441	(²)	(²)	81.8	20.2	51.2	51.3	.....	.....
Value of products.....	71,188,152	61,586,433	48,192,351	47,770,193	31,792,802	21,761,573	47.7	15.6	27.8	0.9	50.3	46.1
Value added by manufacture (value of products less cost of materials).....	31,625,148	23,638,479	20,963,632	19,125,288	12,807,925	8,183,580	50.9	33.8	12.8	9.6	49.3	56.5

¹ A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.
² Comparable figures not available. ³ Figures not strictly comparable.

The number of wage earners employed in this industry in 1909 was nearly three times the number in 1869, and the value of products in the later year was more than three times as great as that in the earlier. The number of establishments, however, decreased gradually from 1869 to 1899, although increasing slightly between 1899 and 1904, and the increase in the number of wage earners in the latter part of the period covered by the table was not very great, a decrease occurring during the decade 1889-1899, while the increase for the last five-year period, 1904-1909, was only three-tenths of 1 per cent. The greatest relative increase in value of products shown for any decade is that for the decade 1879-1889 (50.3 per cent), although the increases for the decades 1899-1909 and 1869-1879 were nearly as

large. For the decade 1899-1909 the increase in the number of wage earners was 17.2 per cent; in the amount of wages paid, 39.7 per cent; in the cost of materials, 45.3 per cent; and in value of products, 47.7 per cent. Some part, however, of the increase in cost of materials and value of products was due to the general advance in prices which took place during the decade. Both the cost of materials and the value of products involve some duplication, due to the sale of yarns by some carpet and rug mills to other establishments in the industry, but the amount of such duplication is relatively small, since the bulk of the yarns purchased by the carpet and rug mills are produced by mills in the woolen industry. The value of the yarn made for sale in 1909 by carpet and rug mills was only \$732,846.

Summary, by states.—Table 51 summarizes, by states, the more important statistics of the industry, the states being arranged according to the value of products reported for 1909. Connecticut, which state

ranked fourth both in 1909 and 1904 in number of wage earners, value of products, and value added by manufacture, is included under "all other states" in order to avoid the disclosure of individual operations.

Table 51

THE CARPET AND RUG INDUSTRY.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. ¹										
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.		
				1909	1904			1899-1909	1904-1909				1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904		
		United States	139	33,307	100.0		\$71,188,152	100.0		\$31,625,148	100.0			17.2	0.3	16.9	47.7	15.6	27.8	50.9	33.8	12.8
New York	16	11,898	35.7	1 2	25,606,262	36.0	1 2	12,291,090	38.9	1 2	2	38.3	7.4	23.8	70.4	32.0	29.1	67.3	48.0	12.6	
Pennsylvania	93	11,510	34.6	2 1	24,879,232	34.9	2 1	10,230,934	32.4	2 1	1	-10.9	-16.1	6.2	7.6	-8.3	17.3	9.0	-1.8	11.5	
Massachusetts	11	5,954	17.9	3 3	12,811,981	18.0	3 3	5,310,871	16.8	3 3	3	32.9	15.0	15.6	83.9	31.9	39.4	78.5	76.4	1.2	
New Jersey	9	884	2.7	5 5	1,945,217	2.7	5 5	1,047,702	3.3	5 5	5	-24.5	-23.9	-1.5	27.7	11.2	14.8	59.8	36.0	17.6	
All other states	10	3,061	9.2		5,945,460	8.4		2,744,551	8.7												

¹ Percentages are based on figures in Table 75. A minus sign (-) denotes decrease.

Carpet and rug factories were reported from only 11 states in 1909. New York ranked first at the census of 1909 in the average number of wage earners employed in the industry, in value of products, and in value added by manufacture, having advanced from second place since 1904; the value of products reported for this state in 1909 represented 36 per cent of the total value of products for the industry in the United States. The number of wage earners in New York increased 38.3 per cent between 1899 and 1909, and the value of products 70.4 per cent. Pennsylvania, which ranked first among the states in 1904 in all three items, was second in 1909, contributing 34.9 per cent of the total value of products for the industry. Massachusetts, which ranked third in all three items in both 1909 and 1904, shows a greater percentage of increase in value of products for the decade than either New York or Pennsylvania, the gain being 83.9 per cent.

Persons engaged in the industry.—Table 52 shows, for 1909, the number of persons engaged in the carpet and rug industry, classified according to occupational status and sex, and in the case of wage earners according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and in other tables is an estimate obtained by the method described in the Introduction.

per cent, were wage earners, 448, or 1.3 per cent, proprietors and officials, and 951, or 2.7 per cent, clerks, this class including other subordinate salaried employees. Of the total number of persons engaged in the industry, 20,725, or 59.7 per cent, were males, and 13,981, or 40.3 per cent, females. The average number of children under 16 years of age employed as wage earners was 1,351, or 3.9 per cent of the total number of persons engaged in the industry.

The average number of wage earners employed in each state in 1909, 1904, and 1899 is given in Table 75. The average number distributed by sex and age is not shown for the individual states, but Table 76 gives such a distribution of the number employed on December 15, or the nearest representative day. Female wage earners were reported as employed in nine states, the largest number, 5,406, being reported for New York, and the next largest number, 4,354, for Pennsylvania. The employment of children under 16 years of age was practically confined to five states; the largest number, 639, was reported for Pennsylvania, and the next largest, 366, for Massachusetts.

In order to compare the distribution of the persons engaged in the industry according to occupational status in 1909 with that in 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 53.

Table 52

CLASS.	PERSONS ENGAGED IN THE CARPET AND RUG INDUSTRY: 1909		
	Total	Male.	Female.
All classes	34,706	20,725	13,981
Proprietors and officials	448	444	4
Proprietors and firm members	134	134	
Salaried officers of corporations	115	113	2
Superintendents and managers	199	197	2
Clerks	951	801	150
Wage earners (average number)	33,307	19,480	13,827
16 years of age and over	31,956	18,720	13,236
Under 16 years of age	1,351	760	591

Table 53

CLASS.	PERSONS ENGAGED IN THE CARPET AND RUG INDUSTRY.				
	1909		1904		Per cent of increase: ¹ 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total	34,706	100.0	34,393	100.0	0.9
Proprietors and firm members	134	0.4	149	0.4	-10.1
Salaried employees	1,265	3.6	1,023	3.0	23.7
Wage earners (average number)	33,307	96.0	33,221	96.6	0.3

¹A minus sign (-) denotes decrease.

The average number of persons engaged in the industry during 1909 was 34,706, of whom 33,307, or 96

Table 54 shows the average number of wage earners in the carpet and rug industry distributed according to age, and in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899.

CLASS.	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	33,307	100.0	33,221	100.0	28,411	100.0
16 years of age and over.....	31,956	95.9	31,338	94.3	26,328	92.7
Male.....	18,720	56.2	16,930	51.0	13,860	48.8
Female.....	13,236	39.7	14,408	43.4	12,468	43.9
Under 16 years of age.....	1,351	4.1	1,883	5.7	2,083	7.3

While the figures indicate that there has been a gradual increase in the relative number of men and a corresponding decrease in the number of women employed in the industry, the most noticeable fact

brought out by the table is the decrease from census to census in the absolute number of children employed.

Wage earners classified according to nature of employment.—Table 55 gives the total number of wage earners employed as spinners, as weavers, and in all other capacities, in the carpet and rug industry classified according to age and sex for 1909 and 1904, together with similar statistics for 1909 only for selected states.

The total number of wage earners employed on December 15 (or the nearest representative day) in 1909 was 34,874, of whom 3.3 per cent were spinners and 30.9 per cent weavers. The corresponding percentages for 1904 were 4.9 and 36.6 per cent, respectively. Both spinners and weavers declined in absolute number as well as in their proportion of the total, some part of the decline probably being attributable to the improvement of carpet and rug making machinery.

CLASS.	Total.	Spinners.		Weavers.		All other.	
		Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.
United States:							
1909.....	34,874	1,138	3.3	10,779	30.9	22,957	65.8
1904.....	33,221	1,621	4.9	12,154	36.6	19,446	58.5
16 years and over:							
1909.....	33,460	1,062	3.2	10,755	32.1	21,643	64.7
1904.....	31,338	1,467	4.7	12,105	38.6	17,766	56.7
Male—							
1909.....	19,601	511	2.6	6,936	35.4	12,154	62.0
1904.....	16,930	531	3.1	7,055	41.7	9,344	55.2
Female—							
1909.....	13,859	551	4.0	3,819	27.6	9,480	68.5
1904.....	14,408	936	6.5	5,050	35.0	8,422	58.5
Under 16 years:							
1909.....	1,414	76	5.4	24	1.7	1,314	92.9
1904.....	1,883	154	8.2	49	2.6	1,680	89.2
Male, 1909.....	796	35	4.4	.....	.....	761	95.6
Female, 1909.....	618	41	6.6	24	3.9	553	89.5
Selected states, 1909:							
Massachusetts.....	6,087	237	3.9	1,233	20.3	4,617	75.8
16 years and over.....	5,721	207	3.6	1,231	21.5	4,283	74.9
Male.....	3,155	75	2.4	553	17.5	2,527	80.1
Female.....	2,566	132	5.1	678	26.4	1,756	68.4
Under 16 years.....	366	30	8.2	2	0.5	334	91.3
Male.....	213	10	4.7	.....	.....	203	95.3
Female.....	153	20	13.1	2	1.3	131	85.6
Selected states, 1909—Continued.							
New Jersey.....	1,008	27	2.7	297	29.5	684	67.9
16 years and over.....	991	27	2.7	297	30.0	667	67.3
Male.....	697	19	2.7	254	36.4	424	60.8
Female.....	294	8	2.7	43	14.6	243	82.7
Under 16 years.....	17	.....	.....	.....	.....	17	100.0
Male.....	15	.....	.....	.....	.....	15	100.0
Female.....	2	.....	.....	.....	.....	2	100.0
New York.....	12,192	535	4.4	2,912	23.9	8,745	71.7
16 years and over.....	12,114	526	4.3	2,912	24.0	8,676	71.6
Male.....	6,708	242	3.6	1,390	20.7	5,078	75.7
Female.....	5,406	284	5.3	1,522	28.2	3,600	66.6
Under 16 years.....	78	9	11.5	.....	.....	69	88.5
Male.....	51	1	2.0	.....	.....	50	98.0
Female.....	27	8	29.6	.....	.....	19	70.4
Pennsylvania.....	12,454	232	1.9	5,705	45.8	6,517	52.3
16 years and over.....	11,815	195	1.7	5,689	48.1	5,937	50.2
Male.....	7,461	131	1.8	4,324	58.0	3,006	40.3
Female.....	4,354	64	1.5	1,350	31.2	2,931	67.3
Under 16 years.....	639	37	5.8	22	3.4	580	90.8
Male.....	342	24	7.0	.....	.....	318	93.0
Female.....	297	13	4.4	22	7.4	262	88.2

¹ For 1909 the figures are those reported for December 15, or the nearest representative day; for 1904 the average number is given.

Table 56 shows the percentage of men, women, and children, respectively, in the total number of wage earners employed in the industry and in each of the three classes for which statistics are presented in Table 55, together with similar statistics for 1909 only for selected states.

In Massachusetts and New York more than half of the spinners and weavers were women, while in New Jersey and Pennsylvania men were largely in the majority. In Massachusetts and Pennsylvania children constituted a considerable proportion of the spinners and of "all other" wage earners.

Table 56

CLASS.	WAGE EARNERS EMPLOYED IN THE CARPET AND RUG INDUSTRY—PER CENT OF TOTAL.			CLASS.	WAGE EARNERS EMPLOYED IN THE CARPET AND RUG INDUSTRY—PER CENT OF TOTAL.		
	16 years and over.		Under 16 years.		16 years and over.		Under 16 years.
	Male.	Female.			Male.	Female.	
United States:				Selected states, 1909—Continued.			
1909.....	56.2	39.7	4.1	New Jersey:			
1904.....	51.0	43.4	5.7	All wage earners.....	69.1	29.2	1.7
Spinners:				Spinners.....	70.4	29.6	.....
1909.....	62.5	36.7	0.8	Weavers.....	85.5	14.5	.....
1904.....	55.1	43.5	1.5	All other.....	62.0	35.5	2.5
Weavers:				New York:			
1909.....	64.3	35.4	0.2	All wage earners.....	55.0	44.3	0.6
1904.....	58.0	41.6	0.4	Spinners.....	45.2	53.1	1.7
All other:				Weavers.....	47.7	52.3	.....
1909.....	52.9	41.3	5.7	All other.....	58.0	41.2	0.8
1904.....	47.0	42.3	8.6	Pennsylvania:			
Selected states, 1909:				All wage earners.....	59.9	35.0	5.1
Massachusetts:				Spinners.....	56.5	27.6	15.9
All wage earners.....	51.8	42.2	6.0	Weavers.....	75.8	23.8	0.4
Spinners.....	31.6	55.7	12.7	All other.....	46.1	45.0	8.9
Weavers.....	44.8	55.0	0.2				
All other.....	54.7	38.0	7.2				

Wage earners employed, by months.—Table 57 gives the number of wage earners employed on the 15th (or the nearest representative day) of each month during the year 1909 for the five states in which an average of 500 or more wage earners were employed during the year.

Table 57

STATE.	WAGE EARNERS EMPLOYED IN THE CARPET AND RUG INDUSTRY: 1909 ¹												
	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States	33,307	33,312	33,603	33,313	32,719	32,835	33,186	33,297	33,387	33,462	33,082	33,397	34,097
Connecticut.....	2,999	2,971	2,978	2,978	2,940	2,939	2,953	3,014	3,029	3,029	3,041	3,068	3,065
Massachusetts.....	5,954	6,037	6,102	5,977	5,855	5,927	5,880	5,974	5,888	5,930	5,898	5,893	6,087
New Jersey.....	884	902	940	925	824	867	779	833	898	865	853	914	1,008
New York.....	11,898	11,570	11,654	11,794	11,804	11,747	11,859	11,952	12,007	12,015	12,032	12,154	12,182
Pennsylvania.....	11,510	11,778	11,875	11,581	11,238	11,292	11,672	11,460	11,500	11,558	11,189	11,300	11,677

¹ The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

The largest number of wage earners employed during any month of 1909 was 34,097, in December, and the smallest number, 32,719, in April, the minimum number being equal to 96 per cent of the maximum. In 1904 the maximum number, 34,514, was shown for February, and the minimum number, 31,570, for September, the latter number being equal to 91.5 per cent of the former. In New York and New Jersey the month of maximum employment in 1909 was December; in Connecticut, November; and in Pennsylvania and Massachusetts, February.

Prevailing hours of labor.—In Table 58 the wage earners in the industry have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

Only 1 per cent of the wage earners employed in 1909 were in establishments where the prevailing number of hours was less than 54 per week, and none were in establishments where the prevailing hours

were over 60 per week. In Massachusetts and New Jersey the most common working time was between 54 and 60 hours per week; in New York, 54 hours; and in Pennsylvania, 60 hours. In Connecticut all the wage earners were reported as employed in establishments where the prevailing hours of work were between 54 and 60 per week.

Table 58

STATE.	AVERAGE NUMBER OF WAGE EARNERS IN THE CARPET AND RUG INDUSTRY: 1909					
	Total.	In establishments with prevailing hours—				
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.
United States	33,307	165	178	7,078	13,892	12,084
Connecticut.....	2,999	.....	.....	.....	2,999	.....
Massachusetts.....	5,954	.....	45	.....	5,909	.....
New Jersey.....	884	36	3	.....	845	.....
New York.....	11,898	.....	124	6,463	742	4,569
Pennsylvania.....	11,510	129	.....	615	3,267	7,499

Character of ownership.—Table 59 presents statistics with respect to the character of ownership of the establishments in the carpet and rug industry for 1909 and 1904.

CHARACTER OF OWNERSHIP.	THE CARPET AND RUG INDUSTRY.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total	139	139	\$71,188,152	\$61,586,433
Individual.....	45	44	7,073,752	7,919,719
Firm.....	37	46	17,213,357	17,690,846
Corporation.....	57	49	46,899,043	35,975,868
Per cent of total	100.0	100.0	100.0	100.0
Individual.....	32.4	31.7	9.9	12.9
Firm.....	26.6	33.1	24.2	28.7
Corporation.....	41.0	35.3	65.9	58.4

In 1909, of the total number of establishments, 41 per cent were under corporate ownership, as compared with 35.2 per cent in 1904. In 1909 the value of products of these establishments, however, represented 65.9 per cent of the total for the industry, and 58.4 per cent in 1904.

Of the total number of wage earners reported for 1909, 2,546, or 7.6 per cent, were employed in establishments under individual ownership; 8,879, or 26.7 per cent, in those under firm ownership; and 21,882, or 65.7 per cent, in those owned by corporations.

Size of establishments.—Table 60 presents statistics for 1909 and 1904 for the establishments in the industry grouped according to the value of their products.

Of the 139 establishments reported for 1909 and 1904, only 16 manufactured products valued at \$1,000,000 and over; but these reported 71.7 per cent of the total value of products in 1909 and 62.8 per cent in 1904.

Establishments manufacturing products valued at less than \$20,000 constituted more than one-sixth (17.2 per cent) of the total number of mills in 1909, but the value of their products amounted to only two-tenths of 1 per cent of the total.

The average value of products per establishment

increased from \$443,068 in 1904 to \$512,145 in 1909, and the average value added by manufacture, as computed from the figures in Table 1, from \$170,061 to \$227,519. The average number of wage earners per establishment was 239 in 1904 and 240 in 1909.

VALUE OF PRODUCTS PER ESTABLISHMENT.	THE CARPET AND RUG INDUSTRY.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total	139	139	\$71,188,152	\$61,586,433
Less than \$5,000.....	12	6	30,390	15,398
\$5,000 and less than \$20,000.....	12	6	134,346	61,527
\$20,000 and less than \$100,000.....	43	46	2,217,254	2,717,194
\$100,000 and less than \$1,000,000.....	56	65	17,772,495	20,101,544
\$1,000,000 and over.....	16	16	51,033,667	38,660,770
Per cent of total	100.0	100.0	100.0	100.0
Less than \$5,000.....	8.6	4.3	(¹)	(¹)
\$5,000 and less than \$20,000.....	8.6	4.3	0.2	0.1
\$20,000 and less than \$100,000.....	30.9	33.1	3.1	4.4
\$100,000 and less than \$1,000,000.....	40.3	46.8	25.0	32.6
\$1,000,000 and over.....	11.5	11.5	71.7	62.8

¹ Less than one-tenth of 1 per cent.

Table 61 classifies the establishments in the carpet and rug industry in the five leading states according to the number of wage earners employed.

Of the 139 establishments reported in 1909, 4.3 per cent employed no wage earners, 27.3 per cent employed from 1 to 20 wage earners, 38.1 per cent from 21 to 100, 20.1 per cent from 101 to 500, and 10.1 per cent more than 500.

Of the total number of wage earners, 3.9 per cent were reported by establishments employing from 1 to 50 wage earners, 13.3 per cent by establishments employing from 51 to 250, 24.2 per cent by establishments employing from 251 to 1,000, and 58.6 per cent by those employing more than 1,000 wage earners. In New York 83.9 per cent of the wage earners were reported by establishments employing more than 1,000 wage earners.

STATE.	THE CARPET AND RUG INDUSTRY.																		
	Total.		Establishments employing in 1909—																
			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.
Es-tab-lish-ments.	Wage earners (average number).	Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	
United States..	139	33,307	6	10	21	28	357	27	923	26	2,025	16	2,418	12	4,144	6	3,906	8	19,515
Connecticut.....	3	2,999								1	88	1	144					1	2,767
Massachusetts.....	11	5,954		1	3	1	13	1	45	1	80	1	168	2	747	2	1,044	2	3,254
New Jersey.....	9	884		2	3	2	26	1	36	1	84	1	144	2	501				
New York.....	16	11,898				4	46	1	47	4	324	1	225	2	718		554	3	9,924
Pennsylvania.....	93	11,510	6	4	10	18	247	23	763	19	1,449	12	1,735	6	2,088	3	1,708	2	3,510

Expenses.—As stated in the Introduction, the census figures for expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; 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 expenses which were reported. Table 50 shows the total expenses in 1909 to have been \$62,311,110, distributed as follows: Cost of materials, \$39,563,004, or 63.5 per

cent; wages, \$15,536,050, or 24.9 per cent; salaries, \$2,209,042, or 3.5 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$5,003,014, or 8 per cent. Table 62 shows the per cent distribution of the expenses reported by the four states for which financial statistics can be given.

STATE.	PER CENT OF TOTAL EXPENSES REPORTED IN THE CARPET AND RUG INDUSTRY: 1909			
	Salaries.	Wages.	Cost of materials.	Miscellaneous expenses.
United States.....	3.5	24.9	63.5	8.0
Massachusetts.....	4.2	24.7	67.0	4.2
New Jersey.....	5.9	25.0	59.8	9.4
New York.....	3.2	27.1	61.4	8.3
Pennsylvania.....	3.4	22.8	64.7	9.1
All other states.....	3.9	25.7	60.4	10.0

proportion of the total in 1909 than in 1899—79.6 per cent, as compared with 86.4 per cent. Water power, also, showed a slight decrease in its proportion of the total in 1909, compared with 1904. There was an increase in the relative importance of the power of gas and other internal-combustion engines and of rented electric power. A great increase also appears in the use of electric motors for the distribution of power by means of current generated in the same establishment.

POWER.	THE CARPET AND RUG INDUSTRY.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total	366	208	178	38,553	33,945	26,740	100.0	100.0	100.0
Owned.....	175	193	178	34,485	32,086	26,271	89.5	96.3	98.2
Steam.....	143	166	155	30,650	29,031	23,091	79.6	87.3	86.4
Gas.....	8	2	1	500	55	35	1.3	0.2	0.1
Water wheels.....	24	25	22	3,305	2,938	3,145	8.6	8.8	11.7
Other.....	.....	.....	.....	12	.....	.....	(¹)	.....	.....
Rented.....	191	15	.....	4,068	1,259	469	10.5	3.7	1.8
Electric.....	191	15	.....	2,709	293	.....	7.0	0.9	.....
Other.....	.....	.....	.....	1,359	966	469	3.5	2.8	1.8
Electric motors.	546	196	5	10,906	5,587	192	100.0	100.0	100.0
Run by current generated by establishment.....	355	181	5	8,197	5,204	192	75.2	94.8	100.0
Run by rented power.....	191	15	.....	2,709	293	.....	24.8	5.2	.....

Engines and power.—The amount of power used in the industry was first reported at the census of 1869. Table 50 shows that the total horsepower used in the carpet and rug industry increased from 3,719 in 1869 to 38,553 in 1909. Table 63 shows the statistics of power as reported at the censuses of 1909, 1904, and 1899.

The total primary power increased from 26,740 horsepower in 1899 to 38,553 horsepower in 1909, or 44.2 per cent. In 1909, as in 1904 and 1899, the power of steam engines constituted a very large part of the total primary power, but it formed a smaller

¹ Less than one-tenth of 1 per cent.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

Materials.—Table 64 shows the quantity and cost of the materials used in the carpet and rug industry for 1909, 1904, and 1899.

The total quantity of wool used, on the scoured equivalent basis, decreased somewhat between 1899 and 1904, but the increase from 1904 to 1909 was sufficient to make a net increase of 37 per cent for the decade. Practically all the wool used was of foreign origin, domestic wool constituting only four-tenths of 1 per cent of the total consumption of wool (in condition purchased) in 1909, 1.7 per cent in 1904, and two-tenths of 1 per cent in 1899. Most of the wool used in the manufacture of carpets and rugs is of comparatively low grade (coarse fiber), and domestic wool, which is nearly all of medium or high grade, is chiefly used in the mills making woolen and worsted cloths.

The importation of carpet wool (designated "class 3" in the statistics of imports and exports) in 1909 aggregated 101,876,052 pounds. (See report on the woolen industry.) The difference between the imports of carpet wool and the quantity reported as material by the carpet and rug mills represents for the most part the carpet wool spun into yarn in woolen and worsted mills and sold in that form to carpet and rug mills.

MATERIAL.	MATERIALS USED IN THE CARPET AND RUG INDUSTRY.			
	1909	1904	1899	Per cent of increase: 1899-1909
Total cost	\$39,563,004	\$37,947,954	\$27,228,719	45.3
Wool, in condition, purchased:				
Pounds.....	64,135,020	51,320,521	51,871,334	23.0
Cost.....	\$11,752,396	\$10,431,146	\$8,104,107	45.0
Equivalent of above in scoured condition, pounds.....	51,474,353	31,551,895	37,500,231	37.0
Animal hair:				
Pounds.....	5,400,944	6,805,802	6,189,757	-12.7
Cost.....	\$474,057	\$593,588	\$549,610	-13.7
Cotton:				
Pounds.....	5,147,130	1,997,369	1,943,942	164.8
Cost.....	\$538,302	\$251,112	\$129,449	312.0
Waste and noils, purchased:				
Pounds.....	2,732,034	2,172,481	2,325,054	17.5
Cost.....	\$513,392	\$341,309	\$305,733	67.9
Yarns, purchased:				
Woolen—				
Pounds.....	25,718,747	32,431,400	32,996,316	-22.1
Cost.....	\$5,036,118	\$6,048,001	\$5,030,654	0.1
Worsted—				
Pounds.....	11,292,749	11,355,993	9,218,267	22.5
Cost.....	\$5,588,915	\$5,406,072	\$3,544,800	57.7
Cotton—				
Pounds.....	26,166,241	27,421,831	10,823,561	32.0
Cost.....	\$4,772,504	\$4,757,850	\$2,744,928	73.9
Linen—				
Pounds.....	8,792,876	8,228,200	8,388,211	4.8
Cost.....	\$1,606,009	\$1,355,892	\$1,164,826	37.9
Jute, ramie, and other vegetable fiber—				
Pounds.....	55,592,343	49,119,558	36,846,413	43.1
Cost.....	\$3,926,694	\$3,404,516	\$2,470,029	58.6
Chemicals and dyestuffs.....	\$1,729,492	\$1,467,476	\$1,151,726	50.2
All other materials.....	\$3,630,035	\$3,291,992	\$2,026,797	79.1

¹ A minus sign (-) denotes decrease.

Establishments in the woolen industry in 1909 reporting specifically the manufacture of carpet yarns used over 28,000,000 pounds of wool and nearly 9,000,000 pounds of animal hair. It thus appears that in the year 1909 there were used in the manufacture of carpets and rugs and of yarns intended for carpets and rugs at least 92,000,000 pounds of wool and 14,000,000 pounds of animal hair.

The purchased waste and noils used in 1909 included 107,863 pounds of mohair noils, costing \$18,362, the balance being wool waste and noils. In 1909 the carpet and rug mills made for their own consumption 51,277,848 pounds of wool yarns, of which 37,184,277 pounds were woolen (carded) and 14,093,571 pounds were worsted (combed), making, with the yarns purchased, a total consumption of 88,289,344 pounds of wool yarn, of which 62,903,024 pounds were woolen and 25,386,320 pounds were worsted. Thus approximately two-fifths of the wool yarns used, both woolen and worsted, were purchased and three-fifths made in the mills where used.

The quantity of purchased cotton yarns used increased 32 per cent from 1899 to 1909. In addition to the purchased cotton yarns used in 1909, the carpet and rug mills themselves produced 3,023,102 pounds, making a total consumption of 29,189,343 pounds. The increase for the decade in the quantity of purchased linen yarn used was only 4.8 per cent, though the increase in its cost was 37.9 per cent, but the consumption of purchased yarns of jute, ramie, and other vegetable fibers increased 43.1 per cent. The carpet and rug mills purchase practically all the yarns of these classes that they use.

Included under the heading of "all other materials" in 1909 were 584,188 pounds of merino yarns, costing \$85,950; 196,840 pounds of spun silk, costing \$322,171; 824,827 pounds of shoddy, mungo, and wool extract, costing \$56,345; 111,548 pounds of tops, costing \$39,267; other and unitemized materials entering into the composition of the products, costing \$836,375; fuel and power, costing \$939,568; freight on materials, not included in their cost, \$106,387; and other materials, such as mill supplies, costing \$1,243,972.

Table 65 shows the quantity of each of the principal fibers and purchased yarns used in 1909 and 1899 and the percentage which each formed of the total quantity.

The table shows a decrease in the relative quantity of wool materials—scoured wool, waste and noils, and woolen and worsted yarns—used, such materials forming 47.5 per cent of the total in 1909 as compared with 52.3 per cent in 1899. On the other hand, the quantity of cotton materials—cotton and cotton yarns—used increased from 13.8 per cent of the total in 1899 to 16.3 per cent in 1909, and that of jute, ramie, and similar yarns from 24.7 per cent to 28.9 per cent during the same period.

MATERIAL.	FIBERS AND PURCHASED YARNS USED IN THE CARPET AND RUG INDUSTRY.			
	1909		1899	
	Quantity (pounds).	Per cent of total.	Quantity (pounds).	Per cent of total.
Total	192,317,417	100.0	157,291,752	100.0
Scoured wool.....	51,474,353	26.8	37,560,231	23.9
Animal hair.....	5,400,944	2.8	6,189,757	3.9
Cotton.....	5,147,130	2.7	1,943,942	1.2
Waste and noils, purchased.....	2,732,034	1.4	2,325,054	1.5
Yarns, purchased:				
Woolen.....	25,718,747	13.4	32,996,316	21.0
Worsted.....	11,292,749	5.9	9,218,267	5.9
Cotton.....	28,166,241	13.6	19,823,561	12.6
Linen.....	8,792,876	4.6	8,388,211	5.3
Jute, ramie, etc.....	55,592,343	28.9	38,846,413	24.7

Table 66 gives statistics regarding the principal materials, by states.

MATERIAL AND STATE.	MATERIALS USED IN THE CARPET AND RUG INDUSTRY.			
	1909		1904	1899
	Cost.	Quantity.	Quantity.	Quantity.
Wool, in condition purchased	\$11,752,396	Pounds. 64,135,020	Pounds. 51,320,521	Pounds. 51,871,334
Massachusetts.....	2,516,995	12,221,681	12,201,063	13,746,907
New York.....	6,256,326	36,177,487	23,552,683	23,297,198
Pennsylvania.....	1,047,177	5,787,409	9,126,230	11,568,721
All other states.....	1,981,898	9,948,443	6,350,545	3,258,508
Equivalent of above in scoured condition		51,474,353	31,551,895	37,560,231
Massachusetts.....		9,547,507	9,552,719	10,096,801
New York.....		29,779,516	12,212,682	17,224,476
Pennsylvania.....		4,309,413	4,818,741	8,189,811
All other states.....		7,837,917	4,967,753	2,049,143
Animal hair	474,057	5,400,944	6,805,802	6,189,757
Cotton	533,302	5,147,130	1,997,369	1,943,942
Waste and noils, purchased	513,392	2,732,034	2,172,481	2,325,054
Yarns, purchased:				
Woolen	5,036,118	25,718,747	32,431,400	32,996,316
Massachusetts.....	238,161	1,480,811	(¹)	.....
New Jersey.....	201,074	678,411	897,536	2,036,980
New York.....	137,408	4,230,924	4,230,395	1,594,801
Pennsylvania.....	4,306,006	22,320,073	26,077,669	28,029,987
All other states.....	153,469	674,528	1,216,800	1,334,548
Worsted	5,888,915	11,292,749	11,355,993	9,218,267
Massachusetts.....	2,017,780	3,900,736	(¹)	2,142,847
New Jersey.....	187,731	371,157	.....	37,047
New York.....	779,688	1,638,696	1,653,638	281,830
Pennsylvania.....	2,692,410	5,360,220	6,292,815	6,504,583
All other states.....	11,306	22,040	3,409,540	251,900
Cotton	4,772,594	26,166,241	27,421,831	19,823,561
Massachusetts.....	587,501	3,309,016	3,381,011	2,103,677
New Jersey.....	155,780	869,678	849,377	432,983
New York.....	1,141,669	6,599,109	4,801,611	3,617,216
Pennsylvania.....	2,674,819	14,385,059	17,296,402	13,215,750
All other states.....	212,825	1,003,479	1,093,430	393,935
Linen	1,606,009	8,792,876	8,228,200	8,388,211
Massachusetts.....	215,556	1,195,599	1,588,434	1,175,131
New York.....	866,837	4,858,864	5,049,746	5,382,255
Pennsylvania.....	285,481	1,433,096	1,232,433	1,699,108
All other states.....	238,135	1,255,317	357,587	131,707
Jute, ramie, and other vegetable fiber	3,926,604	55,592,343	49,119,558	38,846,413
Massachusetts.....	465,123	6,243,685	5,007,155	2,931,326
New Jersey.....	108,193	1,352,412	2,406,587	3,091,770
New York.....	1,880,798	27,836,891	21,403,311	16,411,276
Pennsylvania.....	1,213,413	16,046,563	17,990,828	15,784,309
All other states.....	262,167	3,512,792	2,251,672	627,726
Chemicals and dyestuffs	1,729,492		Cost. \$1,467,476	Cost. \$1,151,726
Massachusetts.....	252,819		128,288	120,315
New Jersey.....	32,624		65,511	37,856
New York.....	417,770		468,372	384,835
Pennsylvania.....	861,323		681,247	550,542
All other states.....	164,956		54,058	52,178

¹ Figures can not be shown without disclosing individual operations.

Products.—The value of all products of the establishments in the carpet and rug industry in 1909 was \$71,188,152, the value of carpets and rugs alone being \$66,966,338. In addition, woolen and worsted rugs to the value of \$479,161 were reported as subsidiary products by establishments engaged primarily in the manufacture of cotton goods and of wool hats. The total value of the carpets and rugs manufactured in all industries was therefore \$67,445,499.

Table 67 shows the quantity and value of the principal products of the carpet and rug industry for 1909, 1904, and 1899. In comparing the percentages of increase in quantity with those in value, it should be remembered that each class of products includes a number of grades and styles, varying greatly in price, and that the relative quantities of these may have changed considerably from census to census. Prior to the census of 1909 carpets were reported in running yards (ingrain 36 inches wide and others 27 inches wide), while rugs woven whole were reported in square yards. In 1909 both carpets and rugs were reported in square yards; the figures for 1904 and 1899, therefore, have been reduced to square yards for the sake of comparability.

The total production of carpets and rugs in the industry in 1909 was 81,218,881 square yards, representing an increase of 6.3 per cent as compared with 1899, but a slight decrease (1.8 per cent) as compared with 1904. The total value of the carpets and rugs produced shows an increase of 53.8 per cent for the decade and an increase of 17.8 per cent for the five-year period 1904-1909.

The great decrease in the production of ingrain carpets between 1899 and 1909 was only partly counterbalanced by increases in other kinds of carpet, and the total production of carpets alone shows a decrease of 11 per cent for the decade. There was an increase, however, in all the principal classes of rugs except Smyrna rugs, the total production of rugs in 1909 being nearly twice that in 1899; and rugs constituted 29.6 per cent of the combined output of carpets and rugs in 1909, as compared with 15.9 per cent in 1899.

With the exception of ingrains, which still held the lead in quantity in 1909, tapestry and Axminster carpets are made in the greatest quantity; in fact, the increase in the production of Axminster carpets and rugs may be considered the leading feature of the industry for the decade.

The rugs reported included only those woven whole (seamless), those woven in strips and sewed together being reported as carpet, although the inclusion of the border in the pattern of this carpet permits of its being used only in rug form. In the case of body Brussels and Wilton rugs only the small sizes are woven whole.

Ingrain art squares, however, are commonly woven seamless, and there is a marked tendency toward weaving tapestry, velvet, and Axminster rugs on wide looms, and the production of seamless rugs is rapidly increasing. Although exact data in regard to the production of pieced rugs are not available, it is roughly estimated that the production of such rugs amounted to approximately 21,000,000 square yards in 1909.

Table 67

PRODUCT.	PRODUCTS OF THE CARPET AND RUG INDUSTRY.			Per cent of increase: 1899-1909
	1909	1904	1899	
Total value.....	2 \$71,188,152	2 \$61,586,433	\$48,192,351	47.4
Carpets:				
Square yards.....	57,176,729	66,426,033	64,238,761	-11.0
Value.....	\$48,475,889	\$43,991,125	\$35,405,926	36.9
Axminster and Moquette—				
Square yards.....	12,507,261	6,413,686	5,026,778	148.8
Value.....	\$13,680,806	\$6,368,757	\$4,762,269	187.3
Wilton—				
Square yards.....	4,576,368	1,297,872	* 3,587,126	27.6
Value.....	\$8,737,788	\$2,720,667	* \$4,030,824	116.8
Brussels—				
Square yards.....	3,960,626	3,024,162	2,686,493	47.4
Value.....	\$5,216,607	\$3,898,675	\$2,979,867	75.1
Tapestry velvet—				
Square yards.....	* 6,927,198	* 8,033,288	4,280,066	61.8
Value.....	* \$5,514,130	* \$7,764,681	\$3,743,353	47.3
Tapestry Brussels—				
Square yards.....	11,405,514	14,099,074	8,737,449	30.5
Value.....	\$8,576,906	\$9,955,043	\$5,520,665	55.4
Ingrain—				
Square yards.....	17,799,762	33,557,951	39,920,849	-55.4
Value.....	\$6,749,672	\$13,287,302	\$14,368,930	-53.0
2-ply—				
Square yards.....	15,439,280	30,492,156	36,698,292	-57.9
Value.....	\$5,620,542	\$11,841,732	\$13,222,667	-57.5
3-ply—				
Square yards.....	2,360,502	3,065,795	3,222,557	-26.8
Value.....	\$1,129,130	\$1,446,570	\$1,146,273	-1.5
Rugs, woven whole:				
Square yards.....	24,042,152	16,244,810	12,171,289	97.5
Value.....	\$18,490,449	\$12,870,650	\$8,146,232	127.0
Axminster and Moquette—				
Square yards.....	3,184,097	1,767,920	327,598	872.0
Value.....	\$3,691,900	\$2,107,383	\$342,262	978.7
Wilton—				
Square yards.....	767,248	1,097,186	399,784	125.8
Value.....	\$1,381,562	\$1,983,777	\$545,967	153.0
Brussels—				
Square yards.....	475,831	( )	( )	.....
Value.....	\$333,582	( )	( )	.....
Tapestry velvet—				
Square yards.....	3,732,972	( )	( )	.....
Value.....	\$3,513,063	( )	( )	.....
Tapestry Brussels—				
Square yards.....	5,672,962	2,009,834	18,750	.....
Value.....	\$4,422,427	\$1,509,673	\$9,000	.....
Ingrain art squares—				
Square yards.....	6,131,862	7,135,546	2,722,323	125.2
Value.....	\$2,408,960	\$2,785,457	\$1,175,951	104.9
Smyrna—				
Square yards.....	1,400,233	3,828,282	3,651,661	-61.7
Value.....	\$1,660,322	\$4,134,500	\$3,680,618	-54.9
Other—				
Square yards.....	2,676,947	406,042	5,111,173	-47.6
Value.....	\$1,078,633	\$349,860	\$2,391,434	-54.9
All other products.....	\$4,221,814	\$4,724,658	\$4,641,193	-9.0

¹ A minus sign (-) denotes decrease.

² In addition, in 1909, carpets and rugs to the value of \$479,161 were reported by establishments engaged primarily in the manufacture of cotton goods and wool hats; in 1904, carpets and rugs to the value of \$70,000 were reported by establishments engaged primarily in the manufacture of other products.

³ Includes Wilton velvet.

⁴ Not reported separately.

Table 68 shows the percentage that the different kinds of carpets and of rugs manufactured in the industry formed of the total production of each of these two classes of products in 1909, 1904, and 1899.

KIND OF CARPETS AND RUGS.	PER CENT OF TOTAL PRODUCTION.		
	1909	1904	1899
Carpets.....	100.0	100.0	100.0
Axminster and Moquette.....	21.9	9.7	7.8
Wilton.....	8.0	2.0	5.6
Brussels.....	6.9	4.6	4.2
Tapestry velvet.....	12.1	12.1	6.7
Tapestry Brussels.....	19.9	21.2	13.0
Ingrain.....	31.1	50.5	62.1
2-ply.....	27.0	45.9	57.1
3-ply.....	4.1	4.6	5.0
Rugs, woven whole.....	100.0	100.0	100.0
Axminster and Moquette.....	13.2	10.9	2.7
Wilton.....	3.2	6.8	2.8
Brussels.....	2.0	(1)	(1)
Tapestry velvet.....	15.5	(1)	(1)
Tapestry Brussels.....	23.6	12.4	0.2
Ingrain art squares.....	25.5	43.9	22.4
Smyrna.....	5.8	23.6	30.0
Other.....	11.1	2.5	42.0

¹ Not reported separately.

PRODUCT.	CARPETS PRODUCED IN THE CARPET AND RUG INDUSTRY.					
	1909		1904	1899	1889	1879
	Square yards.	Running yards.	Running yards.	Running yards.	Running yards.	Running yards.
Carpets, total.....	57,176,729	70,302,385	77,382,060	72,344,732	74,090,220	39,262,634
Ingrain.....	17,799,762	17,799,762	33,557,951	39,920,849	36,170,027	22,848,828
2-ply.....	15,439,260	15,439,260	30,492,156	136,698,292	132,918,659	121,986,434
3-ply.....	2,360,502	2,360,502	3,065,795	13,222,557	3,251,368	1,862,394
Tapestry Brussels.....	11,405,514	15,207,352	18,798,765	11,649,932	20,008,961	9,441,195
Body Brussels.....	3,960,626	5,230,835	4,032,216	3,581,991	9,442,348	4,077,100
Wilton and tapestry velvet.....	11,503,566	15,338,088	12,441,547	10,489,589	3,512,229	217,629
Wilton.....	4,576,368	6,101,824	1,730,496	2,478,235	2,103,101	2,157,629
Tapestry velvet.....	² 6,927,198	² 9,236,264	² 10,711,051	5,706,754	2,482,128	80,000
Axminster and Moquette.....	12,507,201	16,676,348	8,551,581	6,702,371	13,572,527	303,366
All other.....					11,384,128	2,994,426

¹ In addition, a small quantity was made in the woolen mills.

² Includes Wilton velvet.

³ Includes Wilton velvet, which was included with Wilton in 1899 and prior years.

In this table, to make the statistics for the several censuses comparable, Wilton velvet and tapestry velvet carpets have been combined. The separate statistics for Wilton, in 1909 and 1904, refer to Wilton proper, which is woven on a Jacquard loom with a cut pile; Wilton velvet, so called, which is woven on a tapestry loom with a cut pile being included under tapestry velvet. In 1899 and at previous censuses, however, Wilton and Wilton velvet were reported together.

The production of ingrain carpets increased from 1879 to 1899 and then declined, the output in 1909 of 2-ply and 3-ply combined being materially less than in 1879. The largest production of tapestry Brussels and also of body Brussels was reported for 1889, but that of Wilton and tapestry velvets combined, and of Axminster and Moquette carpets, increased throughout the period covered by the table.

Table 70 gives, by states, the output of carpets and rugs for the years 1909, 1904, and 1899, with the value for 1909 only.

Although the manufacture of carpets and rugs was reported from 11 states in 1909, the output was practically all reported from the states of Massachusetts, New Jersey, New York, Pennsylvania, and Connecticut, the last-named state, though ranking fourth in production and value of products, being included with

The production of ingrain carpets dropped from 62.1 per cent of the total number of square yards of carpet in 1899 to 31.1 per cent in 1909, while all other kinds show gains, the production of Axminster and Moquette carpets increasing from 7.8 per cent of the total to 21.9 per cent.

Tapestry velvet and tapestry Brussels rugs contributed largely to the great increase in the rug production, their combined output amounting to 9,405,934 square yards, or 39.1 per cent of the total in 1909. Ingrain art squares represented 25.5 per cent of the total in 1909, as compared with 22.4 per cent in 1899.

Table 69 shows the quantity of the various kinds of carpets reported at each census from 1879 to 1909, inclusive. The quantities are expressed in running yards, and for 1909 in square yards also.

"all other states" to avoid disclosing the operations of individual establishments.

PRODUCT AND STATE.	THE CARPET AND RUG INDUSTRY.			
	1909		1904	1899
	Value.	Quantity (square yards).	Quantity (square yards).	Quantity (square yards).
Carpets.....	\$48,475,889	57,176,729	66,426,033	64,238,761
Massachusetts.....	10,358,191	7,496,772	6,790,552	6,818,672
New York.....	16,177,227	17,430,969	19,206,368	16,038,562
Pennsylvania.....	15,373,145	26,305,322	36,953,509	38,373,245
All other states.....	6,567,326	5,943,666	3,505,604	3,008,282
Rugs.....	18,490,449	24,042,152	16,244,810	12,171,289
Massachusetts.....	1,802,066	2,740,115	1,673,915	506,099
New Jersey.....	1,081,252	1,680,086	1,451,616	1,007,786
New York.....	9,300,529	9,542,662	3,353,505	5,765,593
Pennsylvania.....	6,197,173	8,916,758	8,810,343	4,673,052
All other states.....	109,429	162,531	955,431	218,759

New York, the most important state in the industry when measured by value of products, shows an increase of 8.7 per cent for the decade 1899-1909 in the number of square yards of carpet produced, but shows a decrease of 9.2 per cent for the five-year period 1904-1909. There was, however, a substantial increase in the combined production of carpets and rugs in the state during this five-year period.

Pennsylvania, while ranking second in value of products, was by far the most important state as re-

gards the number of square yards of carpets and rugs produced in 1909, as well as in 1904 and 1899. The total production in 1909, however, was only 36,222,080 square yards, as compared with 43,046,297 in 1899, most of the decrease being in ingrain carpets, which form a very large proportion of the total output of carpets in Pennsylvania—90.7 per cent in 1909 and 82.8 per cent in 1899.

Equipment.—Table 71 shows, by states, the number of sets of cards and the number of wool-combing machines, pickers, and garnet machines in use in the carpet and rug mills in 1909, 1904, and 1899.

KIND OF EQUIPMENT.	THE CARPET AND RUG INDUSTRY.					
	United States.	Connecticut.	Massachusetts.	New Jersey.	New York.	Pennsylvania.
Woolen cards:						
1909.....	456	54	80	8	242	72
1904.....	1 389	48	1 80	5	180	76
1899.....	468	25	66	10	275	92
Wool-combing machines:						
1909.....	132	19	46	3	52	12
1904.....	109	19	47	3	12	28
1899.....	134	17	47	3	50	17
Of American manufacture—						
1909.....	68	4	30	.....	31	3
1904.....	46	3	22	3	9	9
1899.....	46	.....	29	1	11	5
Of foreign manufacture—						
1909.....	64	15	16	3	21	9
1904.....	63	16	25	.....	3	19
1899.....	88	17	18	2	39	12
Pickers: 2						
1909.....	140	6	77	1	39	16
1904.....	79	5	23	2	26	23
Garnet machines: 2						
1909.....	27	4	11	.....	12	.....
1904.....	18	4	9	.....	3	2

1 Includes 3 sets of shoddy cards. 2 Figures for 1899 not available.
 2 Includes 1 in Ohio.

The number of woolen cards and of wool-combing machines reported in 1909 was slightly smaller than in 1899, although somewhat larger than in 1904. Since the amount of wool used has increased during the decade, it would appear that there has been either an increase in the capacity of the machinery or more efficient use of it. Pennsylvania, which ranked first in the production of carpets and rugs in 1909, ranked third in number of sets of cards used, a large percentage of the wool used in that state being purchased in the form of yarn.

Wool-combing machines of American manufacture formed a somewhat larger proportion of the total number in 1909 than in 1904 or 1899.

Spindles.—Table 72 gives the spindle equipment of the carpet and rug mills for 1909, 1904, and 1899.

The number of producing spindles reported for the carpet and rug industry for 1909 was 211,472, of which New York reported 115,390, or over one-half. A marked increase in the number of producing spindles took place between 1899 and 1904, but the number in 1909 was substantially the same as that five years earlier.

The number of woolen and cotton spindles increased during each five-year period, but that of worsted spindles decreased between 1904 and 1909. The number of mule spindles was somewhat larger and that of frame spindles somewhat smaller in 1909

than in 1904. Cotton spindles in this industry were reported from Massachusetts and New York only.

CLASS.	NUMBER OF SPINDLES USED IN THE CARPET AND RUG INDUSTRY.					
	United States.	Connecticut.	Massachusetts.	New Jersey.	New York.	Pennsylvania.
Total:						
1909.....	252,096	17,176	68,380	4,852	131,154	30,534
1904.....	255,347	25,221	55,524	3,883	121,380	49,334
1899.....	209,206	22,610	50,344	3,344	89,982	42,928
Producing spindles:						
1909.....	211,472	13,768	53,244	3,904	115,390	25,166
1904.....	211,331	21,559	42,464	3,240	104,450	39,618
1899.....	167,123	18,004	39,388	2,480	72,568	34,683
Woolen—						
1909.....	97,298	1,768	12,426	1,888	65,050	16,166
1904.....	90,695	7,355	12,156	1,224	52,942	17,018
1899.....	63,836	4,780	10,164	752	26,724	21,416
Worsted—						
1909.....	95,046	12,000	28,722	2,016	43,308	9,000
1904.....	112,044	14,204	28,436	2,016	44,788	22,600
1899.....	97,191	13,224	27,352	1,728	41,620	13,267
Cotton—						
1909.....	19,128	.....	12,096	.....	7,032	.....
1904.....	8,592	.....	1,872	.....	6,720	.....
1899.....	6,096	.....	1,872	.....	4,224	.....
Mule spindles (woolen)—						
1909.....	94,798	1,768	12,426	1,888	62,550	16,166
1904.....	90,695	7,355	12,156	1,224	52,942	17,018
Frame spindles—						
1909.....	116,674	12,000	40,818	2,016	52,840	9,000
1904.....	120,636	14,204	30,308	2,016	51,508	22,600
Woolen—						
1909.....	2,500	.....	.....	.....	2,500	.....
1904.....	.....	.....	.....	.....	.....	.....
1899.....	.....	.....	.....	.....	.....	.....
Worsted—						
1909.....	95,046	12,000	28,722	2,016	43,308	9,000
1904.....	112,044	14,204	28,436	2,016	44,788	22,600
1899.....	97,191	13,224	27,352	1,728	41,620	13,267
Cotton—						
1909.....	19,128	.....	12,096	.....	7,032	.....
1904.....	8,592	.....	1,872	.....	6,720	.....
1899.....	6,096	.....	1,872	.....	4,224	.....
Doubling and twisting spindles:						
1909.....	40,624	3,408	15,136	948	15,764	5,368
1904.....	44,016	3,662	13,960	648	16,930	9,716
1899.....	42,083	4,606	10,956	864	17,414	8,243
Woolen—						
1909.....	2,594	.....	980	300	1,098	216
1904.....	1,788	142	1,090	.....	540	16
1899.....	3,197	.....	680	.....	1,944	573
Worsted—						
1909.....	31,250	3,408	10,556	648	11,486	5,152
1904.....	38,728	3,662	11,382	648	13,478	9,700
1899.....	36,658	4,606	9,688	864	13,874	7,626
Cotton—						
1909.....	6,780	.....	3,600	.....	3,180	.....
1904.....	3,500	.....	588	.....	2,912	.....
1899.....	2,228	.....	588	.....	1,596	44

Looms.—Table 73 gives the loom equipment of the carpet and rug mills for 1909, 1904, and 1899.

KIND OF LOOM.	NUMBER OF LOOMS USED IN THE CARPET AND RUG INDUSTRY.		
	1909	1904	1899
Looms on carpets and rugs, total.....	11,943	11,692	10,754
Power looms.....	11,736	11,002	9,706
Hand looms.....	207	690	1,048
Carpet looms.....	10,032	9,691	8,416
Ingrain—			
Power.....	2,884	4,189	4,354
Hand.....	26	82	92
Broad Ingrain—			
Power.....	788	412	246
Hand.....	7	42	1
Tapestry Brussels.....	1,016	1,207	1,094
Tapestry velvet.....	1,138	1,047	737
Body Brussels.....	638	544	544
Wilton.....	956	639	507
Axminster and Moquette.....	2,562	1,433	761
Venetian—			
Power.....	18	88	80
Hand.....	1	3	.....
Rug looms.....	1,911	2,001	2,338
Tapestry.....	526	236	3
Smyrna—			
Power.....	964	1,131	1,358
Hand.....	57	563	955
Wilton.....	62	71	22
Colonial or rag—			
Power.....	186	(2)	(2)
Hand.....	116	(2)	(2)

1 In addition, in 1899, 135 power looms and 7 hand looms were employed by establishments engaged primarily in the manufacture of woolen and worsted goods.
 2 Figures not available.

There were 11,943 carpet and rug looms of all classes reported by carpet and rug mills in 1909, of which 11,736 were power looms and 207 were hand looms. In 1899 there were 9,706 power looms and 1,048 hand looms. The proportion which hand looms formed of the total number thus decreased from 9.7 per cent in 1899 to 1.7 per cent in 1909. In 1889 there were 10,898 looms, of which 2,598, or 23.8 per cent, were hand looms. The number of narrow ingrain looms decreased 34.5 per cent during the decade from 1899 to 1909, while that of broad ingrain looms increased 221.9 per cent. Tapestry velvet, body Brussels, Wilton, and Axminster and Moquette looms, notably the last-named, also show decided gains.

Table 74 gives the loom equipment of the carpet and rug mills, by states, for 1909.

As shown by the table, Pennsylvania ranked first in 1909 in the number of nearly every kind of loom, reporting a total of 5,637, or 47.2 per cent of the looms used in the carpet and rug industry in the United States. New York ranked second, with 3,238 looms, or 27.1 per cent of the total, and Massachusetts third, with 1,778, or 14.9 per cent of the total. Pennsylvania reported 77.9 per cent of all looms used in the manufacture of ingrain carpets, while New York ranked first in the number of tapestry Brussels and

Axminster looms, and Massachusetts in the number of looms used on body Brussels and Wilton carpets.

Table 74

KIND.	NUMBER OF LOOMS USED IN THE CARPET AND RUG INDUSTRY: 1909						
	United States.	Connecticut.	Massachusetts.	New Jersey	New York.	Pennsylvania.	All other states.
Looms on carpets and rugs, total	11,943	781	1,778	432	3,238	5,637	77
Power looms.....	11,736	781	1,774	415	3,186	5,530	50
Hand looms.....	207	.....	4	17	52	107	27
Carpet looms	10,032	781	1,763	277	2,517	4,655	39
Ingrain—							
Power.....	2,884	83	225	.....	100	2,439	32
Hand.....	26	.....	.....	.....	20	0	.....
Broad ingrain—							
Power.....	788	17	259	62	11	436	3
Hand.....	7	.....	.....	.....	.....	7	.....
Tapestry Brussels.....	1,016	187	125	10	413	281	.....
Tapestry velvet.....	1,138	67	24	80	377	590	.....
Body Brussels.....	636	17	346	3	107	159	4
Wilton.....	956	40	444	96	56	320	.....
Axminster.....	2,562	365	340	26	1,433	393	.....
Venetian—							
Power.....	18	.....	.....	.....	.....	18	.....
Hand.....	1	.....	.....	.....	.....	1	.....
Rug looms	1,911	.....	15	155	721	982	38
Tapestry.....	526	.....	.....	37	395	93	1
Smyrna—							
Power.....	964	.....	.....	101	277	576	10
Hand.....	57	.....	.....	13	29	15	.....
Wilton.....	62	.....	11	.....	5	48	.....
Colonial or rag—							
Power.....	186	.....	.....	.....	12	174	.....
Hand.....	116	.....	4	4	3	78	27

¹ In addition, 323 broad looms were employed on worsted goods, not carpets and rugs.

DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the carpet and rug industry, other than those relating to materials, products, and equipment, are presented, by states, in Tables 75 and 76.

Table 75 shows, for 1909, 1904, and 1899, the num-

ber of establishments, number of persons engaged in the industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture.

Table 76 gives more detailed statistics for 1909.

CARPETS AND RUGS, OTHER THAN RAG—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	139	34,706	134	1,265	33,307	38,553	\$75,627	\$2,209	\$15,536	\$39,563	\$71,188	\$31,825
	1904	139	34,393	149	1,023	33,221	33,945	56,781	1,397	13,724	37,948	61,586	23,838
	1899	133	29,209	111	687	28,411	26,740	44,449	881	11,121	27,229	48,192	20,963
Massachusetts.....	1909	11	6,251	3	294	5,954	10,037	11,450	466	2,763	7,501	12,812	5,311
	1904	10	5,267	2	86	5,179	7,875	7,905	141	2,188	6,703	9,714	3,011
	1899	8	4,552	1	71	4,480	5,875	9,401	127	1,720	3,900	6,066	2,970
New Jersey.....	1909	9	939	6	49	884	970	2,511	88	375	808	1,945	1,047
	1904	8	1,203	3	47	1,153	1,268	2,098	90	418	979	1,749	770
	1899	13	1,221	3	47	1,171	1,051	1,487	73	379	868	1,523	655
New York.....	1909	16	12,272	11	363	11,898	11,901	27,528	686	5,870	13,315	25,606	12,291
	1904	12	11,354	8	269	11,077	10,151	19,830	328	4,567	11,133	19,404	8,271
	1899	12	8,795	3	189	8,603	7,783	12,870	250	3,308	7,681	15,029	7,348
Pennsylvania.....	1909	93	12,078	108	460	11,510	13,073	24,721	762	5,169	14,648	24,879	10,231
	1904	102	14,356	136	504	13,716	11,871	22,284	652	5,829	16,706	27,120	10,414
	1899	93	13,358	103	336	12,919	10,537	17,958	375	5,331	13,774	23,113	9,339
All other states.....	1909	10	3,166	6	99	3,061	2,572	9,417	207	1,359	3,201	5,946	2,745
	1904	7	2,213	.....	117	2,096	2,780	4,664	180	722	2,427	3,599	1,172
	1899	7	1,283	1	44	1,238	1,494	2,733	56	383	916	1,661	646

THE WOOLEN INDUSTRY.

CARPETS AND RUGS, OTHER THAN RAG—DETAILED STATISTICS, BY STATES: 1909.

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.							WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		Female.
								Maximum month.	Minimum month.						
United States	139	34,706	134	314	801	150	33,397	De 34,097	Ap 32,719	34,874	19,601	13,859	796	618	38,553
Massachusetts.....	11	6,261	3	46	205	43	5,954	Fe 6,102	Ap 5,855	6,087	3,155	2,566	213	153	10,037
New Jersey.....	9	930	6	26	21	2	884	De 1,008	Je 779	1,008	687	294	15	2	670
New York.....	16	12,272	11	70	264	29	11,898	De 12,192	Ja 11,670	12,192	6,708	5,406	51	27	11,901
Pennsylvania.....	93	12,078	108	151	246	63	11,510	Fe 11,875	Oc 11,189	12,454	7,461	4,354	342	297	13,073
All other states.....	10	3,166	6	21	65	13	3,061	.....	.....	3,133	1,580	1,239	175	139	2,572

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).	
		Total.	Services.			Materials.			Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.			
United States	\$75,627,010	\$62,311,110	\$1,144,419	\$1,084,623	\$15,536,050	\$939,568	\$38,623,436	\$212,621	\$281,763	\$172,873	\$4,335,757	\$71,188,152	\$31,625,148	
Massachusetts.....	11,450,096	11,202,188	202,914	282,873	2,763,263	237,869	7,263,241	9,923	138,591	3,400	320,114	12,811,981	5,310,871	
New Jersey.....	2,510,704	1,600,709	59,802	28,032	374,823	13,711	883,804	240	8,775	.....	131,522	1,945,217	1,047,702
New York.....	27,527,617	21,680,151	323,580	362,836	5,870,298	309,335	13,005,837	106,555	65,061	35,523	1,600,526	25,606,262	12,291,090	
Pennsylvania.....	24,720,792	22,632,265	450,043	312,227	5,109,275	276,388	14,371,910	95,528	38,627	125,712	1,792,555	24,879,232	10,230,934	
All other states ¹	9,417,801	5,295,797	108,080	98,655	1,358,391	102,265	3,008,044	375	30,109	8,238	491,040	5,945,460	2,744,551	

¹ All other states embrace: Connecticut, 3 establishments; Indiana, 1; Maryland, 1; New Hampshire, 1; Ohio, 2; Virginia, 1; Wisconsin, 1.

THE SHODDY INDUSTRY.

GENERAL STATISTICS.

Scope of the industry.—Shoddy, as a generic term, refers to reclaimed wool and cotton fiber of any sort—that is, to the fiber obtained by passing woolen, worsted, or union rags, tailors' clippings, and all kinds of mill wastes through "pickers," which reduce them to a fibrous form so that they can be mixed with new wool and spun into yarn. Following the English custom, the term "shoddy" is applied to the fiber manufactured from waste yarn and soft fabrics, that made from hard-spun fabrics being termed "mungo," while that obtained from union or cotton-mixed fabrics by carbonizing the cotton fiber with chemicals is called "wool extract." The shoddy mills also make considerable quantities of flocks, which consists of short, refuse wool, the shearings of woolen goods, or wool dust, and is utilized to weight certain kinds of woolen cloth, to coat waterproof garments, in the surfacing of some

wall papers and for other purposes. The statistics presented in this report, except as otherwise noted, relate only to establishments manufacturing shoddy, mungo, carbonized rags, or wool extract as a primary product, including, as at previous censuses, mills engaged primarily in the cutting of flocks and the cleaning or garnetting of mill waste.

Comparison with earlier censuses.—Statistics for the shoddy industry were first obtained at the census of 1859, when 30 establishments, giving employment to an average of 290 hands, and manufacturing products to the value of \$402,590, were reported. At the census of 1869, 56 establishments were reported, these establishments employing an average of 632 hands and manufacturing products to the value of \$1,768,592. Table 77 summarizes the statistics of the shoddy industry for each census from 1879 to 1909, inclusive.

Table 77

	THE SHODDY INDUSTRY.									
	Number or amount.					Per cent of increase. ¹				
	1909	1904	1899	1889	1879	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889
Number of establishments.....	88	97	105	94	73	-16.2	-0.3	-7.0	11.7	28.8
Persons engaged in the industry.....	2,320	2,371	2,167	(2)	(2)	7.1	-2.2	9.4		
Proprietors and firm members.....	83	110	102	(2)	(2)	-18.6	-24.5	7.8		
Salaried employees.....	196	172	130	(2)	(2)	41.0	14.0	23.7		
Wage earners (average number).....	2,041	2,089	1,926	2,155	1,282	6.0	-2.3	8.5	(2)	(2)
Primary horsepower.....	13,820	12,244	11,455	7,059	(2)	20.6	12.9	6.9		
Capital.....	\$6,886,825	\$5,804,164	\$5,272,929	\$3,754,063	\$1,165,100	30.6	18.7	10.1	62.3	222.2
Expenses.....	6,656,311	7,597,483	6,083,993	(2)	(2)	9.4	-12.4	24.0		
Services.....	1,196,376	1,080,225	915,652	707,099	400,326	30.7	10.8	18.0	29.5	76.6
Salaries.....	289,685	245,403	166,704	(2)	(2)	73.8	18.0	47.2		
Wages.....	906,691	834,822	748,948	(2)	(2)	21.1	8.6	11.5		
Materials.....	5,000,706	6,055,781	4,875,192	6,003,035	3,366,650	2.6	-17.4	24.2	-18.8	78.3
Miscellaneous.....	459,229	461,527	293,149	238,094	(2)	56.7	-0.5	57.4	23.1	
Value of products.....	7,446,364	8,406,425	6,730,974	7,887,000	4,989,615	10.6	-11.4	24.9	-14.7	58.1
Value added by manufacture (value of products less cost of materials).....	2,445,658	2,350,694	1,855,782	1,883,965	1,622,965	31.8	4.0	26.7	-1.5	16.1

¹ A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.
² Comparable figures not available.
³ Figures not strictly comparable.

The number of establishments reporting in 1909 was smaller than at any census since 1879. The value of products in 1909 represented an increase of 49.2 per cent as compared with 1879, and a decrease of 5.6 per cent as compared with 1889. All the items included in the table, except number of establishments and of proprietors and firm members, show increases in 1909 as compared with 1899, that in the number of wage earners being 6 per cent, that in cost of materials 2.6 per cent, and that in value of products 10.6 per cent. These gains, however, were due to large increases during the first half of the decade, since de-

creases were reported for each of the items for the five-year period 1904-1909, that in wage earners amounting to 2.3 per cent, and that in value of products to 11.4 per cent. The value of the products of the shoddy industry in 1909 was \$7,446,364, and the value added by manufacture (that is, the value of products less the cost of materials), \$2,445,658, the cost of materials being equal to more than two-thirds (67.2 per cent) of the value of products.

Summary, by states.—Table 78 summarizes the more important statistics of the industry, by states, for 1909, 1904, and 1899.

Table 78

STATE.	THE SHODDY INDUSTRY.												
	Census.	Number of establishments.	Persons engaged in the industry.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	88	2,320	83	196	2,041	13,820	\$8,887	\$289	\$907	\$5,001	\$7,446	\$2,445
	1904	97	2,371	110	172	2,089	12,244	5,804	245	835	6,056	8,406	2,350
	1899	105	2,167	102	139	1,926	11,455	5,273	167	749	4,875	6,731	1,856
Connecticut.....	1909	6	114	5	11	98	1,170	450	12	45	197	324	127
	1904	6	145	7	14	124	891	517	16	55	363	468	105
	1899	7	139	13	8	118	1,204	494	8	44	362	538	176
Massachusetts.....	1909	27	518	21	55	442	4,688	1,519	89	202	1,194	1,766	572
	1904	31	520	29	47	444	4,083	1,206	69	180	1,250	1,815	565
	1899	29	366	29	30	307	3,622	709	35	128	685	988	303
New York.....	1909	14	255	7	25	223	1,982	965	33	106	624	860	245
	1904	11	223	10	18	165	1,637	514	21	80	497	702	205
	1899	9	185	11	7	107	969	330	6	66	311	443	132
Ohio.....	1909	4	469	1	30	438	1,100	1,098	62	200	742	1,257	515
	1904	5	450	3	21	426	1,100	923	37	158	948	1,239	291
	1899	6	509	.....	35	474	1,035	1,308	55	165	1,078	1,479	401
Pennsylvania.....	1909	20	518	32	36	450	2,170	1,627	47	186	1,463	2,051	588
	1904	23	429	35	34	360	1,960	1,216	43	142	1,713	2,204	491
	1899	20	421	19	34	368	1,632	972	25	148	1,070	1,449	379
All other states.....	1909	17	446	17	39	390	2,710	1,230	46	168	781	1,179	398
	1904	21	604	26	38	540	3,173	1,428	59	210	1,285	1,978	663
	1899	28	547	30	25	492	3,173	1,310	38	198	1,369	1,834	465

In 1909 the state of Pennsylvania led in value of products, number of wage earners employed, and value added by manufacture. Massachusetts, Ohio, New York, and Connecticut followed in the order named. Pennsylvania, Massachusetts, and New York show increases in number of wage earners and value of products for the decade 1899-1909, although Massachusetts shows small decreases in both items and Pennsylvania a small decrease in value of products for the five-year period 1904-1909. Connecticut and Ohio, on the other hand, show decreases in both items for the decade as a whole, although in the case of Ohio all of the decrease took place during the five-year period 1899-1904. There was a decrease during the decade in the number of establishments in each state shown separately in Table 78, except New York.

Persons engaged in the industry.—Table 79 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in the operation of the shoddy mills during 1909 was 2,320, of whom 2,041, or 88 per cent, were wage earners, 184, or 7.9 per cent, proprietors and officials, and 95, or 4.1 per cent, clerks, this class including other subordinate salaried employees. Of the total number of persons engaged in the industry, 1,840, or 79.3 per cent, were males and 480, or 20.7 per cent, females. Of the males, 86.7 per cent, and of the females, 92.9

per cent, were wage earners. Only two children under 16 years of age were reported as wage earners.

Table 79

CLASS.	PERSONS ENGAGED IN THE SHODDY INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	2,320	1,840	480
Proprietors and officials.....	184	172	12
Proprietors and firm members.....	83	76	7
Salaried officers of corporations.....	48	45	3
Superintendents and managers.....	53	51	2
Clerks.....	95	73	22
Wage earners (average number).....	2,041	1,595	446
16 years of age and over.....	2,039	1,593	446
Under 16 years of age.....	2	2	.....

Wage earners employed, by months.—Table 80 gives the number of wage earners employed in the shoddy industry on the 15th (or the nearest representative day) of each month during the year 1909.

Table 80

MONTH.	WAGE EARNERS EMPLOYED IN THE SHODDY INDUSTRY: 1909	
	Number.	Per cent of maximum.
January.....	1,980	91.0
February.....	2,025	94.0
March.....	2,041	94.7
April.....	2,010	93.3
May.....	2,024	93.9
June.....	2,040	94.7
July.....	2,035	94.4
August.....	2,003	92.9
September.....	2,033	94.3
October.....	2,070	96.1
November.....	2,077	96.4
December.....	2,155	100.0

The largest number of wage earners employed during any month of 1909 was 2,155 in December, and the smallest number 1,980 in January, the minimum number being equal to 91.9 per cent of the maximum. In 1904 the maximum number, 2,182, was shown for December, and the minimum number, 2,007, for June, the latter number being equal to 92 per cent of the former. The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for the principal states in Table 89.

Prevailing hours of labor.—In Table 81 the wage earners in the shoddy industry have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

STATE.	Total.	In establishments with prevailing hours—						
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States.....	2,041	5	28	5	387	1,320	268	28
Connecticut.....	98					98		
Massachusetts.....	442		24	2	184	206		26
New York.....	223	1	4		30	186		2
Ohio.....	438					170	268	
Pennsylvania.....	450			3	88	359		
All other states.....	390	4			85	301		

Of the 2,041 wage earners employed in the industry in 1909, 1,320, or 64.7 per cent, were employed in establishments where the prevailing hours were 60 per week; 387, or 19 per cent, were in establishments where the hours were between 54 and 60; and 268, or 13.1 per cent, in establishments where the hours were between 60 and 72. All the wage earners in this latter group were reported from Ohio, in which state this was the most common working time; in all the other states shown separately in the table the most common working time was 60 hours per week.

Character of ownership.—Table 82 presents statistics with respect to the character of ownership of the shoddy mills in the United States.

In 1909, of the total number of mills, 36.4 per cent were under corporate ownership, as compared with 27.8 per cent in 1904. The value of products of such establishments represented 53.3 per cent of the total for the industry in 1909, and 45.5 per cent in 1904. Establishments under firm ownership, which ranked second in importance in 1904 as measured by value of products, with more than one-third of the total, show a

considerable decrease both in number and in value of products for the five-year period covered by the table, contributing only 18 per cent of the total value of products in 1909. Establishments under individual ownership, on the other hand, show a considerable increase in value of products for the five-year period, reporting 28.7 per cent of the total in 1909, as against 18.7 per cent in 1904.

CHARACTER OF OWNERSHIP.	Number of establishments.		Value of products.	
	1909	1904	1909	1904
	Total	88	97	\$7,446,384	$8,406,425
Individual.....	39	40	2,135,186	1,570,315
Firm.....	17	30	1,342,739	3,008,683
Corporation.....	32	27	3,968,430	3,827,527
Per cent of total	100.0	100.0	100.0	100.0
Individual.....	44.3	41.2	28.7	18.7
Firm.....	19.3	30.9	18.0	35.8
Corporation.....	36.4	27.8	53.3	45.5

Size of establishments.—Table 83 presents statistics for 1909 and 1904 for establishments in the shoddy industry grouped according to the value of their products.

VALUE OF PRODUCTS PER ESTABLISHMENT.	Number of establishments.		Value of products.	
	1909	1904	1909	1904
	Total	88	97	\$7,446,384	$8,406,425
Less than \$5,000.....	18	15	48,473	36,525
\$5,000 and less than \$20,000.....	19	25	190,615	272,475
\$20,000 and less than \$100,000.....	27	20	1,403,160	1,495,369
\$100,000 and over.....	24	28	5,797,016	6,602,056
Per cent of total	100.0	100.0	100.0	100.0
Less than \$5,000.....	20.5	15.5	0.7	0.4
\$5,000 and less than \$20,000.....	21.6	25.8	2.6	3.2
\$20,000 and less than \$100,000.....	30.7	20.9	18.8	17.8
\$100,000 and over.....	27.3	28.9	77.9	78.5

While establishments manufacturing products valued at over \$100,000 represented only a little more than one-fourth of the total number at both censuses, they reported 77.9 per cent of the total value of products in 1909 and 78.5 per cent in 1904. None of the establishments reported products to the value of \$1,000,000 in either year.

The average value of products per establishment decreased from \$86,664 in 1904 to \$84,618 in 1909, but the average value added by manufacture, as computed from the figures in Table 77, increased from \$24,234 to \$27,792. The average number of wage earners per establishment shows an increase from 21.5 in 1904 to 23.2 in 1909.

Expenses.—As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; 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 expenses which were reported. Table 77 shows the total expenses in 1909 to have been \$6,656,311, distributed as follows: Cost of materials, \$5,000,706, or 75.1 per cent; wages, \$906,691, or 13.6 per cent; salaries, \$289,685, or 4.4 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$459,229, or 6.9 per cent. There was considerable variation in the proportions represented by the different classes of expenses in the several states, the percentage for cost of materials ranging from 65.2 in Ohio to 82.7 in Pennsylvania, and that for wages from 10.5 in Pennsylvania to 17.6 in Ohio.

Engines and power.—Table 84 shows statistics of power as reported at the censuses of 1909, 1904, and 1899.

The total primary power used in the shoddy mills increased from 11,455 in 1899 to 13,820 in 1909, or 20.6 per cent. Power generated by steam engines forms the greater part of the power used in the industry, although such power represented a smaller proportion of the total primary power in 1909 than in 1904 and 1899. Water power represented about the same proportion of the total in both 1909 and 1899 (35.6 per cent and 35.5 per cent, respectively), the proportion

decreasing during the first half of the decade, but increasing between 1904 and 1909.

Table 84

POWER.	THE SHODDY INDUSTRY.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	164	163	155	13,820	12,244	11,455	100.0	100.0	100.0
Owned.....	147	155	155	13,107	11,426	11,237	94.8	93.3	98.1
Steam.....	80	89	90	8,135	7,825	7,123	58.9	63.9	62.2
Gas.....	1		2	50		45	0.4		0.4
Water wheels.....	65	66	63	4,747	3,601	4,069	34.3	29.4	35.5
Water motors.....	1			175			1.3		
Rented.....	17	8		713	818	218	5.2	6.7	1.9
Electric.....	17	8		545	417		3.9	3.4	
Other.....				168	401	218	1.2	3.3	1.9
Electric motors.....	42	16	3	953	613	105	100.0	100.0	100.0
Run by current generated by establishment.....	25	8	3	408	201	105	42.8	32.5	100.0
Run by rented power.....	17	8		545	417		57.2	67.5	

Fuel consumed.—Bituminous coal was the principal class of fuel used, 41,345 short tons being consumed in the industry in 1909. The total amount expended for fuel and rent of power, as shown in Table 89, was \$168,398.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

Materials.—Table 85 shows statistics of the materials used in the industry for 1909, 1904, and 1899.

MATERIAL.	THE SHODDY INDUSTRY.			
	1909	1904	1899	Per cent of increase ¹ 1899-1909
Total cost.....	\$5,000,706	\$6,055,731	\$4,875,192	2.6
Tailors' clippings, rags, etc.:				
Pounds.....	64,561,713	68,921,097	79,623,312	-18.9
Cost.....	\$3,051,045	\$4,295,641	\$3,558,706	-14.3
Waste and noils of wool, mohair, camel's hair, etc.:				
Pounds.....	7,567,579	8,177,846	4,236,028	78.6
Cost.....	\$917,976	\$909,754	\$693,972	32.3
Wool, in condition purchased:				
Pounds.....	237,097	597,492	422,349	-43.0
Cost.....	\$98,032	\$127,927	\$127,069	-22.9
Equivalent of above in scoured condition, pounds..	196,097	421,492	242,997	-19.3
Chemicals and dyestuffs.....	\$138,241	\$142,455	\$111,095	24.4
All other materials.....	\$795,412	\$579,954	\$384,320	107.0

¹ A minus sign (-) denotes decrease.

The total cost of materials increased 24.2 per cent from 1899 to 1904, but decreased 17.4 per cent from 1904 to 1909, the increase for the decade being 2.6 per cent. The quantity of tailors' clippings, rags, etc., used decreased from 79,623,312 pounds in 1899 to 64,561,713 pounds in 1909, or 18.9 per cent; the decrease in value was 14.3 per cent. The cost of this class of materials represented 73 per cent of the total cost of materials in 1899 and 61 per cent in 1909. The waste and noils of wool, mohair, camel's hair, etc., used

in the industry show an increase of 78.6 per cent in quantity and of 32.3 per cent in value for the decade, although for the five-year period 1904-1909 there was a decrease of 7.5 per cent in consumption, the cost, however, increasing nine-tenths of 1 per cent.

Products and equipment.—Table 86 shows for 1909, 1904, and 1899 the quantity and value of the several kinds of products of the shoddy mills and the number of pickers and garnett machines employed.

PRODUCT.	THE SHODDY INDUSTRY.			
	1909	1904	1899	Per cent of increase ¹ 1899-1909
Total value.....	\$7,446,364	\$8,406,425	\$6,730,974	10.8
Shoddy and mungo:				
Pounds.....	48,375,724	54,401,295	39,014,661	24.0
Value.....	\$5,699,260	\$0,831,689	\$5,388,378	5.8
Wool extract:				
Pounds.....	5,637,514	6,375,768	4,980,825	13.2
Value.....	\$865,528	\$727,912	\$620,504	39.5
Flocks:				
Pounds.....	1,638,013	2,968,203	2,080,758	-21.3
Value.....	\$107,697	\$143,536	\$131,894	-18.3
Waste:				
Pounds.....	2,237,748	42,504	1,608,470	39.1
Value.....	\$275,545	\$1,544	\$148,043	86.1
All other products.....	\$268,708	\$365,805	\$151,494	77.4
Receipts for work on materials for others.....	\$229,026	\$335,939	\$290,061	-21.0
MACHINERY.				
Pickers, number.....	346	317	(3)	
Garnett machines, number.....	158	116	(3)	

¹ A minus sign (-) denotes decrease.

² In addition, shoddy to the value of \$367,278 was made for sale by establishments engaged primarily in the manufacture of other products.

³ Not reported.

WOOL PULLING AND WOOL SCOURING.

WOOL PULLING.

This industry includes establishments pulling wool, on contract, from pelts owned by others, and reporting as value of products only the amount received for work done, as well as establishments that buy the pelts and report their cost under cost of materials, and the value of the wool and skins under value of products. Variations in the relative importance of these two classes of establishments render it impracticable to make any significant comparisons of cost of materials and value of products for different censuses. Table 90 summarizes the statistics for the industry, that is, for the independent wool pulling establishments, for 1909, 1904, and 1899.

	Number or amount.			Per cent of increase. ¹		
	1909	1904	1899	1899-1909	1904-1909	1899-1904
	Number of establishments..	37	34	34	8.8	8.8
Persons engaged in the industry.....	759	786	541	40.3	-3.4	45.3
Proprietors and firm members.....	37	40	31	19.4	-7.5	29.0
Salaried employees.....	91	65	35	160.0	40.0	85.7
Wage earners (average number).....	631	681	475	32.8	-7.3	43.4
Primary horsepower.....	1,368	1,324	820	66.6	3.2	61.5
Capital.....	\$3,247,928	\$2,534,029	\$944,715	243.8	28.2	168.2
Expenses.....	4,876,919	671,549	384,742	1,167.6	626.2	74.5
Services.....	518,511	439,169	283,372	83.0	18.1	55.0
Salaries.....	131,598	74,415	35,422	271.5	76.8	110.1
Wages.....	386,915	364,754	247,950	56.0	6.1	47.1
Materials.....	4,103,250	103,984	53,975	(2)	(2)	(2)
Miscellaneous.....	255,158	128,396	47,395	438.4	98.7	170.9
Value of products.....	5,130,856	881,706	531,287	(2)	(2)	(2)
Value added by manufacture (value of products less cost of materials).....	1,077,606	777,722	477,312	125.8	38.6	62.9

¹ A minus sign (-) denotes decrease.

² Figures not comparable.

Large quantities of wool are pulled in slaughtering and meat-packing establishments, which in 1909 reported 21,858,926 pounds, and tanning establishments, including those tanning leather for their own use, which reported 8,218,363 pounds in 1909.

WOOL SCOURING.

Wool scouring is now, and always has been, in this country, chiefly done in the mills. The independent scouring plants are a recent development.

Table 91 summarizes the statistics of the wool-scouring industry (that is, of the independent establishments engaged in wool scouring) for 1909, 1904, and 1899. The statistics for such establishments were not segregated prior to 1899.

	Number or amount.			Per cent of increase. ¹		
	1909	1904	1899	1899-1909	1904-1909	1899-1904
	Number of establishments..	28	27	25	12.0	3.7	8.0
Persons engaged in the industry.....	1,262	852	776	62.6	48.1	9.8
Proprietors and firm members.....	18	18	11	63.6	.....	63.6
Salaried employees.....	102	55	45	126.7	85.5	22.2
Wage earners (average number).....	1,142	779	720	58.6	46.0	8.2
Primary horsepower.....	6,782	3,478	2,900	133.9	95.1	19.9
Capital.....	\$3,257,585	\$1,187,716	\$1,061,123	207.0	174.3	11.9
Expenses.....	2,967,331	830,284	700,482	320.0	253.6	18.8
Services.....	700,364	475,505	410,617	70.6	47.3	15.8
Salaries.....	142,646	77,694	72,011	98.1	88.6	7.9
Wages.....	557,718	397,811	338,606	64.7	40.2	17.5
Materials.....	2,122,102	214,624	193,826	(2)	(2)	(2)
Miscellaneous.....	144,865	140,155	102,039	42.0	-2.9	46.2
Value of products.....	3,289,215	1,052,909	889,809	(2)	(2)	(2)
Value added by manufacture (value of products less cost of materials).....	1,167,113	838,285	695,983	67.7	39.2	20.4

¹ A minus sign (-) denotes decrease.

² Figures not comparable.

The number of establishments engaged primarily in wool scouring increased only 12 per cent during the decade 1899-1909, though the average number of wage earners increased 58.6 per cent. In some cases the wool scoured is owned by the establishment and its cost is included in the cost of materials and its value in the value of products; in other cases, when the work is done under contract, the value of products represents only the amount received for work done on materials furnished by others. The statistics for 1909, in particular, cover a number of cases where the raw wool was purchased, and consequently the statistics for cost of materials and value of products as reported at the different censuses are not comparable. Statistics for the quantity of wool scoured by the independent establishments in 1909 are not available. The total quantity of scoured wool used in the textile industries was approximately 352,000,000 pounds, but the bulk of this was scoured in the establishments where it was used.

HATS, FUR-FELT

THE FUR-FELT HAT INDUSTRY.

Summary for the United States.—The establishments assigned to this industry manufacture stiff and soft hats from hatters' fur. All of the various processes, from the first treatment of the raw fur to the turning out of the finished product, are carried on in some of the establishments, while others purchase hat bodies in the rough and finish and trim them.

Table 1 summarizes the statistics of the industry for each census from 1899 to 1909, inclusive.

While the manufacture of fur-felt hats by machinery has been carried on in the United States for more than 60 years, it was not until the census of 1899 that separate statistics for the industry were obtained. Before that the statistics were included with those for the industry "hats and caps, not including wool hats." The industry grew with a considerable degree of uniformity during the decade covered by Table 1, the percentage of gain in the number of establishments and value of products being about the same for each of the five-year periods. The number of persons engaged during 1909 was 27,091, as compared with 19,814 in 1899.

	NUMBER OR AMOUNT.			PER CENT OF INCREASE.		
	1909	1904	1899	1899-1909	1904-1909	1899-1904
Number of establishments.....	273	216	171	59.6	26.4	26.3
Persons engaged in the industry.....	27,091	23,666	19,814	36.7	14.5	19.4
Proprietors and firm members.....	264	252	208	26.9	4.8	21.2
Salaried employees.....	1,763	1,367	726	142.8	29.0	88.3
Wage earners (average number).....	25,064	22,047	18,880	32.8	13.7	16.8
Primary horsepower.....	19,245	16,630	11,543	62.5	15.7	40.4
Capital.....	\$35,733,594	\$23,258,104	\$16,701,308	114.0	53.6	39.3
Expenses.....	41,847,651	31,576,876	24,995,037	67.4	32.5	26.3
Services.....	16,319,881	12,770,473	10,063,232	62.2	27.8	26.9
Salaries.....	2,096,689	1,488,236	943,993	122.1	40.9	57.7
Wages.....	14,223,192	11,282,237	9,119,234	56.0	26.1	23.7
Materials.....	22,109,231	15,975,205	13,519,668	63.6	38.4	18.2
Miscellaneous.....	3,418,539	2,831,197	1,416,737	141.3	20.7	99.8
Value of products.....	47,864,630	36,629,353	27,811,187	72.1	30.7	31.7
Value added by manufacture (value of products less cost of materials).....	25,755,399	20,654,147	14,207,519	80.1	24.7	44.5

Summary, by states.—Table 2 summarizes the more important statistics by states, the states being arranged according to the value of products reported for 1909.

STATE.	Number of establishments: 1909	WAGE EARNERS.			VALUE OF PRODUCTS.			VALUE ADDED BY MANUFACTURE.			PER CENT OF INCREASE. ¹								
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.		
											1909	1904	1899	1899	1904	1899	1899	1904	1899
United States.....	273	25,064	100.0	.....	\$47,864,630	100.0	.....	\$25,755,399	100.0	.....	32.8	13.7	16.8	72.1	30.7	31.7	80.1	24.7	44.5
Pennsylvania.....	38	7,220	28.8	1	13,022,617	27.2	1	8,009,847	31.1	1	149.8	56.3	59.8	206.9	77.2	73.2	237.1	73.3	94.5
Connecticut.....	80	5,217	20.8	2	10,399,890	21.7	2	5,550,877	21.6	2	7.2	1.1	6.0	37.8	20.0	14.8	43.8	17.9	22.0
New York.....	44	5,013	20.0	3	10,218,600	21.3	3	4,812,395	18.7	3	21.3	14.0	6.4	82.4	32.0	38.2	60.7	12.9	42.3
New Jersey.....	58	4,657	18.6	4	8,825,217	18.4	4	4,713,649	18.3	4	-1.9	-18.4	20.2	22.4	-7.5	32.3	31.9	-11.3	48.7
Massachusetts.....	11	2,224	8.9	5	3,745,879	7.8	5	1,813,971	7.0	5	22.0	40.2	-13.0	42.4	61.7	-12.0	46.2	52.3	-4.0
Illinois.....	10	99	0.4	8	236,721	0.6	8	131,784	0.5	8	(*)	(*)	(*)	(*)	170.8	(*)	(*)	(*)	(*)
All other states.....	32	634	2.5	.....	1,365,682	2.9	.....	722,876	2.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Percentages are based on figures in Table 17. A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners or is less than \$100,000 for value added by manufacture.
² Industry not reported in state in 1899.

The states shown in this table are given their actual ranking among all states, the rank of certain states for which data can not be presented being higher than that of some named in the table.

The fur-felt hat industry in the United States is confined principally to a few Eastern states, the five states of Pennsylvania, Connecticut, New York, New Jersey, and Massachusetts having 231 establishments, or 84.6 per cent of the total. The value of products reported for these states in 1909 amounted to \$46,212,227, or 96.5 per cent of the total. Pennsylvania was in 1909 the most important state as measured by value of products and number of wage

earners; Connecticut was second in both 1909 and 1904; and New York ranked third in value of products at both censuses and third in wage earners in 1909. New Jersey, which was first in importance in 1904, had dropped to fourth place in 1909.

Persons engaged in the industry.—Table 3 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
All classes	27,081	19,572	7,519
Proprietors and officials.....	777	735	42
Proprietors and firm members.....	264	258	6
Salaried officers of corporations.....	137	130	1
Superintendents and managers.....	376	341	35
Clerks.....	1,250	1,022	228
Wage earners (average number).....	25,064	17,815	7,249
16 years of age and over.....	24,533	17,526	7,007
Under 16 years of age.....	531	289	242

The average number of persons engaged in the fur-felt hat industry during 1909 was 27,091, of whom 25,064, or 92.5 per cent, were wage earners. Of the total number, 72.2 per cent were males and 27.8 per cent females. The average number of wage earners under 16 years of age was only 531, or 2.1 per cent of the total number of wage earners.

The average number of wage earners for each state, as reported at the censuses of 1909, 1904, and 1899, is given in Table 17. The distribution of the average number by sex and age is not shown for the individual states, but Table 18 gives such a distribution for the number employed on December 15, or the

nearest representative day. Female wage earners were reported from all states in which the industry was located except three—Iowa, Michigan, and Mississippi.

Table 4 shows the average number of wage earners in the industry distributed according to age, and in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899. There was little change in the distribution of the employees of the industry from census to census.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY.					
	1909		1904		1899	
	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.	Num-ber.	Per cent distribution.
Total	25,064	100.0	22,047	100.0	18,880	100.0
16 years of age and over..	24,533	97.9	21,508	98.0	18,023	95.6
Male.....	17,526	69.9	15,432	70.0	13,187	69.8
Female.....	7,007	28.0	6,106	28.0	5,430	28.8
Under 16 years of age....	531	2.1	449	2.0	257	1.4

Wage earners employed, by months.—Table 5 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each month during the year 1909 for the five states in which an average of over 500 wage earners were employed during the year.

STATE.	Average number during the year.	WAGE EARNERS EMPLOYED IN THE INDUSTRY: 1909 ¹											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States	25,064	25,987	19,394	20,361	20,590	21,075	24,538	26,676	27,585	28,216	28,276	28,972	29,062
Connecticut.....	5,217	5,880	1,940	2,183	2,285	2,472	5,330	6,850	7,109	7,289	7,266	7,045	6,941
Massachusetts.....	2,224	2,091	2,394	2,539	2,172	2,270	2,195	2,144	2,125	2,262	2,268	2,066	2,157
New Jersey.....	4,657	5,490	2,800	3,118	3,606	3,958	4,253	4,798	5,149	5,100	5,206	6,101	6,188
New York.....	5,013	4,587	4,648	4,790	4,735	4,710	4,805	5,009	5,232	5,407	5,411	5,461	5,396
Pennsylvania.....	7,220	7,229	6,936	7,026	7,072	6,956	7,169	7,163	7,250	7,361	7,358	7,521	7,599

¹ The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

The largest number of wage earners employed in the industry during any month was 29,062, in December, and the smallest number 19,394, in February, the minimum number being equal to 66.7 per cent of the maximum. The statistics shown in Table 5 do not represent normal conditions because of an important strike which affected a large number of establishments in Connecticut and New Jersey. In Connecticut the strike lasted from January 16 to the middle of June, and in New Jersey for a somewhat longer period. In 1904 the maximum number, 22,840, was reported for September, and the minimum number, 20,879, for May. The minimum thus was equal to 91.4 per cent of the maximum, showing a much narrower range of variation than in 1909.

The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for the principal states in Table 18.

Prevailing hours of labor.—In Table 6 the wage earners in the industry as a whole have been classified

according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

STATE.	AVERAGE NUMBER OF WAGE EARNERS: 1909					
	Total.	In establishments with prevailing hours—				
		48 and under.	Be-tween 48 and 54.	54.	Be-tween 54 and 60.	60.	Be-tween 60 and 72.
United States	25,064	2,182	7,985	5,163	8,957	778
Connecticut.....	5,217	588	3,016	22	1,468	123
Massachusetts.....	2,224	83	20	2,121	.....	.....
New Jersey.....	4,657	619	3,295	108	366	269
New York.....	5,013	672	1,660	36	3,236	9
Pennsylvania.....	7,220	65	370	4,019	1,533	333

Most of the wage earners were employed in establishments where the prevailing hours were more than 48 but less than 60. There was considerable diversity among the several states in the prevailing time of employment.

Character of ownership.—Table 7 presents data with respect to the character of ownership of the establishments in the industry for 1909 and 1904.

In 1909, of the total number of establishments, 38.1 per cent were under corporate ownership, as compared with 25.9 per cent in 1904. In 1909 the value of products of these establishments represented 66 per cent of the total, and in 1904, 55.1 per cent.

CHARACTER OF OWNERSHIP.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	273	216	\$47,864,630	\$36,629,353
Individual.....	108	92	5,679,082	4,418,094
Firm.....	61	65	10,578,321	12,028,079
Corporation.....	104	59	31,607,227	20,182,580
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	39.6	42.6	11.9	12.1
Firm.....	22.3	31.5	22.1	32.8
Corporation.....	38.1	25.9	66.0	55.1

Table 8 gives statistics for the establishments in the industry classified according to form of ownership, by states.

STATE.	NUMBER OF ESTABLISHMENTS OWNED BY—			WAGE EARNERS IN ESTABLISHMENTS OWNED BY—			VALUE OF PRODUCTS OF ESTABLISHMENTS OWNED BY—			VALUE ADDED BY MANUFACTURE IN ESTABLISHMENTS OWNED BY—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	108	61	104	2,672	4,995	17,397	\$5,679,082	\$10,578,321	\$31,607,227	\$2,778,486	5,406,625	\$17,570,288
Connecticut.....	20	16	44	248	1,034	3,935	531,682	2,120,383	7,747,795	223,714	1,112,795	4,214,388
Massachusetts.....	3	3	5	20	478	1,726	43,879	823,654	2,378,340	20,041	421,915	1,372,015
New Jersey.....	22	14	22	719	1,308	2,030	1,210,551	2,801,454	4,313,212	655,535	1,541,420	2,516,694
New York.....	24	9	11	423	641	3,949	1,558,550	1,630,879	7,029,231	559,555	852,768	3,400,071
Pennsylvania.....	17	12	9	1,166	1,262	4,792	2,039,559	2,674,955	8,308,108	1,139,637	1,163,918	5,706,292

In 1909, of the total number of wage earners reported for the industry, 2,672, or 10.7 per cent, were employed in establishments under individual ownership; 4,995, or 19.9 per cent, in those under firm ownership; and 17,397, or 69.4 per cent, in those owned by corporations.

Size of establishment.—Table 9 presents statistics for 1909 and 1904 for establishments in the fur-felt hat industry grouped according to the value of their products.

In 1909 only six establishments manufactured products valued at \$1,000,000 or over, but they reported 35 per cent of the total value of products for all establishments.

The average value of products per establishment increased from \$169,580 in 1904 to \$175,328 in 1909, but the average value added by manufacture, as computed from the figures in Table 1, decreased slightly, from \$95,621 to \$94,342; the average number of

wage earners per establishment also shows a decrease from 102 in 1904 to 92 in 1909.

VALUE OF PRODUCTS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	273	216	\$47,864,630	\$36,629,353
Less than \$5,000.....	35	18	104,234	61,337
\$5,000 and less than \$20,000.....	63	61	995,573	655,316
\$20,000 and less than \$100,000.....	78	60	3,639,413	3,291,900
\$100,000 and less than \$1,000,000..	91	71	26,673,802	21,389,673
\$1,000,000 and over.....	6	6	16,751,608	11,231,127
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	12.8	8.3	0.2	0.2
\$5,000 and less than \$20,000.....	23.1	28.2	1.5	1.8
\$20,000 and less than \$100,000.....	28.6	27.8	7.6	9.0
\$100,000 and less than \$1,000,000..	33.3	32.9	55.7	58.4
\$1,000,000 and over.....	2.2	2.8	35.0	30.7

Table 10 gives, for 1909, a classification of establishments according to the number of wage earners employed, for the industry as a whole and for the leading states.

STATE.	ESTABLISHMENTS EMPLOYING IN 1909—																			
	TOTAL.		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.	
	Estab-lish-ments.	Wage earners (average number).	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.
United States.....	273	25,064	12	71	200	56	687	47	1,597	32	2,224	31	4,600	19	6,579	2	1,102	3	8,075	
Connecticut.....	80	5,217	2	17	47	12	172	17	629	13	884	14	1,983	5	1,502	.....	.....	.....	.....
Massachusetts.....	11	2,224	.....	2	3	2	31	.....	436	4	234	1	176	1	386	.....	.....	1	1,394
New Jersey.....	58	4,657	1	11	37	8	88	.....	436	10	746	11	1,549	4	1,226	1	575	.....	.....
New York.....	44	5,013	4	13	37	8	109	9	257	4	279	.....	.....	4	1,521	1	527	1	2,283
Pennsylvania.....	38	7,220	2	7	12	13	145	6	191	1	81	3	449	5	1,944	.....	.....	1	4,396

MANUFACTURES.

HATS, FUR-FELT—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, 1899.

Table 17

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.						Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).	Expressed in thousands.								
							Capital.	Salaries.								Wages.	Cost of materials.	Value of products.
United States.....	1909	273	27,091	264	1,763	25,064	19,245	\$35,734	\$2,097	\$14,223	\$22,109	\$47,865	\$25,756		
	1904	216	23,666	252	1,387	22,047	16,630	23,258	1,485	11,232	15,975	36,629	20,654		
	1899	171	19,814	208	726	18,880	11,843	16,701	944	9,119	13,514	27,811	14,287		
Connecticut.....	1909	80	5,877	59	601	5,217	5,619	7,144	574	3,384	4,849	10,400	5,551		
	1904	56	5,664	57	449	5,158	3,729	3,352	427	2,096	3,954	8,663	4,709		
	1899	58	5,126	85	173	4,808	3,370	3,198	173	2,415	3,686	7,547	3,861		
Illinois.....	1909	10	123	9	15	99	20	70	12	71	155	287	132		
	1904	5	49	4	8	37	14	45	7	24	54	108	52		
	1899														
Massachusetts.....	1909	11	2,341	10	107	2,224	1,149	2,262	147	990	1,932	3,746	1,814		
	1904	6	1,664	9	69	1,536	1,180	1,845	93	627	1,125	2,316	1,191		
	1899	11	1,805	18	54	1,823	855	1,468	56	791	1,390	2,631	1,241		
New Jersey.....	1909	58	5,104	63	384	4,657	5,046	5,335	478	2,969	4,112	8,825	4,713		
	1904	63	6,078	81	292	5,705	5,018	4,331	318	3,270	4,227	9,540	5,313		
	1899	59	4,965	66	154	4,745	3,709	2,932	186	2,487	3,037	7,211	3,574		
New York.....	1909	44	5,379	47	319	5,013	1,451	5,702	393	2,725	5,406	10,219	4,813		
	1904	43	4,684	52	235	4,397	3,487	4,441	264	2,309	3,478	7,740	4,262		
	1899	15	4,280	12	135	4,133	1,840	3,050	224	2,079	2,607	6,602	2,935		
Pennsylvania.....	1909	38	7,537	46	271	7,220	5,335	14,439	423	3,725	5,013	13,023	8,010		
	1904	25	4,931	29	283	4,619	2,745	8,778	340	2,122	2,729	7,350	4,621		
	1899	20	3,092	22	180	2,890	1,737	5,726	270	1,187	1,867	4,243	2,376		
All other states.....	1909	32	730	30	66	634	625	782	70	359	642	1,365	723		
	1904	18	596	20	31	545	459	466	33	228	408	914	506		
	1899	8	456	5	30	421	332	327	35	160	327	577	280		

HATS, FUR-FELT—DETAILED STATISTICS, BY STATES: 1909.

Table 18

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.							WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.						Primary horse-power.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.	
								Maximum month.	Minimum month.						
United States....	273	27,091	264	513	1,022	228	25,064	De 29,062	Fe 19,394	30,292	21,182	8,468	349	293	19,245
Connecticut.....	80	5,877	59	170	343	88	5,217	Se 7,289	Fe 1,940	7,656	5,373	2,231	42	10	5,619
Illinois.....	10	123	9	1	11	3	99	De 111	Jy 93	111	61	50			20
Massachusetts.....	11	2,341	10	35	43	29	2,224	Mh 2,539	No 2,065	2,497	1,603	963	22	9	1,149
Missouri.....	4	41	3	2	2	2	32	Je ¹ 34	Ja ¹ 29	29	15	14			4
New Jersey.....	58	5,104	63	148	202	34	4,657	De 6,186	Fe 2,860	6,296	4,889	1,304	49	54	5,046
New York.....	44	5,379	47	74	202	43	5,013	No 5,461	Fe 4,548	5,417	3,597	1,777	21	22	1,451
Pennsylvania.....	38	7,537	46	67	183	21	7,220	De 7,599	Fe 6,936	7,643	5,313	1,934	203	193	5,335
Wisconsin.....	3	8	1	2			5	Oc ¹ 8	Ja ¹ 4	7	3	4			9
All other states ²	25	681	26	14	36	8	597			636	428	191	12	5	612

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).	
		Total.	Services.			Materials.			Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.			
United States....	\$35,733,594	\$41,847,651	\$1,069,007	\$1,027,682	\$14,223,192	\$651,632	\$21,457,599	\$184,065	\$102,508	\$328,697	\$2,805,269	\$47,864,630	\$25,755,399	
Connecticut.....	7,143,713	9,395,203	297,723	276,613	3,384,364	175,076	4,673,907	42,689	21,796	28,013	495,022	10,399,890	5,550,877	
Illinois.....	70,007	250,898	1,560	10,650	70,990	1,774	153,163	9,732	227		2,802	288,721	131,784	
Massachusetts.....	2,261,684	3,356,205	95,028	51,665	990,107	44,698	1,887,204	15,370	8,468	20,748	242,917	3,745,873	1,813,971	
Missouri.....	29,042	58,353	2,500	1,820	14,740	1,544	20,084	6,900	135		10,630	76,554	54,926	
New Jersey.....	5,335,313	8,184,099	275,836	202,093	2,969,230	149,633	3,961,935	26,088	20,738	108,469	470,081	8,825,217	4,713,649	
New York.....	5,702,386	9,620,859	161,713	230,948	2,725,118	107,491	5,298,774	49,709	17,832	153,464	875,810	10,218,660	4,812,395	
Pennsylvania.....	14,438,611	9,877,996	204,902	217,814	3,724,699	150,930	4,861,840	18,233	30,492	15,753	653,333	13,022,617	8,009,847	
Wisconsin.....	9,678	9,330	825		3,608	216	3,507	696	12		466	11,741	8,018	
All other states ²	743,100	1,094,708	28,920	36,079	340,336	20,270	697,185	14,650	2,810	250	54,208	1,277,387	659,932	

¹ Same number reported for one or more other months.
² All other states embrace: California, 2 establishments; Delaware, 1; Indiana, 1; Iowa, 1; Kentucky, 2; Maine, 1; Maryland, 1; Michigan, 1; Minnesota, 3; Mississippi, 1; Nebraska, 1; New Hampshire, 1; Ohio, 3; Oklahoma, 1; Oregon, 1; Rhode Island, 2; Texas, 1; West Virginia, 1.

SILK MANUFACTURES

(147)

SILK MANUFACTURES.

GENERAL STATISTICS.

Scope of the industry.—The silk manufacturing industry, according to the classification adopted for the presentation of the statistics of manufactures at the census of 1909, includes two classes of establishments, as follows: (1) Establishments manufacturing finished silk products, such as woven fabrics, braids, and trimmings, sewing, embroidery, and wash silks, machine twist, and fringe and floss silks; and (2) establishments manufacturing silk yarn, known technically as organzine, tram, and spun silk.¹ The concerns engaged only in the manufacture of organzine and tram are known as throwsters and winders, the latter performing the work of winding the threads on skeins and spools after they have been washed free from the gum which encases the raw fibers. In most cases it has not been deemed necessary to give separate statistics regarding the two branches of the industry, and except where otherwise stated the tables in this report present statistics only for the industry as a whole. The statistics for the industry do not cover the general manufacture of silk hosiery and knit goods, since establishments engaged primarily in such manufactures are included with the hosiery and knit goods industry. The total value of silk hosiery and knit underwear produced in all industries, so far as these figures are available, is, however, presented in Table 28.

Summary for the industry: 1909.—Table 1 presents a summary of the statistics for the silk manufacturing industry as a whole for 1909.

Few establishments include the entire process of silk manufacture in their operations, almost three-fourths of the total quantity of organzine and tram reported for 1909 being thrown under contract by independent throwsters. Although the establishments engaged solely in throwing, winding, etc., formed more than one-fifth of the total number of establishments in the industry and employed almost one-sixth of the total number of wage earners, they reported only 5.2 per cent of the total cost of materials and 6.5 per cent of the total value of products. This is due to the fact that the establishments operating on a commission basis did not include the value of the silk thrown, which belonged to the establishments for which the work is done, the cost of materials for the establishment throwing the

silk consisting of the cost of mill supplies, fuel, etc., and the value of products mainly represents the amount received for the work performed. The establishment for which the throwing was done reported the cost of the thrown silk in its cost of materials and the amount paid for throwing as contract work under miscellaneous expenses.

Table 1

	SILK MANUFACTURING INDUSTRY.				
	Total.	Establishments engaged primarily in—		Per cent of total.	
		Manufacturing finished silk products.	Throwing, winding, etc., only (throwsters).	Finished silk products.	Throwsters.
Number of establishments....	852	600	192	77.5	22.5
Persons engaged in the industry.....	105,238	88,507	16,671	84.2	15.8
Proprietors and firm members.....	664	536	128	80.7	19.3
Salaried employees.....	5,537	4,958	579	89.5	10.5
Wage earners (average number).....	99,037	83,073	15,964	83.9	16.1
Primary horsepower.....	97,947	(1)	(1)	.....	.....
Capital.....	\$152,158,002	\$137,855,737	\$14,602,265	90.4	9.6
Expenses.....	177,175,719	165,880,356	11,295,363	93.6	6.4
Services.....	46,097,364	41,409,408	4,687,956	89.8	10.2
Salaries.....	7,527,279	6,771,282	756,017	90.0	10.0
Wages.....	38,570,085	34,638,146	3,931,939	89.8	10.2
Materials.....	107,766,916	102,177,570	5,589,346	94.8	5.2
Miscellaneous.....	23,311,439	22,293,378	1,018,061	95.6	4.4
Contract work.....	12,008,744	11,726,803	281,941	97.7	2.3
All other.....	11,302,695	10,566,510	736,185	93.5	6.5
Value of products.....	196,911,667	184,099,555	12,812,112	93.5	6.5
Value added by manufacture (value of products less cost of materials).....	89,144,751	81,021,985	7,222,766	91.9	8.1

¹ Figures not available.

NOTE.—The 852 establishments comprise 468 corporations, the officers of which are included under salaried employees. Proprietors and firm members pertain to individual and firm establishments (see Table 16).

Wages paid in dyeing, printing, finishing, embossing, etc., by establishments outside of the classified silk industry are reported elsewhere and appear here largely in the value of materials (see Table 3). Contract work is chiefly labor expended upon materials in other mills, and value added by manufacture does not include value added to materials by establishments elsewhere reported (see Tables 4 and 6).

For duplications in value of products see Tables 4 and 6, and for value of products used in other industries, Table 25.

Table 2 shows another classification of the two branches of the industry, for mills manufacturing the finished products and for plants reporting as engaged exclusively in throwing, winding, etc.

Table 2	CLASS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
Total.....		852	99,037	\$38,570,085	\$107,766,916	\$196,911,667	\$89,144,751
Mills making finished products.....		637	81,391	34,023,194	99,679,000	179,765,675	80,086,675
Mills doing throwing, winding, etc..		215	17,646	4,546,891	8,087,916	17,145,992	9,058,076

¹ Organzine and tram constitute respectively the warp and the weft of silk fabrics, and are made from the best grades of the raw material by the process of throwing (doubling, twisting, and winding the filaments into yarn). Spun silk is produced by spinning, in much the same manner as wool fabrics are spun, the short-fibered silk from pierced cocoons or from waste silk of any sort which can not be thrown in the usual manner.

The silk goods constituting the final products of the industry are to a considerable extent dyed and finished in establishments included in the industry designated "dyeing and finishing textiles," and a comprehensive view of the silk manufacturing industry should cover also such dyeing and finishing of silk goods in independent dyeing and finishing establishments. It is not possible, however, to give complete statistics on this subject, as the returns of the independent dyeing and finishing establishments do not in all cases indicate the kind of goods treated; of the 426 establishments included under the industry "dyeing and finishing textiles," however, the returns show 69 to have been engaged primarily in the dyeing and finishing of silk goods, and the principal statistics for these establishments are summarized in Table 3.

Table 3

	Independent dyeing and finishing establishments engaged primarily in dyeing and finishing silk goods.
Number of establishments.....	69
Persons engaged in the industry.....	8,860
Proprietors and firm members.....	39
Salaried employees.....	514
Wage earners (average number).....	8,307
Primary horsepower.....	13,067
Capital.....	\$17,336,210
Expenses.....	12,273,237
Services.....	5,400,120
Salaries.....	1,045,700
Wages.....	4,354,360
Materials.....	5,814,716
Miscellaneous.....	1,058,401
Value of products.....	13,970,978
Value added by manufacture (value of products less cost of materials).....	8,156,262

The figures for expenses for the silk manufacturing industry as a whole involve considerable duplication. The figures for miscellaneous expenses shown in Table 1 include \$12,008,744, representing payments for contract work, a large part of which was made to other establishments in the industry for throwing organzine and tram or dyeing and finishing silk goods for the establishments reporting the payments. The establishments to which these payments were made, on the other hand, paid out the greater part of the amounts thus received for wages, materials, and other expenses, thus occasioning a duplication in the total expenses reported for the industry. Similarly, the establishments doing throwing or dyeing and finishing under contract reported the amounts received for this work in their value of products, while the cost of such contract work is one of the elements entering into the value of products of the establishments for which the work was done, so that a duplication thus arises in the total value of products for the industry as a whole.

It is impossible to determine the exact amount of duplication arising from the causes mentioned, since no segregation can be made between the amounts reported as received for contract work by establishments within the industry and the receipts for work done for merchants and for establishments in other industries, and no segregation can be made between

the two classes of receipts. It is believed, however, that the amounts received for contract work from concerns not engaged in the silk manufacturing industry were comparatively small, so that the total amount reported as received for contract work by establishments within the industry (\$8,364,350, of which \$6,745,261 was reported by throwsters or by weaving mills also doing contract throwing) would represent approximately the amount of duplication in expenses and value of products resulting from this factor, although the actual duplication might be somewhat less. The difference (\$3,644,394) between payments and receipts for contract work within the industry would then represent the payments for such work to establishments outside the industry.

Duplication also arises in the cost of materials and value of products for this industry from the fact that some establishments within the industry sell partly manufactured products, such as organzine, tram, spun silk, and fringe and floss, to other establishments in the industry for use as materials in further manufacturing processes. The value of such products is, of course, included in the value of products of the establishments reporting them, and also enters into the value of products of the establishments using them as materials, while the cost of the materials from which they were made constitutes part of the cost of materials of the establishment manufacturing them, and also enters into the cost of materials of the establishments using these products as materials for further manufacture. As the total amount of this class of products reported as purchased for use as materials exceeds the amount reported as sold, the value of the latter (\$15,055,625) may be assumed to represent approximately the amount of duplication in the total value of products for the industry, although, as some of these products were sold to concerns outside the industry, the actual amount of duplication was less; the error, however, is comparatively small. The actual duplication in cost of materials was somewhat less than the figure just given, which includes the value added to the raw materials by manufacture in the establishments transforming them into the partly manufactured products, but it is impossible to determine the exact amount, as no segregation can be made in the returns between the materials entering into these products and those on which all the manufacturing processes to which they were subjected within the industry were performed in the same establishment. At the same time it should be noted that the amount obtained by subtracting the figure given above from the total cost of materials for the industry is more significant than that which would be obtained by merely eliminating the actual duplication, for the reason that it more nearly represents the original cost of the materials transformed by the manufacturing processes performed within the industry.

The extent to which the duplications referred to affect the value of products for the industry is brought out by Table 4, which shows the total value of products, the approximate amount of duplication arising from the causes mentioned, and the net value of products, eliminating the duplication.

	VALUE OF PRODUCTS OF SILK MANUFACTURING INDUSTRY: 1909	
	Amount.	Per cent of total.
Total value of products.....	\$196,911,667	100.0
Duplications.....	23,419,975	11.9
Resulting from sale of partly finished products to other establishments in the industry for use as materials.....	15,055,625	7.6
Organzine and tram.....	12,550,510	6.4
Spun silk.....	2,104,036	1.1
Fringes and floss.....	401,049	0.2
Resulting from contract work.....	8,364,350	4.3
Net value of products.....	173,491,692	88.1

Comparison with earlier censuses.—Table 5 summarizes the statistics of the industry as a whole for

each census from 1869 to 1909, 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.

Statistics for the silk manufacturing industry were first obtained at the census of 1849, when 67 establishments, employing an average of 1,723 hands, and manufacturing products valued at \$1,809,476, were reported. At the census of 1859, 139 establishments were reported, giving employment to an average of 5,435 hands, and manufacturing products valued at \$6,607,771. The figures for 1869 include those for establishments that reported silk hose and silk knit goods as their products of chief value, while such establishments are now classified under the hosiery and knit goods industry. As the business of such establishments was comparatively small in volume, this inclusion does not materially affect the comparability of the figures for the different censuses.

	SILK MANUFACTURING INDUSTRY.											
	Number or amount.						Per cent of increase. ¹					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
Number of establishments.....	852	624	483	472	352	86	76.4	36.5	29.2	2.3	23.6	344.2
Persons engaged in the industry.....	105,238	84,153	68,550	(²)	(²)	(²)	53.5	25.1	22.8	.....	.....	.....
Proprietors and firm members.....	664	525	477	(²)	(²)	(²)	39.2	26.5	10.1	.....	.....	.....
Salaried employees.....	5,537	4,027	2,657	(²)	(²)	(²)	108.4	37.5	51.6	.....	.....	.....
Wage earners (average number).....	99,037	79,601	65,416	49,382	31,337	6,649	51.4	24.4	21.7	(³)	(³)	(³)
Primary horsepower.....	97,947	71,760	57,397	29,638	8,810	1,911	70.6	36.5	25.0	93.7	236.4	361.0
Capital.....	\$152,158,002	\$109,550,621	\$81,082,201	\$51,007,537	\$19,125,300	\$8,231,130	87.7	38.9	35.1	59.0	166.7	206.9
Expenses.....	177,175,719	121,424,178	96,787,419	74,944,366	(²)	(²)	83.1	45.9	25.5	29.1	.....	.....
Services.....	46,097,364	31,510,213	24,116,546	19,680,318	9,146,705	1,942,286	91.1	46.3	30.7	22.5	115.2	370.9
Salaries.....	7,527,279	4,742,270	3,134,352	(²)	(²)	(²)	140.2	53.7	51.3	.....	.....	.....
Wages.....	38,570,085	26,767,943	20,982,194	(²)	(²)	(²)	83.3	44.1	27.6	.....	.....	.....
Materials.....	107,766,916	75,861,188	62,406,665	51,004,425	22,467,701	7,817,559	72.7	42.1	21.6	22.4	127.0	187.4
Miscellaneous.....	23,311,439	14,052,777	10,264,208	4,259,623	(²)	(²)	127.1	65.9	36.0	141.0	.....	.....
Value of products.....	196,911,667	133,288,072	107,266,258	87,298,454	41,033,045	12,210,662	83.6	47.7	24.3	22.9	112.8	236.0
Value added by manufacture (value of products less cost of materials).....	89,144,751	57,426,884	44,849,593	36,294,029	18,565,344	4,393,103	98.8	55.2	28.0	23.6	95.5	322.6

¹ Where percentages are omitted, comparable figures are not available.

² Comparable figures not available.

³ Figures not strictly comparable.

NOTE.—See note to Table 1.

Almost ten times as many establishments and almost fifteen times as many wage earners were reported for the silk manufacturing industry in 1909 as in 1869, while the value of products in the later year was more than sixteen times as great, and the value added by manufacture more than twenty times as great as that reported forty years previous. The percentages of increase in the two items first mentioned were actually even greater than those based on the figures in the table, owing to the fact, already noted, that the financial figures for 1869 were reported in a depreciated currency. The greatest relative growth took place during the first half of the period, the value of products more than trebling during the decade 1869-1879 and more than doubling during the following decade.

The development of the industry during the decade 1899-1909 was much more rapid than during the preceding decade, the number of establishments

increasing 76.4 per cent, the number of wage earners 51.4 per cent, and the value of products 83.6 per cent. For practically every item shown in the table the increase was greater during the second half of the decade than during the first, nearly three-fourths of the total increase in value of products between 1899 and 1909 taking place during the five-year period 1904-1909.

In making comparisons between the value of products, cost of materials, and certain other items, as reported for the different censuses, account should be taken of the fact, already mentioned, that these items contain more or less duplication, the extent of which varied at different censuses. As shown by Table 4, the duplication in value of products for 1909 was approximately \$23,419,475, or 11.9 per cent of the total value of products for the industry. At prior censuses the method employed in estimating duplications in cost of materials and value of products ("materials

and products twice included") differed to some extent from that by which the figures presented in Table 4 were obtained, being as follows:

(1) The cost of organzine and tram reported as materials and the value of that reported as products were deducted from the cost of materials and value of products, respectively. (2) The value of the spun silk reported as a product was deducted both from the cost of materials and the value of products. (3) The cost of fringe and floss reported as materials was deducted both from the cost of materials and the value of products. (4) The amount received for contract work was deducted from the value of products.

Table 6 shows for each census from 1889 to 1909, inclusive, the total cost of materials and value of products, as reported, the cost of materials and value of products twice included, as determined by the above method, and the net cost of materials and value of products, eliminating these duplications.

The value of products in 1909, exclusive of duplications, differs somewhat from the net value of products shown in Table 4, on account of the fact that the cost of all fringe and floss purchased was treated as duplication in Table 6, instead of the value of that sold by the mills within the industry.

The relative duplication in cost of materials and value of products has not varied to any great extent

at the last three censuses. Between 1889 and 1899, however, it appears to have decreased considerably, possibly indicating that during this decade there was a tendency to concentrate all the processes of manufacture in the same establishment.

Table 6

SILK MANUFACTURING INDUSTRY.				
	1909	1904	1899	1889
MATERIALS.				
Total cost, as reported.....	\$107,766,916	\$75,861,188	\$62,406,665	\$51,004,425
Cost of materials twice included.....	18,420,972	16,400,231	11,840,267	15,537,520
Per cent of total.....	17.1	21.3	19.0	30.5
Cost of materials, exclusive of duplication.....	89,345,944	59,460,957	50,566,398	35,466,905
Per cent of increase over preceding census.....	50.3	17.6	42.6	.....
PRODUCTS.				
Total value, as reported.....	196,911,667	133,288,072	107,256,258	87,298,454
Value of products twice included.....	24,656,113	14,754,512	14,805,046	18,143,855
Per cent of total.....	12.5	11.1	13.8	20.8
Value of products, exclusive of duplications.....	172,255,554	118,533,560	92,451,212	69,154,599
Per cent of increase over preceding census.....	45.3	28.2	33.7	.....

Summary, by states.—Table 7 summarizes the more important statistics of the industry as a whole, by states, the states being arranged according to the value of products reported for 1909. Some states for which data can not be shown separately ranked higher than some named in the table.

Table 7

STATE.	Number of establishments: 1909	SILK MANUFACTURING INDUSTRY.																	
		Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. ¹								
		Average number: 1909	Per cent of total: 1909	Rank. 1909 1904	Amount: 1909	Per cent of total: 1909	Rank. 1909 1904	Amount: 1909	Per cent of total: 1909	Rank. 1909 1904	Wage earners (average number).			Value of products.			Value added by manufacture.		
											1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
United States.	852	99,037	100.0	.....	\$196,911,667	100.0	.....	\$89,144,751	100.0	.....	51.4	24.4	21.7	83.6	47.7	24.3	88.8	55.2	28.0
New Jersey.....	348	30,285	30.6	2	65,429,550	33.2	1	32,164,373	36.1	1	25.4	18.9	5.5	63.7	52.6	7.2	75.4	56.7	11.9
Pennsylvania.....	226	36,469	36.8	1	62,061,302	31.5	2	26,895,731	30.2	2	73.4	35.5	28.0	99.7	57.8	26.6	140.4	78.5	34.7
New York.....	170	12,903	13.0	3	28,518,821	13.5	3	12,570,232	14.1	3	64.1	14.4	43.5	108.7	31.4	58.8	104.9	29.7	57.9
Connecticut.....	47	8,703	8.8	4	21,062,687	10.7	4	9,228,342	10.4	4	33.6	11.7	19.6	70.2	34.8	26.2	78.1	41.4	26.0
Massachusetts.....	19	4,109	4.1	5	8,942,246	4.5	5	3,512,395	3.9	5	32.1	26.0	4.9	50.1	27.5	17.7	64.6	23.0	33.8
Rhode Island.....	13	1,685	1.7	6	4,584,431	2.3	6	1,396,746	1.6	6	270.3	30.5	183.7	240.6	79.3	95.0	183.7	62.3	74.8
Virginia.....	7	819	0.8	8	1,543,723	0.8	8	532,830	0.6	8	73.2	.....	.....	57.3	.....	.....	104.0	.....	.....
Maryland.....	4	655	0.7	10	511,968	0.3	12	275,339	0.3	12	.....	.....	.....	.....	87.5	.....	.....	.....	.....
Delaware.....	3	218	0.2	13	255,434	0.1	14	103,913	0.1	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	15	3,191	3.2	.....	6,001,505	3.0	.....	2,464,850	2.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Percentages are based on figures in Table 39. Percentage not shown where comparative figures can not be given without disclosing individual operations.

The silk manufacturing industry is confined to 17 states, all of which, with the exception of California, which reported three establishments, are located east of the Mississippi River, while 16 establishments, located in Maryland, Virginia, North Carolina, and Georgia, represent the extent of the industry in the southern states. New Jersey is the most important state in the industry, ranking first at the censuses of 1909 and 1904 in value of products, with about one-third (33.2 per cent) of the total for the United States, and in value added by manufacture, but second at both censuses in the number of wage earners. The

number of wage earners employed in the silk manufacturing industry of the state increased 25.4 per cent during the decade ending with 1909, and the value of products increased 63.7 per cent. Pennsylvania, which ranked second in value of products, showed larger relative gains from 1899 to 1909 than New Jersey in all three items for which the percentages of increase are given in the table, and outranked the latter state at the censuses of 1909 and 1904 in the number of wage earners employed. This latter condition is caused by the fact that many establishments in Pennsylvania are engaged in throwing raw silk into

organzine and tram for use in establishments outside the state, and since these establishments confine their operations for the most part to contract work, their value of products does not include the value of the organzine and tram produced, but consists mainly of the amount received for work done. New Jersey and Pennsylvania together reported about two-thirds of the total number of wage earners and total value of products for the industry in 1909. New York ranked third in number of wage earners, value of products, and value added by manufacture in 1909 and 1904. Rhode Island, while not an important state in the industry as measured by value of products, shows the largest percentages of increase from 1899 to 1909 of any of the states for which figures are given in the

table, the gain in the number of wage earners being 270.3 per cent, that in value of products 249.6 per cent, and that in value added by manufacture 183.4 per cent.

In general, the states held the same or nearly the same rank in respect to number of wage earners, value of products, and value added by manufacture, in 1909 as in 1904, and all of the states had the same rank in value added by manufacture in 1909 as in value of products.

Table 8 shows, for the six leading states for 1909, the total cost of materials and value of products as reported, the amount of duplication in these items, and the cost of materials and value of products less duplications.

	SILK MANUFACTURING INDUSTRY: 1909					
	Connecticut.	Massachusetts.	New Jersey.	New York.	Pennsylvania.	Rhode Island.
MATERIALS.						
Total cost, as reported.....	\$11,834,345	\$5,429,851	\$33,265,177	\$13,948,589	\$35,165,571	\$3,187,685
Cost of materials twice included.....	\$2,080,543	\$696,154	\$4,907,124	\$2,394,415	\$7,644,809	\$303,618
Per cent of total.....	17.6	12.8	14.8	17.2	21.7	9.5
Cost of materials, exclusive of duplication.....	\$9,753,802	\$4,733,697	\$28,358,053	\$11,554,174	\$27,520,762	\$2,884,067
PRODUCTS.						
Total value, as reported.....	\$21,062,687	\$8,942,246	\$65,429,550	\$26,518,821	\$62,061,302	\$4,584,431
Value of products twice included.....	\$2,835,491	\$752,814	\$3,084,260	\$2,883,141	\$12,006,069	\$165,394
Per cent of total.....	13.5	8.4	5.6	10.9	19.3	3.4
Value of products, exclusive of duplication.....	\$18,227,196	\$8,189,432	\$61,745,290	\$23,635,680	\$50,055,233	\$4,429,037

In many instances the partially manufactured products of one state go to another state to be completed; hence, in some states, the gross value of products may be a better indication of the magnitude of the industry than the value less products twice included. The gross value of the products of Pennsylvania, \$62,061,302, is relatively much nearer the total value of its silk manufactures than the value less products twice included, \$50,055,233, because a considerable portion of the silk thrown by independent throwsters in Pennsylvania (three-fifths of the total for the United States) does not appear in the value of products for that state, but is used as materials in other states, where it becomes a part of the total value of the finished products.

PERSONS ENGAGED IN THE INDUSTRY.

Summary: 1909.—Table 9 shows, for 1909, the number of persons engaged in the industry as a whole, classified according to occupational status and sex, and in the case of wage earners according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in the silk manufacturing industry during 1909 was 105,238, of whom 99,037, or 94.1 per cent, were wage earners, 2,236, or 2.1 per cent, proprietors and officials, and 3,965, or 3.8 per cent, were clerks, this class including subordinate salaried employees. Of the total number

63,022, or 59.9 per cent, were females, of whom 62,015, or 98.4 per cent, were wage earners. The number of female wage earners represented 62.6 per cent of the total number of wage earners in the industry, and the number of children under 16 years of age (7,878) represented 8 per cent, more than two-thirds of the latter (69.5 per cent) being girls.

CLASS.	PERSONS ENGAGED IN THE SILK MANUFACTURING INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	105,238	42,216	63,022
Proprietors and officials.....	2,236	2,134	102
Proprietors and firm members.....	664	638	26
Salaried officers of corporations.....	480	469	11
Superintendents and managers.....	1,092	1,027	65
Clerks.....	3,965	3,060	905
Wage earners (average number).....	99,037	37,022	62,015
16 years of age and over.....	91,159	34,620	56,539
Under 16 years of age.....	7,878	2,402	5,476

In connection with these figures it may be noted that in 1869 children represented 20.8 per cent of the total number of operatives engaged in the industry, most of them being employed as spinners and winders, while the census of 1909 shows a tendency to eliminate children as wage earners, most of those reported being employed in the throwing of organzine and tram.

In order to compare the distribution of the persons engaged in the industry according to occupational status in 1909 with that in 1904 it is necessary to use

the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 10.

CLASS.	PERSONS ENGAGED IN THE SILK MANUFACTURING INDUSTRY.				
	1909		1904		Percent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	105,238	100.0	84,153	100.0	25.1
Proprietors and firm members.....	664	0.6	525	0.6	26.5
Salaried employees.....	5,537	5.3	4,027	4.8	37.5
Wage earners (average number).....	99,037	94.1	79,601	94.6	24.4

Table 11 shows the average number of wage earners in the silk manufacturing industry, distributed according to age, and in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE SILK MANUFACTURING INDUSTRY.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	99,037	100.0	79,601	100.0	65,416	100.0
16 years of age and over.....	91,159	92.0	72,235	90.7	59,003	90.2
Male.....	34,620	35.0	27,037	34.0	24,206	37.0
Female.....	56,539	57.0	45,198	56.8	34,797	53.2
Under 16 years of age.....	7,878	8.0	7,366	9.3	6,413	9.8

The average number of wage earners in each state in 1909, 1904, and 1899 is given in Table 39. The distribution of the average number by sex and age is not shown for the individual states, but Table 40 gives such a distribution of the number employed on December 15, 1909, or the nearest representative day. Female wage earners were reported from all the states in which the industry was carried on, and in every case exceeded the males in number. The largest number, 25,940, or 40.5 per cent of the total for the industry in the United States, was reported for Pennsylvania, and the next largest number, 17,316, for New Jersey. The four leading states, as measured by value of products, New Jersey, Pennsylvania, New York, and Connecticut, together employed 56,636 female wage earners, or almost nine-tenths (88.4 per cent) of the total number for the United States. Wage earners under 16 years of age were reported from 15 states; the largest number, 5,140, were in Pennsylvania, in which state they represented 13.8 per cent of the total number of wage earners in the industry. Of the states shown in Table 40, the proportion of children employed was highest in Maryland, where they represented 28.2 per

cent of the total number of wage earners in the industry, and lowest in New York, where they constituted 2.5 per cent.

Wage earners classified according to nature of employment.—Table 12 shows for the United States as a whole, for 1909 and 1904, and for selected states for 1909, the distribution by age, and in the case of those 16 years of age and over by sex also, of spinners, weavers, and all other wage earners. It should be noted that the absolute figures for the two censuses are not strictly comparable, owing to the fact that the numbers shown for 1904 are computed averages for the entire year, while those for 1909 are the numbers reported for December 15, or the nearest representative day. The difference between the number of wage earners on this day and the average number for the year 1909, however, was only 3,332, or 3.3 per cent of the total; and since there is little variation in the proportion of the different classes of employees, the figures representing the per cent distribution may be taken as fairly comparable.

While the number of weavers increased between 1904 and 1909, there was a decrease in the proportion which they represented of the total number of wage earners employed. Female weavers outnumbered the males in the weaving of broad silks, while in the weaving of ribbons, velvets, and plushes, men predominated.

The total number of spinners, including winders, warpers, etc., increased from 33,514 in 1904 to 49,700 in 1909, or 48.3 per cent, the number of adult males increasing 57.7 per cent, the number of adult females 51.5 per cent, and the number of children 24.2 per cent.

The relative number of spinners and weavers varied considerably in the different states. In only one of the five states shown separately in the table (New Jersey) did the number of weavers exceed the number of spinners. In Massachusetts, 58.7 per cent of the wage earners were spinners, while in Connecticut such operators constituted only 32.8 per cent of the total. Of the total male wage earners 16 years of age or over in 1909, somewhat more than one-half (53 per cent) were weavers and about one-third (31.1 per cent) spinners, the proportion of weavers having decreased somewhat during the decade 1899-1909, while the proportion of spinners increased slightly. In the case of women wage earners, the proportions are practically reversed, about one-third (33.3 per cent) of the total number being weavers and more than one-half (54.9 per cent) spinners; comparatively little change in the percentages took place during the decade. Of the children somewhat more than three-fourths (79.3 per cent) were spinners.

Table 12

STATE, CLASS, AND YEAR.	WAGE EARNERS EMPLOYED IN THE SILK MANUFACTURING INDUSTRY. ¹				STATE, CLASS, AND YEAR.	WAGE EARNERS EMPLOYED IN THE SILK MANUFACTURING INDUSTRY. ¹			
	Total.	16 years and over.		Under 16 years.		Total.	16 years and over.		Under 16 years.
		Male.	Female.				Male.	Female.	
UNITED STATES.					UNITED STATES—continued.				
Wage earners—					Per cent of total—Continued.				
1909.....	102,369	35,785	58,441	8,143	All other—				
1904.....	79,001	27,037	45,198	7,366	1909.....	12.9	15.8	11.7	9.0
1904.....					1904.....	16.5	14.9	10.4	22.7
Weavers:					SELECTED STATES 1909.				
1909.....	39,413	18,980	19,484	949	Connecticut.....	9,296	4,283	4,614	399
1904.....	32,989	15,942	16,555	492	Weavers.....	2,890	1,575	1,197	118
Broad silk—					Spinners.....	3,051	590	2,385	73
1909.....	28,319	12,560	15,218	541	All others.....	3,355	2,118	1,029	208
1904.....	23,276	9,619	13,264	393	Per cent of total.....	100.0	100.0	100.0	100.0
Ribbons—					Weavers.....	31.1	36.8	25.9	29.6
1909.....	7,916	4,870	2,690	356	Spinners.....	32.8	13.8	51.8	18.3
1904.....	6,273	4,398	1,828	47	All other.....	36.1	49.5	22.3	52.1
Velvet and plush—					Massachusetts.....	4,370	1,293	2,607	470
1909.....	963	672	201	.....	Weavers.....	1,346	558	756	32
1904.....	738	554	183	1	Spinners.....	2,564	615	1,548	401
All other—					All other.....	460	120	303	37
1909.....	2,215	878	1,285	52	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	2,702	1,371	1,280	51	Weavers.....	30.8	43.2	29.0	6.8
Spinners (including winders, warpers, etc.):					Spinners.....	58.7	47.6	59.4	85.3
1909.....	49,700	11,146	32,093	6,461	All other.....	10.5	9.3	11.6	7.9
1904.....	33,514	7,007	21,245	5,202	New Jersey.....	31,342	13,628	16,585	1,129
All other:					Weavers.....	15,444	8,715	6,649	80
1909.....	13,256	5,659	6,804	733	Spinners.....	13,876	4,108	8,842	926
1904.....	13,098	4,028	7,398	1,672	All other.....	2,022	805	1,094	123
Per cent of total:					Per cent of total.....	100.0	100.0	100.0	100.0
Weavers					Weavers.....	49.3	63.9	40.1	7.1
1909.....	38.5	53.0	33.3	11.7	Spinners.....	44.3	30.1	53.3	82.0
1904.....	41.4	59.0	36.6	6.7	All other.....	6.5	5.9	6.6	10.9
Broad silk—					New York.....	13,231	4,641	8,255	335
1909.....	27.7	35.1	26.0	6.6	Weavers.....	4,360	2,248	2,084	28
1904.....	29.2	35.6	29.3	5.3	Spinners.....	5,606	1,438	3,982	188
Ribbon—					All other.....	3,265	957	2,189	119
1909.....	7.7	13.6	4.6	4.4	Per cent of total.....	100.0	100.0	100.0	100.0
1904.....	7.9	16.3	4.0	0.6	Weavers.....	33.0	48.4	25.2	8.4
Velvet and plush—					Spinners.....	42.4	30.9	48.2	56.1
1909.....	0.9	1.9	0.5	.....	All other.....	24.7	20.6	26.5	35.5
1904.....	0.9	2.0	0.4	(?)	Pennsylvania.....	37,290	9,772	22,378	5,140
All other—					Weavers.....	12,993	4,791	7,745	457
1909.....	2.2	2.4	2.2	0.6	Spinners.....	21,188	3,684	13,179	4,325
1904.....	3.4	5.1	2.8	0.7	All other.....	3,109	1,297	1,454	358
Spinners (including winders, warpers, etc.):					Per cent of total.....	100.0	100.0	100.0	100.0
1909.....	48.5	31.1	54.9	79.3	Weavers.....	34.8	49.0	34.6	8.9
1904.....	42.1	20.1	47.0	70.6	Spinners.....	56.8	37.7	58.9	84.1
					All other.....	8.3	13.3	6.5	7.0

¹ For 1909 the figures are those reported for December 15, or the nearest representative day for 1904 the average number given. ² Less than one-tenth of 1 per cent.

Table 13 shows for the United States as a whole, for 1909, 1904, and 1899, and for certain important states in the industry for 1909 only, the percentage of men,

women, and children, respectively, in the total number of wage earners and in each of the three classes for which statistics are presented in Table 12.

Table 13

CLASS.	WAGE EARNERS EMPLOYED IN THE SILK MANUFACTURING INDUSTRY—PER CENT OF TOTAL.			CLASS.	WAGE EARNERS EMPLOYED IN THE SILK MANUFACTURING INDUSTRY—PER CENT OF TOTAL.		
	16 years and over.		Under 16 years.		16 years and over.		Under 16 years.
	Male.	Female.			Male.	Female.	
UNITED STATES.				SELECTED STATES, 1909—continued.			
All wage earners—				Massachusetts—			
1909.....	35.0	57.1	8.0	All wage earners.....	29.6	59.7	10.8
1904.....	34.0	56.8	9.3	Weavers.....	41.5	56.2	2.4
1899.....	37.0	53.2	9.8	Spinners.....	24.0	60.4	15.6
Weavers—				All other.....	26.1	65.0	8.0
1909.....	48.2	49.4	2.4	New Jersey—			
1904.....	48.3	50.2	1.5	All wage earners.....	43.5	52.9	3.6
1899.....	52.8	44.8	2.3	Weavers.....	56.4	43.1	0.5
Spinners—				Spinners.....	29.6	63.7	6.7
1909.....	22.4	64.6	13.0	All other.....	39.8	54.1	6.1
1904.....	21.1	63.4	15.5	New York—			
1899.....	23.1	61.4	15.0	All wage earners.....	35.1	62.4	2.5
All other—				Weavers.....	51.6	47.8	0.6
1909.....	42.7	51.8	5.5	Spinners.....	25.6	71.0	3.4
1904.....	30.8	56.5	12.8	All other.....	29.3	67.0	3.6
1899.....	33.4	49.1	17.5	Pennsylvania—			
SELECTED STATES, 1909.				All wage earners.....	26.2	60.0	13.8
Connecticut—				Weavers.....	30.9	59.6	3.5
All wage earners.....	46.1	49.6	4.3	Spinners.....	17.4	62.2	20.4
Weavers.....	54.5	41.4	4.1	All other.....	41.7	46.8	11.5
Spinners.....	19.3	78.3	2.4				
All other.....	63.1	30.7	6.2				

Nearly two-thirds (64.6 per cent) of the spinners reported for the United States as a whole in 1909 were women, the proportion being approximately the same at each of the two preceding censuses. Women were in the majority in this class of wage earners in each of the states shown in the table, the percentage which they formed of the total ranging from 60.4 in Massachusetts to 78.3 in Connecticut. The weavers were almost equally divided between adults of the two sexes; in Pennsylvania and Massachusetts, however, more than half of the weavers were women, the proportions being 59.6 per cent and 56.2 per cent, respectively, as compared with 41.4 per cent in Connecticut. Women formed a somewhat larger proportion of the total number of weavers in the industry in 1909 than in 1899, although there was a slight decrease in the percentages between 1904 and 1909. Of the wage earners included under the head of "All other" in 1909, over one-half were women.

Children are of importance only among the spinners, of whom they formed about one-eighth (13 per cent) in 1909; this relatively high percentage was, however, mainly due to conditions in Pennsylvania, where about one-fifth (20.4 per cent) of the spinners were children, this class in fact outnumbering the adult males reported as spinners, and in Massachusetts, where the proportion was 15.6 per cent; in the other states shown in the table the proportion of children among the spinners was small. Children formed a somewhat smaller proportion of the total number of spinners in the industry in 1909 than in either 1904 or 1899.

Wage earners employed, by months.—Table 14 gives the number of wage earners employed in the silk manufacturing industry on the 15th (or the nearest representative day) of each month during the year 1909 for nine of the leading states in which an average of 500 or more wage earners were employed during the year.

Table 14

WAGE EARNERS EMPLOYED IN THE SILK MANUFACTURING INDUSTRY: 1909¹

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States.....	99,037	97,170	99,473	100,753	100,314	99,212	97,782	96,534	98,351	99,528	99,629	99,409	100,294
Connecticut.....	8,703	<i>8,870</i>	8,459	8,581	8,517	8,526	8,594	8,725	8,877	9,248	8,783	8,855	8,896
Maryland.....	655	<i>593</i>	675	693	717	670	653	683	710	688	562	<i>555</i>	657
Massachusetts.....	4,109	<i>3,745</i>	3,887	4,060	4,114	4,096	4,138	3,844	4,155	4,274	4,359	4,264	4,370
New Jersey.....	30,285	30,040	30,653	30,951	30,817	30,415	29,787	<i>29,726</i>	29,834	30,054	30,349	30,204	30,530
New York.....	12,903	13,044	13,532	13,616	13,166	12,672	12,130	<i>11,726</i>	12,393	12,789	13,220	13,187	13,353
North Carolina.....	739	<i>721</i>	<i>718</i>	715	745	757	750	752	796	761	725	716	717
Pennsylvania.....	36,469	<i>35,775</i>	36,457	36,964	37,031	36,917	36,761	36,203	36,260	36,480	36,265	36,159	36,856
Rhode Island.....	1,685	<i>1,452</i>	1,522	1,553	1,570	1,583	1,521	1,679	1,806	1,796	1,878	1,908	1,893
Virginia.....	819	808	<i>798</i>	809	824	815	802	810	829	823	803	835	869

¹ The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

The largest number of wage earners employed in the silk mills during any month of 1909 was 100,753, in March, and the smallest number, 96,534, in July, the minimum number being equal to 95.8 per cent of the maximum. The industry is not subject to any noticeable seasonal variations. In 1904 the maximum number of wage earners, 82,724, was reported for December, and the minimum number, 76,587, for January, the latter number being equal to 92.6 per cent of the former.

Prevailing hours of labor.—In Table 15 the wage earners in the silk manufacturing industry have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

Nearly all (95.2 per cent) of the wage earners employed in the silk manufacturing industry in 1909 were in mills where the prevailing hours exceeded 54

per week, the great majority, 82.2 per cent of the total, being employed in establishments where the prevailing hours were between 54 and 60 per week. This was the most common working time, likewise, in all but two of the individual states for which figures are given in Table 15. In Maryland, however, all the wage earners, and in North Carolina the majority, were employed in establishments operating 60 hours.

Table 15

AVERAGE NUMBER OF WAGE EARNERS IN THE SILK MANUFACTURING INDUSTRY: 1909

STATE.	Total.	In establishments with prevailing hours—				
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	
United States.....	99,037	106	2,320	2,323	81,407	12,861
Connecticut.....	8,703				8,004	639
Maryland.....	655					655
Massachusetts.....	4,109	1	39		4,099	
New Jersey.....	30,285	42	477	190	29,448	128
New York.....	12,903	32	1,305	1,042	7,753	2,771
North Carolina.....	739				196	543
Pennsylvania.....	36,469	31	400	490	27,859	7,599
Rhode Island.....	1,685				1,685	
Virginia.....	819				669	150

CHARACTER OF OWNERSHIP.

Table 16 presents statistics with respect to the character of ownership of the establishments in the silk manufacturing industry.

CHARACTER OF OWNERSHIP.	SILK MANUFACTURING INDUSTRY.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total	852	624	\$196,911,667	\$133,288,072
Individual	180	143	10,081,800	11,048,417
Firm	1,204	166	143,334,000	29,836,535
Corporations	468	315	134,495,867	92,403,120
Per cent of total.....	100.0	100.0	100.0	100.0
Individual	21.1	22.9	9.7	8.3
Firm	123.9	26.6	122.0	22.4
Corporation	54.9	50.5	68.3	69.3

¹ Includes one establishment under an unclassified form of ownership, to avoid disclosure of individual operations.

In 1909, of the total number of silk mills reported, 54.9 per cent were under corporate ownership, as compared with 50.5 per cent in 1904, these establishments contributing more than two-thirds of the total value of products for the industry in both years (68.3 per cent and 69.3 per cent, respectively). Although establishments under individual and under firm ownership formed approximately the same percentage of the total number, the value of products of the establishments under the latter form of ownership was more than twice as great as that of establishments under individual ownership.

Table 17 gives statistics for establishments classified according to form of ownership for 8 leading states for 1909. The 1 establishment under an unclassified form of ownership has in this table been included with those under firm ownership.

STATE.	SILK MANUFACTURING INDUSTRY: 1909											
	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	180	204	468	9,746	21,904	67,387	\$19,081,800	\$43,334,000	\$134,495,867	\$9,533,210	\$19,853,107	\$59,758,434
Connecticut.....	8	10	29	633	623	7,447	1,030,757	1,109,736	18,922,104	583,018	512,329	8,132,905
Maryland.....		1	3	(X)	(X)	655	(X)	(X)	511,968	(X)	(X)	275,339
Massachusetts.....	6	3	9	(X)	(X)	4,109	(X)	(X)	8,842,246	(X)	(X)	3,512,395
New Jersey.....	86	99	163	3,695	8,880	17,710	8,395,443	18,385,422	38,648,685	4,158,341	8,927,330	19,078,702
New York.....	45	41	84	1,607	2,526	8,770	2,606,387	6,096,477	17,815,957	1,362,696	2,672,874	8,534,062
Pennsylvania.....	32	46	148	3,097	7,231	26,141	5,786,036	12,370,475	43,924,791	2,949,572	5,729,753	18,210,406
Rhode Island.....	1	2	10	(X)	(X)	1,685	(X)	(X)	4,584,431	(X)	(X)	1,396,746
Virginia.....			7			819			1,543,723			532,830

NOTE.—In some states in order to avoid disclosing the returns for individual establishments, the figures for one group have been consolidated with those for establishments under some other form of ownership. In such cases an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics. The figures for firms include those for one establishment under an unclassified form of ownership.

In 1909, 9,746 wage earners, or 9.8 per cent of the total, were employed in establishments under individual ownership; 21,904, or 22.1 per cent, in those under firm ownership, including the one establishment under an unclassified form of ownership; and 67,387, or 68 per cent, in those owned by corporations.

The different states show considerable variation in the relative importance of the establishments operated by individuals, firms, and corporations, respectively. In New Jersey, the leading state in the production of silk goods, establishments controlled by corporations constituted 46.8 per cent of the total number of establishments, gave employment to 58.5 per cent of the wage earners, and reported 59.1 per cent of the total value of products. In Pennsylvania, the second state in the industry, establishments under corporate ownership formed 65.5 per cent of the total number and reported 71.7 per cent of the wage earners and 70.8 per cent of the total value of products.

SIZE OF ESTABLISHMENTS.

Classification by value of products.—Table 18 presents statistics for 1909 and 1904 for establishments grouped according to the value of their products.

VALUE OF PRODUCTS PER ESTABLISHMENT.	SILK MANUFACTURING INDUSTRY.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	852	624	\$196,911,667	\$133,288,072
Less than \$5,000.....	45	32	115,378	96,817
\$5,000 and less than \$20,000.....	130	101	1,511,784	1,190,250
\$20,000 and less than \$100,000.....	298	204	15,328,061	10,438,041
\$100,000 and less than \$1,000,000.....	342	264	111,378,038	81,783,414
\$1,000,000 and over.....	37	23	65,579,806	39,778,944
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	5.3	5.1	0.1	0.1
\$5,000 and less than \$20,000.....	15.3	16.2	0.8	0.9
\$20,000 and less than \$100,000.....	35.0	32.7	7.8	7.8
\$100,000 and less than \$1,000,000.....	40.1	42.3	56.6	61.4
\$1,000,000 and over.....	4.3	3.7	34.8	29.8

Establishments with products valued at \$100,000 but less than \$1,000,000 form the most important class, both numerically and as measured by value of products, such establishments constituting about two-fifths of the total number both in 1909 and 1904, and reporting 56.6 per cent of the total value of products in 1909 and 61.4 per cent in 1904. Establishments with products valued at \$1,000,000 or over formed only a small proportion of the total number at either census, but reported 34.8 per cent of the total value of products in 1909 and 29.8 per cent in 1904.

The average value of products per establishment increased from \$213,603 in 1904 to \$231,117 in 1909, and the average value added by manufacture, as computed from the figures in Table 5, from \$92,030 to \$104,630. The average number of wage earners per

establishment, on the other hand, shows a decrease from 128 in 1904 to 116 in 1909.

Classification by number of wage earners.—Table 19 classifies establishments in 9 of the leading states according to the number of wage earners employed.

Table 19

STATE.	SILK MANUFACTURING INDUSTRY.																		
	Establishments employing in 1909—																		
	Total.		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.	
	Es-tab-lish-ments.	Wage earners (average number).	Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.
United States....	852	99,037	3	61	176	182	2,336	180	6,210	155	11,394	168	27,012	75	25,818	20	13,538	8	12,553
Connecticut.....	47	8,703				10	142	11	387	8	566	11	1,718	4	1,396	2	1,595	1	2,899
Maryland.....	4	655							28				321	1	306				
Massachusetts.....	19	4,109							240	1	57	2	6	1	884	1	585	1	1,910
New Jersey.....	348	30,285		29	73	102	1,290	74	2,540	63	4,536	54	8,590	19	6,860	4	2,592	3	3,754
New York.....	170	12,903	3	19	61	38	482	37	1,190	32	2,255	28	4,170	11	3,703	2	1,042		
North Carolina.....	4	739											3	472	1	267			
Pennsylvania.....	226	36,469		11	37	25	334	45	1,049	44	3,395	57	9,088	31	10,515	10	6,861	3	3,990
Rhode Island.....	13	1,685				4	46		45	4	284			4	1,310				
Virginia.....	7	810						2	50	2	166		274	1	329				

Of the 852 silk mills reported for 1909, 3 employed no wage earners; 28.5 per cent employed from 1 to 20 wage earners; 39.3 per cent from 21 to 100; 28.5 per cent from 101 to 500; 2.3 per cent from 501 to 1,000; and only nine-tenths of 1 per cent more than 1,000.

Of the total number of wage earners reported, 2.5 per cent were in establishments employing from 1 to 20 wage earners; 17.8 per cent in establishments employing from 21 to 100; 53.3 per cent in those employing from 101 to 500; 13.7 per cent in those employing from 501 to 1,000; and 12.7 per cent in establishments employing more than 1,000 wage earners. The most important class of establishments shown in the table is that comprising establishments employing from 101 to 250 wage earners, these establishments employing an aggregate of 27,012 wage earners, or 27.3 per cent of the total for the industry, while those employing from 251 to 500 wage earners were second, with 25,818 wage earners, or 26.1 per cent of the total.

EXPENSES.

As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; 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 expenses which were reported. Table 1 shows the total expenses in 1909 to have been \$177, 175, 719, distributed as follows: Cost of materials, \$107,766,916, or 60.8 per cent; wages, \$38,570,085, or 21.8 per cent; salaries, \$7,527,279, or 4.2 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, taxes, traveling

expenses, and other sundry expenses, \$23,311,439, or 13.2 per cent.

The proportions of the total expenses represented by the different items naturally vary in the several states. The differences are very largely due to differences in the extent to which the organzine and tram used is made within the state or purchased from outside the state and in the relative importance of establishments engaged solely in throwing.

ENGINES, POWER, AND FUEL.

Engines and power.—The amount of power used in the silk manufacturing industry was first reported at the census of 1869. Table 5 shows that the total horsepower used increased from 1,911 in 1869 to 97,947 in 1909. Table 20 shows statistics of power as reported at the censuses of 1909, 1904, and 1899.

The total primary power used in the silk mills increased from 57,397 horsepower in 1899 to 97,947 horsepower in 1909, or 70.6 per cent. By far the greater part of the power used in the industry is steam power; the proportion which such power formed of the total primary power, however, decreased from 80.1 per cent in 1899 to 73.6 per cent in 1909, although there was a considerable absolute increase during the decade in the amount of steam power employed. Water power, also, which formed 11.6 per cent of the total primary power in 1899, shows a steady decrease in the proportion which it formed of the total, in spite of an increase in amount, constituting only 8.5 per cent of the total in 1909. The horsepower of electric motors operated by purchased current (rented electric power) increased from 609 in 1899 to 10,354 in 1909, and at the last census was second in importance to steam power, representing 10.6 per cent of the total

primary power, as compared with only 1 per cent a decade earlier.

Table 20

POWER.	SILK MANUFACTURING INDUSTRY.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	2,836	1,350	557	97,947	71,780	57,397	100.0	100.0	100.0
Owned.....	700	605	557	81,719	64,628	52,056	83.4	90.1	92.3
Steam.....	535	468	421	72,059	56,362	45,959	73.6	78.5	80.1
Gas.....	64	50	19	1,277	937	323	1.3	1.3	0.6
Water wheels.....	101	85	117	8,383	6,965	6,666	8.5	9.7	11.6
Water motors.....		2		9			(1)	(1)	
Other.....				355		8		0.5	(1)
Rented.....	2,136	745		16,228	7,132	4,441	16.6	9.9	7.7
Electric.....	2,136	745		10,354	2,393	609	10.6	3.3	1.0
Other.....				5,874	4,739	3,832	6.0	6.6	6.7
Electric motors.....	5,714	2,157	135	23,758	9,521	4,607	100.0	100.0	100.0
Run by current generated by establishment.....	3,578	1,412	135	13,404	7,128	3,998	56.4	74.9	86.8
Run by rented power.....	2,136	745		10,354	2,393	609	43.6	25.1	13.2

¹ Less than one-tenth of 1 per cent.

The number and horsepower of electric motors used for distributing power by means of current generated in the establishment show a very large increase, the horsepower of such motors having more than trebled during the decade.

Table 21 shows, for 1909, the amount of the several kinds of power and of the different kinds of fuel used in nine of the leading states in the industry.

In 1909 Pennsylvania, New Jersey, and New York together reported 75,448 horsepower, or 77 per cent of the aggregate for the industry. Steam power was the most important form of power in all of the states shown separately except Massachusetts and Virginia, where water power was used to a greater extent than any other form of power. The largest amount of steam power, 37,410 horsepower, is shown for Pennsylvania; the largest amount of water power, 2,001 horsepower, for Massachusetts; and the largest amount of rented electric power, 2,960 horsepower, for Pennsylvania. The rented power included under the head of "Other," which is particularly large in New Jersey, is chiefly power supplied by shafts or belts to small mills.

Table 21

STATE.	SILK MANUFACTURING INDUSTRY.															
	Number of establishments reporting.	Total horsepower.	Primary horsepower.						Electric horsepower.		Fuel used.					
			Owned by establishments reporting.				Rented.		Total rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).				
United States.....	844	97,947	81,719	72,059	1,277	8,383	10,354	5,874	23,758	13,404	242,771	155,256	3,601	993	3,072	49,673
Connecticut.....	47	8,564	8,050	6,577		1,473	514		2,286	1,772	2,268	39,794		557	135	484
Maryland.....	4	915	850	850			65		65			4,539				60
Massachusetts.....	19	5,305	4,012	1,991	20	2,001	1,281	12	1,823	542	13	12,682		160		
New Jersey.....	346	22,376	15,799	14,378	303	1,118	2,381	4,196	5,731	3,350	74,090	16,817		8	278	5,640
New York.....	165	11,110	8,549	6,422	639	1,488	1,924	637	3,642	1,718	16,140	20,357	3,601	6	114	36,591
North Carolina.....	4	865	865	865					320	320	402	3,441		60		
Pennsylvania.....	225	41,962	38,066	37,410	154	502	2,960	936	7,616	4,656	148,313	41,746		43	637	5,508
Rhode Island.....	13	2,318	1,655	1,265		390	630	33	779	149	134	4,156				
Virginia.....	7	1,858	1,484	685		799	374		763	389	438	3,478				
All other states.....	14	2,674	2,389	1,616	161	612	225	60	733	508	973	8,248		159	1,913	1,390

Fuel consumed.—Anthracite coal was the principal class of fuel used, 242,771 long tons being consumed during 1909. Bituminous coal was next in impor-

tance, 155,256 short tons being consumed. Gas was also used to a considerable extent, the greatest quantity being reported for New York.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND EQUIPMENT.

MATERIALS.

Summary for the United States.—Table 22 shows statistics of the materials used in the industry for 1909, 1904, and 1899.

MATERIAL.	MATERIALS USED IN THE SILK MANUFACTURING INDUSTRY.			
	1909	1904	1899	Per cent of increase: 1899-1909
Total cost	\$107,766,916	\$75,861,188	\$62,406,665	72.7
Silk:				
Raw—				
Pounds.....	17,472,204	11,572,783	9,760,770	79.0
Cost.....	\$67,787,037	\$45,318,416	\$40,721,877	66.5
Spun—				
Pounds.....	2,112,972	1,951,201	1,550,291	36.3
Cost.....	\$4,848,789	\$4,310,061	\$3,406,059	42.4
Artificial—				
Pounds.....	914,494	466,151	6,056	15,000.6
Cost.....	\$1,926,894	\$1,023,473	\$10,380	18,463.5
Organzine and tram, purchased—				
Pounds.....	3,377,072	3,236,744	2,338,464	44.5
Cost.....	\$14,079,719	\$14,552,425	\$10,539,032	39.3
Fringe and floss, including waste, noils, etc., purchased—				
Pounds.....	2,402,060	1,49,811	1,735,179	38.5
Cost.....	\$1,637,187	\$187,159	\$1,008,947	62.3
Yarns, other than silk:				
Cotton (not including mercerized)—				
Pounds.....	12,617,292	8,387,048	6,444,208	95.8
Cost.....	\$4,687,173	\$2,586,954	\$1,830,550	156.1
Mercerized cotton—				
Pounds.....	1,494,586	631,247	219,861	579.8
Cost.....	\$1,124,409	\$471,035	\$165,683	578.6
Woolen or worsted—				
Pounds.....	610,588	443,155	239,461	155.0
Cost.....	\$765,989	\$409,867	\$167,770	356.6
Mohair—				
Pounds.....	710,108	138,389	104,810	577.5
Cost.....	\$640,529	\$137,097	\$107,365	496.6
All other—				
Pounds.....	353,780	130,930	108,388	226.4
Cost.....	\$456,597	\$108,841	\$134,986	238.3
Chemicals and dyestuffs.....	\$1,062,313	\$666,992	(?)	.....
All other materials.....	\$8,150,280	\$5,488,868	\$4,313,416	89.0

¹ Does not include waste, noils, etc., which are included with "all other materials."
² Not reported separately.

The total cost of the materials used in the silk manufacturing industry in 1909 was \$107,766,916, as compared with \$75,861,188 in 1904 and \$62,406,665 in 1899, an increase during the decade of 72.7 per cent. The figures involve considerable duplication, as already stated, but it is not possible to make any accurate estimate of the extent of this duplication.

Attention is called to the fact that the statistics for raw silk shown in Table 22 do not represent the total amount of this material used in the industry. More than two-thirds of the raw silk used was thrown on contract, either for silk merchants or for weaving mills, and as this silk was not owned by the mills doing the throwing, its amount and value were not included by them in their report as to materials used. The silk thrown for the weaving mills, however, formed part of the materials reported by such mills and accordingly is included in the table, but that thrown for merchants, not being owned by silk manufacturing concerns, was not reported and so is not included in the statistics for the industry. It is impossible to give the amount of silk so thrown, but the quantity must have been considerable. Silk thrown for merchants and later sold by

them as organzine and tram to establishments within the silk industry does not figure in the statistics of materials as raw silk, but as organzine or tram only.

The reported cost of raw silk represented 62.9 per cent of the total cost of all materials used, while that of organzine and tram, purchased as such, represented 13.6 per cent, these two items forming more than three-fourths (76.5 per cent) of the total cost of materials. The following table shows the proportion which the quantity of the different materials used in the silk industry formed of the total in 1909, 1904, and 1899:

MATERIAL.	PER CENT OF TOTAL QUANTITY OF TEXTILE MATERIALS USED IN THE SILK MANUFACTURING INDUSTRY.		
	1909	1904	1899
Total	100.0	100.0	100.0
Silk	62.5	64.0	68.4
Raw silk.....	41.5	42.9	43.4
Spun silk.....	5.0	7.2	6.9
Artificial silk.....	2.2	1.7	(¹)
Organzine and tram.....	8.0	12.0	10.4
Fringe and floss, including waste, noils etc.....	5.7	0.2	7.7
Yarns, other than silk	37.5	36.0	31.6
Cotton.....	30.0	31.1	28.6
Mercerized cotton.....	3.6	2.3	1.0
Woolen or worsted.....	1.5	1.6	1.1
Mohair.....	1.7	0.5	0.4
All other.....	0.8	0.5	0.5

¹ Less than one-tenth of 1 per cent.

² Not including waste, noils, and pierced cocoons.

Silk in its various forms constituted about three-fifths of the total weight of textile materials used in 1909, and yarns other than silk about two-fifths. The quantity of raw silk used in the industry shows an increase of 79 per cent during the decade and its cost an increase of 66.5 per cent. The increase in the amount of yarns other than silk used was much greater than that in the silk used, thus indicating a tendency toward the manufacture of silk mixed goods. The amount of cotton yarn other than mercerized used in 1909 was nearly twice as great as in 1899, and that of mercerized cotton yarns, the consumption of which in 1899 was comparatively small, nearly seven times as great, while considerable increases are also shown for mohair and for woolen or worsted yarns.

The amount of spun silk purchased shows an increase of only 36.3 per cent for the decade, a smaller increase relatively than in any other material shown separately in Table 22. The quantity purchased exceeded the quantity reported as sold (see Table 27) by 1,333,510 pounds in 1909, 1,380,672 pounds in 1904, and 1,112,832 pounds in 1899. A large part of this material is imported, the total quantity brought into the country during the fiscal year ending June 30, 1909, being 2,343,576 pounds. Spun silk is used principally in the manufacture of silk-mixed goods, although large quantities are used in the cotton goods and woolen industries and in the manufacture of hosiery and knit goods. The spun silk manufactured in the United States is made, to a great extent, from the

waste which result from the various processes of manufacture carried on in the silk mills, together with imported wild silk and pierced cocoons.

Owing to the high price of silk and to its limited supply, great efforts have been made to secure satisfactory substitutes. As a result, a number of processes have been invented for making fibers closely resembling animal silk. The production of artificial silk is largely confined to Germany and France, but a number of other countries have mills devoted to its manufacture. Although the establishments in the United States have scarcely passed the experimental stage there is promise of a large output in this country. The silk mills of the United States used 914,494 pounds of artificial silk in 1909, as compared with 466,151 pounds in 1904, and 6,056 pounds in 1899. This material is used principally in the manufacture of braids and fringes, dress trimmings, millinery trimmings, etc.

In 1909 the silk mills purchased 3,377,972 pounds of organzine and tram. This amount is very little

larger than that for 1904, and only 44.5 per cent in excess of that reported for 1899. The quantity purchased exceeded that sold (see Table 28) by 637,653 pounds in 1909 and 1,211,099 pounds in 1904; in 1899, however, the quantity made for sale exceeded that purchased.

In addition to the silk materials already mentioned, 2,402,960 pounds of fringe and floss, waste, pierced cocoons, noils, and the like, valued at \$1,637,187, were purchased and used in the industry in 1909. No comparative data are available for 1904, but in 1899 the quantity of these materials used amounted to 1,735,179 pounds, valued at \$1,008,947, the increase in consumption for the decade amounting to 38.5 per cent. The imports of these materials for the fiscal year ending June 30, 1909, amounted to 1,854,207 pounds, valued at \$1,073,018 (see Table 27).

Materials, by states.—Table 24 shows, by states, the quantity and cost of the materials used in the silk mills in 1909, with quantities alone for 1904 and 1899.

MATERIAL AND STATE.	PRINCIPAL MATERIALS USED IN THE SILK MANUFACTURING INDUSTRY.				MATERIAL AND STATE.	PRINCIPAL MATERIALS USED IN THE SILK MANUFACTURING INDUSTRY.			
	Cost: 1909	Quantity (pounds).				Cost: 1909	Quantity (pounds).		
		1909	1904	1899			1909	1904	1899
Raw silk	\$67,787,937	17,472,204	11,572,783	9,760,770	Cotton yarns (not including mercerized yarns)	4,627,173	12,617,292	8,387,048	6,444,208
Connecticut.....	6,099,209	1,624,701	1,320,509	1,159,951	Connecticut.....	630,437	2,410,095	1,350,021	1,137,863
Massachusetts.....	3,753,207	920,308	739,004	720,485	Massachusetts.....	535,880	1,225,886	724,504	480,220
New Jersey.....	23,705,009	6,112,047	3,553,090	3,155,334	New Jersey.....	731,061	1,880,158	1,054,973	757,486
New York.....	7,092,171	1,817,329	1,000,703	914,205	New York.....	737,470	2,018,612	1,197,943	1,556,545
Pennsylvania.....	21,200,972	5,532,973	3,070,044	3,233,285	Pennsylvania.....	1,077,157	2,860,000	2,591,135	1,759,769
Rhode Island.....	2,173,458	483,390	262,112	102,691	Rhode Island.....	404,141	1,421,229	969,426	409,936
All other states.....	3,750,411	980,916	721,231	469,749	All other states.....	281,018	783,812	489,956	292,399
Spun silk	4,848,789	2,112,972	1,951,201	1,550,291	Mercerized cotton yarns	1,124,409	1,494,586	631,247	219,861
Connecticut.....	1,425,657	590,379	716,607	502,555	Connecticut.....	20,270	29,310	21,560	1,642
New Jersey.....	628,027	244,617	154,201	178,735	Massachusetts.....	118,253	158,399	5,348	4,708
New York.....	769,910	315,622	249,808	263,200	New Jersey.....	390,198	490,307	261,905	122,053
Pennsylvania.....	1,500,914	695,007	454,074	477,543	New York.....	359,315	483,627	101,943	51,560
Rhode Island.....	175,113	73,816	52,145	51,516	Pennsylvania.....	224,029	309,063	227,944	30,070
All other states.....	209,368	137,471	324,278	76,739	Rhode Island.....	12,769	17,983	5,550	2,000
Artificial silk	1,926,894	914,494	466,151	6,056	All other states.....	4,575	5,897	6,997	7,828
New Jersey.....	197,208	103,148	8,066	.....	Woolen or worsted yarns	765,989	610,588	442,155	239,461
New York.....	1,309,400	618,439	289,282	5,350	New Jersey.....	106,333	69,169	26,725	16,940
Pennsylvania.....	273,646	127,486	127,192	526	New York.....	114,829	94,622	184,340	45,527
All other states.....	140,040	67,421	41,611	180	Pennsylvania.....	98,340	83,075	48,870	8,717
Organzine and tram, purchased	14,679,719	3,377,972	3,236,744	2,338,464	All other states.....	446,487	363,722	184,220	163,277
Connecticut.....	238,785	54,619	28,844	31,041	Mohair yarns	640,529	710,108	138,389	104,810
New Jersey.....	4,800,843	1,143,754	1,343,081	1,209,012	Connecticut.....	483,984	542,061	97,323	1,236
New York.....	1,471,824	335,003	603,623	197,781	New Jersey.....	70,820	96,496	11,253	.....
Pennsylvania.....	7,531,045	1,719,952	1,202,805	871,235	New York.....	47,408	52,521	14,511	29,697
All other states.....	538,222	124,644	58,391	29,395	All other states.....	24,308	19,030	15,302	73,377
Fringe and floss, including waste, noils, etc., purchased	1,637,187	2,402,960	149,811	1,735,179	Other yarns	456,597	353,780	130,930	108,388
New York.....	326,691	515,545	7,080	308,486	New York.....	170,491	113,855	71,486	24,167
Pennsylvania.....	93,764	55,863	32,960	221,151	Pennsylvania.....	148,013	178,306	49,824	31,323
All other states.....	1,216,732	1,831,552	9,771	1,205,542	All other states.....	138,093	61,619	9,620	52,898

¹ Not including waste, noils, etc.

Consumption of silk in other textile industries.—In addition to the silk used in the silk manufacturing industry, considerable amounts were used in other textile industries in the manufacture of goods of mixed fibers and of silk hosiery and silk knit goods, and also in the electrical industry for covering wire, for which data in regard to consumption is not available. Table 25 shows the quantity of reeled and spun silk yarns used in the United States in textile industries other than the silk manufacturing industry for 1909, 1904, and 1899.

The quantity of silk used in other textile industries in 1909 was more than three times as large as in 1899.

The amounts used in hosiery and knit goods and cotton manufactures each show an increase of about 270 per cent; the quantity used in wool manufactures, however, shows an increase of less than 50 per cent. In cotton manufactures silk is used exclusively in the manufacture of fancy woven fabrics with silk stripes or figures. The statistics for 1909 show the remarkable increase in the production of silk hosiery from 12,572 dozen pairs in 1899 and 42,065 dozen pairs in 1904 to 434,414 dozen pairs in 1909, and this accounts for most of the increase shown for the hosiery and knit goods industry.

INDUSTRY.	SILK YARN USED.		
	1909	1904	1899
Total.....pounds..	3,524,135	1,221,953	1,147,270
Cotton manufactures.....pounds..	2,002,006	412,589	500,680
Wool manufactures.....pounds..	479,376	488,326	320,343
Hosiery and knit goods.....pounds..	932,753	1,321,038	266,247
Per cent of total.....	100.0	100.0	100.0
Cotton manufactures.....	58.5	33.8	48.9
Wool manufactures.....	13.6	40.0	27.9
Hosiery and knit goods.....	27.9	26.3	23.2

¹ Includes 367 pounds reported by the cordage and twine and jute and linen goods industry.

Raw silk thrown under contract.—Formerly the throwing of raw silk in the United States was carried on chiefly in establishments which used the organzine and tram in further processes of manufacture. The practice on the part of weaving mills of having the silk thrown under contract in establishments whose activities are limited to this work, has, however, been growing rapidly. Table 26 shows, by states, the quantity of raw silk thrown under contract into organzine and tram in 1909, 1904, and 1899.

STATE.	RAW SILK (POUNDS).			
	Total amount used in the industry.	Thrown under contract.		
		Total.	Into organzine.	Into tram.
United States:				
1909.....	17,472,204	12,753,002	6,114,209	6,638,793
1904.....	11,572,783	7,101,851	3,635,384	3,466,487
1899.....	9,769,770	4,298,659	2,331,456	1,987,203
Connecticut:				
1909.....	1,624,701	290,253	150,332	139,921
1904.....	1,320,509	216,454	131,038	85,416
1899.....	1,159,961	253,858	184,270	69,588
Massachusetts:				
1909.....	920,308	116,543	50,670	59,873
1904.....	739,004	8,000		
1899.....	720,485			
New Jersey:				
1909.....	6,112,647	2,661,205	813,906	1,847,299
1904.....	3,553,090	1,689,088	702,055	987,033
1899.....	3,155,334	1,237,622	585,722	651,900
New York:				
1909.....	1,817,329	936,754	495,053	441,701
1904.....	1,006,793	705,078	359,248	345,830
1899.....	914,265	322,381	117,981	204,400
North Carolina:				
1909.....	125,769	321,366	66,024	255,342
1904.....				
1899.....	20,200	73,000		73,000
Pennsylvania:				
1909.....	5,532,973	7,733,016	4,150,688	3,582,328
1904.....	3,970,044	4,116,269	2,288,174	1,828,125
1899.....	3,238,285	2,259,673	1,332,768	920,915
Rhode Island:				
1909.....	483,330			
1904.....	262,112	88,000	68,000	20,000
1899.....	102,691	16,599	16,599	
Virginia:				
1909.....	214,434	104,114	120,852	43,262
1904.....				
1899.....	104,200	94,930	67,220	27,710
All other states:²				
1909.....	640,713	529,751	260,684	269,067
1904.....	721,231	280,932	86,899	200,063
1899.....	285,349	32,596	26,900	6,690

¹ Included in "all other states."

² All other states embrace: In 1909, California, Delaware, Georgia, Illinois, Maine, Maryland, Michigan, New Hampshire, and Ohio; in 1904, California, Delaware, Illinois, Maine, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Virginia; and in 1899, California, Delaware, Illinois, Maine, Maryland, Michigan, New Hampshire, and Utah.

The total amount of raw silk thrown under contract in 1909 was 12,753,002 pounds, equal to 73 per cent of the total amount used in the industry, the corresponding ratio for 1904 being 61.4 per cent, and that for 1899, 44 per cent. While these percentages do not show the proportion of the total amount of raw

silk used in the industry which was thrown under contract in the respective years, owing to the fact that the silk reported as thrown under contract includes that thrown for merchants and others not in the silk manufacturing industry, they are sufficiently close to give a general idea of the relative extent of commission throwing and of the increase in the relative importance of such throwing during the decade covered by the table.

The quantity of silk thrown under contract almost trebled during the decade 1899-1909. Pennsylvania led in this branch of the industry in 1909, reporting 7,733,016 pounds, or about three-fifths (60.6 per cent) of the total amount of silk so thrown.

Imports.—Silk mills depend upon imports for their raw silk material. Table 27 shows the quantity and value of the imports of raw silk, spun silk, and raw silk waste for each fiscal year from 1899 to 1909, inclusive.

YEAR ENDING JUNE 30—	IMPORTED SILK MATERIALS. ¹			
	Total.	Raw silk.	Spun silk.	Raw silk waste, including cocoons and nolls.
QUANTITY (POUNDS).				
1909.....	27,531,533	23,333,750	2,343,576	1,854,207
1908.....	18,802,980	15,424,041	2,140,848	1,238,091
1907.....	21,223,268	16,722,207	2,479,364	2,021,697
1906.....	19,609,281	14,505,324	2,257,260	2,846,697
1905.....	24,709,713	17,812,133	2,352,406	4,545,174
1904.....	18,775,983	12,630,883	2,053,274	4,091,826
1903.....	17,265,871	13,637,206	1,995,012	1,633,653
1902.....	16,396,071	12,620,682	2,161,245	1,614,144
1901.....	12,120,622	9,139,617	1,715,067	1,265,938
1900.....	15,494,270	11,259,310	2,420,552	1,814,408
1899.....	12,978,093	9,691,145	1,727,710	1,550,238
VALUE.				
1909.....	\$83,487,443	\$78,830,568	\$3,583,857	\$1,073,018
1908.....	68,249,135	63,065,534	3,702,232	861,369
1907.....	75,187,643	70,220,518	3,775,744	1,182,381
1906.....	57,308,424	52,855,611	3,227,920	1,224,893
1905.....	64,327,695	59,542,892	3,287,642	1,497,161
1904.....	49,148,317	44,461,564	3,047,817	1,638,936
1903.....	53,005,701	49,002,597	2,994,651	1,008,453
1902.....	45,941,875	41,714,331	3,308,524	921,020
1901.....	32,635,081	29,353,777	2,583,716	697,588
1900.....	40,053,108	44,549,672	3,723,348	780,088
1899.....	34,454,643	31,827,061	1,975,016	652,566

¹ Bureau of Foreign and Domestic Commerce, Department of Commerce, "Commerce and Navigation of the United States."

PRODUCTS.

Summary for the United States.—Table 28 shows in detail for 1909, 1904, and 1899, the quantity and value of the products of the establishments within the silk manufacturing industry.

The single-width yard is used as the unit of measurement in Table 28 and all other tables giving statistics of products for the industry.

The total value of products for the industry increased \$89,655,409, or 83.6 per cent, between 1899 and 1909. The total production of silk goods of broad weave (broad silks, velvets, plushes, tapestries, and upholstery) in 1909 was 198,787,027 running yards, valued at \$115,136,724, as compared with 97,940,935 yards, valued at \$58,122,622, in 1899, the increase in output being 103 per cent, and that in value, 98.1 per cent.

Table 28

PRODUCTS OF THE SILK MANUFACTURING INDUSTRY.

PRODUCT.	1909	1904	1899	Per cent of increase: 1899-1909
Total value.....	\$196,911,667	\$133,288,072	\$107,256,256	83.6
Broad silks:				
Yards.....	185,707,316	124,871,215	87,636,883	111.9
Value.....	\$107,881,146	\$66,917,762	\$52,152,816	106.9
Plain and fancies—				
All-silk—				
Yards.....	81,934,158	68,393,042	53,573,488	52.9
Value.....	\$53,282,704	\$40,741,480	\$33,852,111	57.4
Silk-mixed—				
Yards.....	24,742,556	9,061,025	8,963,315	176.0
Value.....	\$14,207,861	\$5,343,472	\$5,450,710	160.7
Jacquard—				
All-silk—				
Yards.....	13,249,090	8,143,091	7,532,229	75.9
Value.....	\$9,835,345	\$5,927,063	\$5,379,001	82.8
Silk-mixed—				
Yards.....	6,043,686	2,336,120	1,677,466	200.3
Value.....	\$3,473,799	\$1,220,648	\$1,260,321	175.6
Piece-dyed—				
All-silk—				
Yards.....	19,693,393	21,334,584	7,331,501	168.6
Value.....	\$11,353,242	\$9,276,445	\$3,342,167	236.7
Silk-mixed—				
Yards.....	40,044,433	15,603,353	8,558,884	367.9
Value.....	\$15,728,195	\$4,309,654	\$2,868,506	448.3
Velvets:				
Yards.....	10,093,583	7,262,315	5,122,249	97.1
Value.....	\$4,767,990	\$3,161,206	\$2,479,903	92.3
Plushes:				
Yards.....	2,759,411	2,547,367	3,848,084	-28.3
Value.....	\$2,104,768	\$1,340,815	\$2,480,068	-15.1
Tapestries and upholstery:				
Yards.....	226,717	1,766,210	1,333,119	-83.0
Value.....	\$382,820	\$1,559,982	\$1,009,835	-62.1
Ribbons.....	\$32,744,873	\$21,890,004	\$18,467,179	77.3
Laces, nets, veils, veiling, etc.....	\$1,350,850	\$745,489	\$803,104	78.2
Embroideries.....	\$455,322	\$112,362	\$57,025	742.2
Fringes and gimps.....	\$824,327	\$1,019,954	\$444,787	184.5
Braids and bindings.....	\$4,483,248	\$3,493,977	\$1,632,505	189.5
Trimmings.....	\$3,850,448	\$3,107,097	\$2,034,076	89.3
Milliners'.....	\$1,646,136	\$1,333,735	\$615,012	167.7
Ladies' dress.....	\$1,580,547	\$1,549,391	\$912,361	79.2
Military.....	\$346,093	\$170,231	\$54,066	534.7
Cloak.....	\$235,702	\$53,040	\$241,500	-2.4
Tailors'.....	\$41,040	\$700	\$26,624	54.1
Other.....			\$183,853	
Machine twist:				
Pounds.....	1,088,780	932,998	937,917	10.2
Value.....	\$6,341,719	\$5,521,055	\$5,997,974	5.7
Sewing, embroidery, wash, fringe, and floss silks:				
Pounds.....	747,246	811,711	739,301	1.1
Value.....	\$4,179,355	\$4,625,016	\$4,248,216	-1.6
Organzine and tram, for sale:				
Pounds.....	2,740,319	2,025,645	2,468,387	11.0
Value.....	\$12,550,510	\$9,190,650	\$11,167,191	12.4
Spun silk, for sale:				
Pounds.....	779,462	570,529	437,459	78.2
Value.....	\$2,104,006	\$1,060,647	\$1,026,227	105.0
All other products.....	\$4,495,675	\$5,227,800	\$1,027,472	337.5
Amount received for contract work.....	\$8,364,350	\$3,716,056	\$2,337,220	257.9

¹ A minus sign (-) denotes decrease.

² In addition, similar classes of silk goods to the value of \$1,218,101 were made by establishments engaged primarily in the manufacture of other products, and silk hosiery and knit goods to the value of \$4,548,708 were reported by hosiery and knit goods establishments.

Broad silks formed over nine-tenths of all broad weaves in 1909, the increase in the output between 1899 and 1909 being 111.9 per cent. All-silk goods constituted 61.9 per cent of the broad silk product in 1909 as compared with 78.1 per cent in 1899, the production of such goods increasing only 67.9 per cent during the decade, as compared with an increase of 268.9 per cent in the case of silk-mixed broad silks. In the case of each of the three main classes of broad silks, the increase in the output and value of silk-mixed goods was much greater relatively than that in the output and value of all-silk goods. Plain and fancy silks were the most important class of broad silks, representing 57.4 per cent of the total production in 1909 and contributing 62.6 per cent of the total value; of the total output of these fabrics, all-silk

goods represented 76.8 per cent. Piece-dyed broad silks ranked next in importance, representing 32.2 per cent of the total output of broad silks and contributing 25.1 per cent of the total value; about two-thirds (67 per cent) of the total production of piece-dyed goods consisted of silk-mixed fabrics. The output of Jacquard broad silks, of which somewhat more than two-thirds (68.7 per cent) consisted of all-silk goods, was much less than that of the other two classes, representing 10.4 per cent of the total production of broad silks and contributing 12.3 per cent of the total value.

Each class of broad silk shows a considerable increase for the decade as a whole, the largest relative increase being in the case of silk-mixed piece-dyed broad silks, the output of which in 1909 was nearly five times as great as in 1899. The production of all-silk piece-dyed broad silks decreased 7.7 per cent between 1904 and 1909, although it was more than twice as great in the later year as in 1899.

The production of velvets nearly doubled during the decade, but there was a marked decrease in that of plushes, although there was a slight increase between 1904 and 1909. The production of tapestries and upholstery also decreased, all of the decrease taking place during the latter part of the decade.

Silk goods of narrow weave are of such varied widths that statistics of output in yards would have little meaning. Most of these goods show large increases in value, however, the increase for the decade in the value of embroideries and in that of braids and bindings being particularly noteworthy.

The figures for organzine and tram sold, of course fall short of representing the total production of organzine and tram other than for the use of the establishment doing the throwing, owing to the fact that they do not include the large amount of organzine and tram thrown under contract for establishments furnishing the raw silk. As shown by Table 26, a total of 12,753,002 pounds of raw silk were thrown under contract in 1909, none of the organzine and tram obtained from this silk being included as such in Table 28.

The production of sewing, embroidery, wash, fringe, and floss silks shows a decrease of 7.9 per cent for the five-year period 1904-1909, and its value a decrease of 9.6 per cent, although the production in 1909 represented an increase of 1.1 per cent over that in 1899.

"All other products," for which the value was separately reported in 1909, amounted to \$4,495,675 and include a variety of commodities, some of which may have been included at previous censuses among those for which separate quantities and values were shown, and but inadequately represents the importance of the manufactures included under this heading. Silk hosiery and knit goods were not separately called for in the schedule used in 1899, 1904, and 1909. Hence, no figures as to this production are available. The various items comprising this total

died for 1909, in so far as they can be segregated, were as follows:

ARTICLES.	Value.
Total	\$4,495,675
Casket and upholstery trimmings, cords, tassels, etc.....	890,148
Gloves.....	279,860
Mufflers and handkerchiefs.....	267,910
Ties, neckwear, and belting.....	182,240
Fabrics.....	110,732
Fish lines.....	96,665
Dyed silk (raw silk).....	1,186,462
Miscellaneous unclassified silk products, and waste.....	673,230
Miscellaneous products, other than silk.....	808,428

In addition to the products covered by Table 28, silk goods were manufactured to some extent by establishments assigned to industries other than the silk manufacturing industry proper, and Table 29 shows for 1909 their quantity and value so far as separately reported, manufactured in all industries combined, in the industry designated "silk and silk goods, including throwsters," and in all other industries, respectively.

PRODUCT.	Total production: 1909	Production in the silk manufacturing industry.	Production in other industries. ¹
Value of all products	\$202,678,476	\$196,911,667	\$5,766,809
Broad silks, plain and fancy—			
All silk—			
Yards.....	82,307,528	81,934,168	373,368
Value.....	\$53,419,522	\$53,282,704	\$136,818
Silk mixed—			
Yards.....	28,645,106	24,742,556	3,902,550
Value.....	\$15,136,632	\$14,207,861	\$928,771
Flushes:			
Yards.....	2,770,311	2,759,411	10,900
Value.....	\$2,112,968	\$2,104,768	\$8,200
Ribbons.....	\$32,873,469	\$32,744,873	\$128,596
Braids and bindings.....	\$4,495,964	\$4,483,248	\$12,716
Trimmings.....	\$3,353,448	\$3,850,448	\$3,000
Hosiery.....	² \$3,600,416	(3)	\$3,600,416
Shirts and drawers, silk and silk mixed.....	² \$709,074	(3)	\$709,074
Combination suits, silk and silk mixed.....	² \$239,218	(3)	\$239,218
All other products.....	\$86,237,765	\$86,237,765	.....

¹ Includes products made by establishments in the following industries: Clothing, men's, including shirts; corsets; cotton goods and cotton small wares; fancy articles not elsewhere specified; furnishing goods, men's; hosiery and knit goods.

² Exclusive of hosiery and knit goods made in the silk manufacturing industry.

³ Included with "all other products."

The total value of products reported for the silk manufacturing industry proper in 1909 includes

\$16,242,087, representing the value of organzine and tram, spun silk, and other partly finished products, a large part of which were sold to other manufacturing establishments for use as material in the manufacture of silk goods, and \$808,428 representing the value of products other than silk manufactures, so far as these were separately returned. The subtraction of the two figures just given from the total value of products for the industry leaves a remainder of \$179,861,152, which represents approximately the value of the finished silk goods made in the industry, although it may include the value of some products other than silk goods which were not specifically reported. On the other hand, silk and silk mixed hosiery and knit goods to the value of \$4,548,708 were reported by establishments in the hosiery and knit goods industry, and other silk manufactures to the value of \$1,218,101 were reported by establishments engaged primarily in the manufacture of other products, although it is probable that these figures do not represent the total production of silk manufactures outside the silk manufacturing industry, as some establishments making these products may not have reported them separately. Combining the two figures just given with that previously given as representing the approximate value of finished silk goods made by establishments in the silk manufacturing industry proper, a total of \$185,627,961 is obtained, which represents approximately the total value of the finished silk goods manufactured in 1909.

Products, by states.—Table 30 gives, by states, the quantities of the different products of the silk manufacturing industry, so far as reported, for 1909, 1904, and 1899, with the values for 1909; and the value only for 1909, 1904, and 1899 of all products for which the quantity was not reported.

Table 31 gives for 1909 and 1899 the per cent distribution, by states, of the output (or the value) of all products for which the quantity or value is shown separately in Table 30.

Table 30

PRODUCT AND STATE.	PRODUCTS OF THE SILK MANUFACTURING INDUSTRY.				PRODUCT AND STATE.	PRODUCTS OF THE SILK MANUFACTURING INDUSTRY.					
	1909		1904			1909		1904		1899	
	Value.	Yards.	Yards.	Yards.		Value.	Pounds.	Pounds.	Pounds.	Pounds.	
Broad silks	\$107,881,146	185,707,315	124,871,215	87,636,883	Machine twist	\$6,341,719	1,088,780	932,998	987,917		
Connecticut.....	5,890,233	11,454,011	7,562,168	5,470,874	Massachusetts.....	636,524	109,312	134,256	269,241		
Massachusetts.....	5,898,231	9,668,788	4,235,637	2,705,638	New Jersey.....	605,978	154,655	35,325	40,500		
New Jersey.....	43,167,205	64,788,199	46,700,737	40,594,148	New York.....	609,523	117,766	28,223	43,476		
New York.....	9,042,488	15,217,298	10,896,899	7,545,565	Pennsylvania.....	4,489,694	707,037	735,194	628,700		
Pennsylvania.....	35,772,192	65,569,386	43,552,924	26,853,629	All other states.....						
Rhode Island.....	4,415,641	11,640,145	6,497,937	2,307,437	Sewing, embroidery,						
All other states.....	3,695,166	7,360,488	5,425,005	2,099,592	and wash silks.....	3,778,306	680,507	606,357	477,658		
All-silk	74,471,291	114,876,640	97,870,717	68,437,218	Massachusetts.....	1,302,794	220,552	262,076	170,423		
Connecticut.....	4,146,923	7,724,070	6,812,551	4,814,129	New Jersey.....	253,875	69,931	12,960	18,528		
New Jersey.....	35,553,705	52,403,047	42,327,218	36,415,300	New York.....	2,221,637	370,024	331,321	288,707		
New York.....	5,946,921	8,707,603	10,002,610	3,089,439	Fringe and floss silks	401,049	86,739	205,354	261,643		
Pennsylvania.....	25,873,332	41,600,686	33,624,116	20,565,734	Massachusetts.....	168,001	26,396	6,610	20,964		
All other states.....	2,950,410	4,441,225	5,104,222	2,652,016	Pennsylvania.....	213,320	56,402	106,073	128,262		
Silk-mixed	33,409,855	70,830,675	27,000,498	19,199,665	All other states.....	19,728	3,941	92,671	112,417		
Connecticut.....	4,146,923	7,724,070	6,812,551	4,814,129	Organsine and tram,						
New Jersey.....	7,613,500	12,385,152	4,373,519	4,178,948	for sale.....	12,550,510	2,740,319	2,025,645	2,468,387		
New York.....	3,095,567	6,509,695	894,199	3,556,120	New Jersey.....	1,240,406	266,458	171,187	185,640		
Pennsylvania.....	9,898,860	23,968,700	9,928,898	6,287,895	New York.....	1,354,540	330,026	99,866	48,263		
All other states.....	11,058,618	24,237,196	11,054,357	4,520,051	Pennsylvania.....	7,475,327	1,642,004	1,396,424	1,723,701		
Plain and fancies:					All other states.....	2,480,237	501,831	358,168	380,687		
All-silk	53,282,704	81,934,157	68,393,042	53,573,488	Spun silk for sale	2,104,066	779,462	570,529	437,459		
Massachusetts.....	1,237,522	1,687,102	1,049,292	665,153	Connecticut.....	923,321	339,863	328,863	166,205		
New Jersey.....	24,000,880	36,759,084	32,971,793	28,268,070	All other states.....	1,180,745	440,662	241,666	271,194		
New York.....	4,421,795	5,923,694	4,672,699	3,859,029	Ribbons	32,744,873					
Pennsylvania.....	22,291,788	35,923,451	25,404,097	17,887,478	Connecticut.....	1,125,697	\$21,890,604	\$18,467,179	655,807		
All other states.....	1,330,719	1,640,816	4,295,161	2,892,868	New Jersey.....	14,971,005	1,153,983	1,153,983	831,721		
Silk-mixed	14,207,861	24,742,556	9,061,025	8,963,315	New York.....	6,261,289	10,036,531	4,883,011	4,883,011		
New Jersey.....	3,808,772	6,077,863	1,822,091	2,331,493	Pennsylvania.....	10,008,146	5,573,799	4,368,399	4,368,399		
New York.....	1,132,607	1,974,661	681,761	1,047,130	All other states.....	378,736	142,779	218,241	218,241		
Pennsylvania.....	4,076,011	7,466,518	1,061,199	669,377	Laces, nets, veils, veil-						
All other states.....	5,190,411	9,223,514	5,495,974	4,915,315	ings, etc.....	1,350,850		745,489	603,104		
Jacquard:					New Jersey.....	531,823		414,591	423,257		
All-silk	9,835,345	13,249,090	8,143,091	7,532,229	New York.....	794,640		291,400	377,047		
New Jersey.....	3,352,659	10,880,081	5,480,654	6,451,655	All other states.....	24,287		39,198	2,800		
New York.....	377,875	417,740	1,057,489	108,410	Fringes and gimps	824,527	1,016,954	444,787	444,787		
Pennsylvania.....	660,880	1,101,107	894,916	903,001	New York.....	560,027	544,544	195,523	195,523		
All other states.....	443,931	850,162	710,032	69,163	Pennsylvania.....	171,423	849,870	170,095	170,095		
Silk-mixed	3,473,799	6,043,686	2,336,120	1,677,466	All other states.....	93,077	122,540	78,564	78,564		
New Jersey.....	1,970,175	2,722,960	1,220,195	1,466,355	Braids and bindings	4,483,248	3,493,977	1,522,555	1,522,555		
New York.....	16,191	16,950	269,191	61,426	New Jersey.....	750,563	404,456	162,555	162,555		
Pennsylvania.....	462,643	918,258	406,052	56,421	New York.....	2,566,881	2,042,365	383,301	383,301		
All other states.....	1,024,390	2,335,518	500,682	93,264	Pennsylvania.....	539,792	424,277	119,673	119,673		
Piece-dyed:					All other states.....	620,072	622,879	852,003	852,003		
All-silk	11,353,242	19,693,393	21,334,584	7,331,501	Trimnings	3,850,448	3,107,697	2,034,076	2,034,076		
New Jersey.....	3,200,166	4,703,872	3,874,771	1,694,675	New Jersey.....	244,408		100	100		
New York.....	1,147,251	2,306,169	4,272,422	22,000	New York.....	1,898,688	1,725,985	767,294	767,294		
Pennsylvania.....	2,920,664	4,576,128	7,325,103	1,775,255	Pennsylvania.....	1,493,143	1,326,307	1,010,145	1,010,145		
All other states.....	4,085,161	7,987,224	5,862,288	3,839,571	All other states.....	209,204	55,405	256,477	256,477		
Silk-mixed	15,728,195	40,044,433	15,603,353	8,558,884	All other products	4,485,675	5,227,800	1,027,472	1,027,472		
Connecticut.....	1,409,717	3,319,973	582,580	147,833	Connecticut.....	702,631	74,470	192,744	192,744		
Massachusetts.....	1,288,348	2,505,211	50,000	20,384	Massachusetts.....	25,746	383,821	21,053	21,053		
New Jersey.....	1,834,553	3,584,320	1,331,233	381,000	New Jersey.....	1,323,369	555,408	434,501	434,501		
New York.....	1,946,309	4,518,084	3,247	2,447,570	New York.....	1,489,120	2,539,445	133,622	133,622		
Pennsylvania.....	5,360,206	15,583,924	8,461,557	5,562,097	Pennsylvania.....	936,031	1,092,372	171,349	171,349		
All other states.....	3,889,062	10,532,912	5,174,736		Rhode Island.....	17,475	54,283	8,400	8,400		
Velvets	4,767,990	10,093,583	7,262,315	5,122,249	All other states.....	1,903	228,001	65,803	65,803		
Connecticut.....	4,519,238	9,741,329	7,154,387	4,261,208	Amount received for						
All other states.....	248,752	352,254	107,928	861,041	contract work.....	8,364,350	3,716,056	2,337,220	2,337,220		
Plushes	2,104,788	2,759,411	2,547,367	3,848,684	Connecticut.....	293,332	230,614	136,362	136,362		
Connecticut.....	1,439,937	2,171,429	1,894,107	1,011,457	Massachusetts.....	107,056	20,342	9,273	9,273		
All other states.....	664,851	587,982	653,260	2,837,227	New Jersey.....	2,436,573	998,890	760,844	760,844		
Upholstery	197,474	105,622	572,884	1,011,141	New York.....	606,010	268,252	238,218	238,218		
Tapestries	185,346	121,095	1,193,326	321,978	Pennsylvania.....	4,416,978	1,994,319	1,070,133	1,070,133		
					Rhode Island.....	3,394	61,800	14,294	14,294		
					All other states.....	501,007	135,839	102,091	102,091		

for 1909, in so far as they can be segregated, were as follows:

ARTICLES.	Value.
Total	\$4,495,675
Casket and upholstery trimmings, cords, tassels, etc.....	890,148
Gloves.....	270,860
Mufflers and handkerchiefs.....	267,910
Ties, neckwear, and belting.....	182,240
Fabrics.....	110,732
Fish lines.....	96,665
Dyed silk (raw silk).....	1,180,462
Miscellaneous unclassified silk products, and waste.....	673,230
Miscellaneous products, other than silk.....	808,428

In addition to the products covered by Table 28, silk goods were manufactured to some extent by establishments assigned to industries other than the silk manufacturing industry proper, and Table 29 shows for 1909 their quantity and value so far as separately reported, manufactured in all industries combined, in the industry designated "silk and silk goods, including throwsters," and in all other industries, respectively.

PRODUCT.	Total production: 1909	Production in the silk manufacturing industry.	Production in other industries. ¹
Value of all products	\$202,678,476	\$196,911,667	\$5,766,809
Broad silks, plain and fancies—			
All silk—			
Yards.....	82,307,526	81,934,158	373,368
Value.....	\$53,419,522	\$53,232,704	\$186,818
Silk mixed—			
Yards.....	28,645,106	24,742,556	3,902,550
Value.....	\$15,136,632	\$14,207,861	\$928,771
Plushes:			
Yards.....	2,770,311	2,769,411	10,900
Value.....	\$2,112,968	\$2,104,768	\$8,200
Ribbons.....	\$32,873,469	\$32,744,873	\$128,596
Braids and bindings.....	\$4,495,964	\$4,483,248	\$12,716
Trimmings.....	\$3,853,448	\$3,850,448	\$3,000
Hosiery.....	\$3,600,416	(3)	\$3,600,416
Shirts and drawers, silk and silk mixed.....	\$709,074	(3)	\$709,074
Combination suits, silk and silk mixed.....	\$239,213	(3)	\$239,213
All other products.....	\$86,237,765	\$86,237,765	.....

¹ Includes products made by establishments in the following industries: Clothing, men's, including shirts; corsets; cotton goods and cotton small wares; fancy articles not elsewhere specified; furnishing goods, men's; hosiery and knit goods.

² Exclusive of hosiery and knit goods made in the silk manufacturing industry.

³ Included with "all other products."

The total value of products reported for the silk manufacturing industry proper in 1909 includes

\$16,242,087, representing the value of organzine and tram, spun silk, and other partly finished products, a large part of which were sold to other manufacturing establishments for use as material in the manufacture of silk goods, and \$808,428 representing the value of products other than silk manufactures, so far as these were separately returned. The subtraction of the two figures just given from the total value of products for the industry leaves a remainder of \$179,861,152, which represents approximately the value of the finished silk goods made in the industry, although it may include the value of some products other than silk goods which were not specifically reported. On the other hand, silk and silk mixed hosiery and knit goods to the value of \$4,548,708 were reported by establishments in the hosiery and knit goods industry, and other silk manufactures to the value of \$1,218,101 were reported by establishments engaged primarily in the manufacture of other products, although it is probable that these figures do not represent the total production of silk manufactures outside the silk manufacturing industry, as some establishments making these products may not have reported them separately. Combining the two figures just given with that previously given as representing the approximate value of finished silk goods made by establishments in the silk manufacturing industry proper, a total of \$185,627,961 is obtained, which represents approximately the total value of the finished silk goods manufactured in 1909.

Products, by states.—Table 30 gives, by states, the quantities of the different products of the silk manufacturing industry, so far as reported, for 1909, 1904, and 1899, with the values for 1909; and the value only for 1909, 1904, and 1899 of all products for which the quantity was not reported.

Table 31 gives for 1909 and 1899 the per cent distribution, by states, of the output (or the value) of all products for which the quantity or value is shown separately in Table 30.

Table 30

PRODUCT AND STATE.	PRODUCTS OF THE SILK MANUFACTURING INDUSTRY.				PRODUCT AND STATE.	PRODUCTS OF THE SILK MANUFACTURING INDUSTRY.			
	1909		1904	1899		1909		1904	1899
Broad silks.	<i>Value.</i>	<i>Yards.</i>	<i>Yards.</i>	<i>Yards.</i>		<i>Value.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Connecticut.....	\$107,881,146	185,707,315	124,871,215	87,636,883	Machine twist.	\$6,341,719	1,088,780	832,998	987,917
Massachusetts.....	5,890,233	11,454,011	7,502,168	5,470,874	Massachusetts.....	636,524	109,312	134,256	209,241
New Jersey.....	5,898,231	9,668,788	4,285,037	2,705,638	New York.....	605,978	154,665	35,225	46,500
New York.....	43,167,205	64,783,199	40,700,737	40,594,148	Pennsylvania.....	609,523	117,766	28,223	43,476
Pennsylvania.....	9,042,488	15,217,298	10,890,809	7,545,565	All other states.....	4,489,694	707,037	735,194	623,700
Rhode Island.....	35,772,192	65,569,986	43,552,924	26,853,629	Sewing, embroidery,				
All other states.....	4,415,641	11,649,145	6,497,937	2,367,437	and wash silks.	3,778,306	660,507	606,357	477,658
	3,695,150	7,300,488	5,425,005	2,099,592	Massachusetts.....	1,302,794	220,552	262,076	170,423
All-silk.	74,471,991	114,876,640	97,870,717	68,437,218	New York.....	253,875	69,931	12,900	18,528
Connecticut.....	4,146,923	7,724,079	6,512,551	4,814,129	All other states.....	2,221,637	370,024	331,321	288,707
New Jersey.....	35,553,705	55,408,047	42,327,218	30,415,300	Fringe and floss silks.				
New York.....	5,046,921	8,707,803	10,002,610	3,989,439	Massachusetts.....	401,049	86,739	205,354	261,643
Pennsylvania.....	25,873,332	41,600,686	33,024,116	20,555,734	New York.....	168,001	26,396	6,610	20,964
All other states.....	2,950,410	4,441,225	5,104,222	2,652,616	Pennsylvania.....	213,320	56,402	106,073	128,262
Silk-mixed.	33,409,855	70,830,675	27,000,498	19,198,665	All other states.....	19,728	3,941	92,671	112,417
Connecticut.....	1,743,310	3,729,932	749,615	656,745	Organzine and tram,				
New Jersey.....	7,613,600	12,388,152	9,928,808	3,556,126	for sale.	12,550,510	2,740,319	2,025,645	2,468,387
New York.....	3,095,567	6,509,605	4,373,519	4,178,848	New Jersey.....	1,240,406	268,458	171,187	315,646
Pennsylvania.....	9,808,860	23,068,700	9,928,808	6,287,895	New York.....	1,354,540	330,026	99,866	48,263
All other states.....	11,058,618	24,237,196	11,054,357	4,520,051	Pennsylvania.....	7,475,327	1,642,004	1,396,424	1,725,791
Plain and fancy:					All other states.....	2,480,237	501,831	358,168	380,687
All-silk.	53,282,704	81,934,157	68,393,042	53,573,488	Spun silk, for sale.				
Massachusetts.....	1,237,522	1,687,102	1,049,202	605,153	Connecticut.....	2,104,066	779,462	570,529	437,459
New Jersey.....	24,000,880	36,759,094	32,971,793	28,208,970	New York.....	923,321	339,400	328,863	166,265
New York.....	4,421,795	5,923,694	4,672,699	3,859,029	All other states.....	1,180,745	440,062	241,666	271,194
Pennsylvania.....	22,201,788	35,923,451	25,404,097	17,887,478	Ribbons.			<i>Value.</i>	<i>Value.</i>
All other states.....	1,330,719	1,640,816	4,295,161	2,892,858	Connecticut.....	32,744,873		\$21,890,604	\$18,467,179
Silk-mixed.	14,207,861	24,742,556	9,061,025	8,963,315	New Jersey.....	1,125,697		1,153,983	655,807
New Jersey.....	3,808,772	6,077,803	1,822,091	2,351,430	New York.....	14,971,005		10,036,331	8,341,721
New York.....	1,132,697	1,974,661	681,761	2,047,130	Pennsylvania.....	6,261,289		4,983,712	4,883,011
Pennsylvania.....	4,076,011	7,466,518	1,061,199	609,377	All other states.....	10,008,146		5,573,799	4,368,399
All other states.....	5,190,411	9,223,514	5,495,974	4,915,315	Laces, nets, veils, vell-			<i>Value.</i>	<i>Value.</i>
Jacquard:					ings, etc.	1,350,850		745,489	803,104
All-silk.	9,835,345	13,249,090	8,143,061	7,532,229	New Jersey.....	531,923		414,801	423,257
New Jersey.....	8,362,659	10,880,801	5,480,654	6,451,655	New York.....	794,640		201,400	377,047
New York.....	377,875	417,740	1,057,489	105,410	All other states.....	24,287		30,198	2,800
Pennsylvania.....	660,880	1,101,107	894,916	903,001	Fringes and gimps.			1,016,954	444,787
All other states.....	443,931	850,162	710,032	69,163	New York.....	824,527		544,544	595,528
Silk-mixed.	3,478,799	6,043,686	2,336,120	1,677,466	Pennsylvania.....	560,027		349,570	170,005
New Jersey.....	1,970,175	2,722,960	1,220,195	1,466,355	All other states.....	171,423		122,840	78,564
New York.....	16,591	16,950	209,191	61,426	Braids and bindings.			3,493,977	1,522,565
Pennsylvania.....	462,643	918,258	406,052	50,421	New Jersey.....	4,483,248		404,456	162,595
All other states.....	1,024,300	2,386,518	500,682	83,264	New York.....	750,563		2,042,365	338,391
Piece-dyed:					Pennsylvania.....	2,566,881		424,277	119,573
All-silk.	11,353,242	19,693,393	21,334,584	7,331,501	All other states.....	539,732		622,879	852,006
New Jersey.....	3,200,166	4,763,872	3,874,771	1,694,675	Trimnings.			3,107,697	2,034,076
New York.....	1,147,261	2,366,169	4,272,422	22,000	New Jersey.....	3,850,448		244,408	160
Pennsylvania.....	2,020,664	4,576,128	7,325,103	1,775,255	New York.....	1,898,688		1,725,985	767,294
All other states.....	4,085,161	7,987,224	5,862,288	3,839,571	Pennsylvania.....	1,498,148		1,320,307	1,010,145
Silk-mixed.	15,728,195	40,044,433	15,603,353	8,558,884	All other states.....	209,204		55,405	256,477
Connecticut.....	1,409,717	3,319,973	582,580	147,833	All other products.			5,227,800	1,027,472
Massachusetts.....	1,288,348	2,505,211	50,000	20,384	Connecticut.....	4,495,875		74,470	192,744
New Jersey.....	1,834,553	3,584,329	1,331,233	381,000	Massachusetts.....	702,031		353,821	21,053
New York.....	1,946,309	4,518,084	3,247	2,447,570	New Jersey.....	25,746		855,408	434,501
Pennsylvania.....	5,360,206	15,583,924	8,461,557	5,562,097	New York.....	1,323,369		2,539,445	133,622
All other states.....	3,889,062	10,532,912	5,174,736		Pennsylvania.....	1,489,120		1,092,372	171,349
Velvets.					Rhode Island.....	936,031		54,283	8,400
Connecticut.....	4,767,990	10,093,583	7,262,315	5,122,249	All other states.....	17,475		228,001	65,803
Connecticut.....	4,519,238	9,741,329	7,154,387	4,261,208	Amount received for				
All other states.....	248,752	352,254	107,928	861,041	contract work.	8,364,350		3,716,056	2,337,220
Plushes.					Connecticut.....	293,332		230,614	136,362
Connecticut.....	2,104,768	2,759,411	2,547,367	3,848,684	Massachusetts.....	107,056		26,842	9,278
Connecticut.....	1,439,937	2,171,429	1,894,107	1,011,457	New Jersey.....	2,436,573		998,890	766,844
All other states.....	664,831	587,982	653,260	2,837,227	New York.....	606,010		268,252	238,218
Upholstery.					Pennsylvania.....	4,416,978		1,994,319	1,070,133
Tapestries.					Rhode Island.....	3,394		61,800	14,294
	185,346	121,095	1,193,326	321,978	All other states.....	501,007		135,839	102,091

Table 31 PRODUCT AND STATE.	PER CENT DISTRIBUTION OF PRODUCTS OF THE SILK MANUFACTURING INDUSTRY.		PRODUCT AND STATE.	PER CENT DISTRIBUTION OF PRODUCTS OF THE SILK MANUFACTURING INDUSTRY.	
	1909	1899		1909	1899
Broad silks.	Quantity.	Quantity.	Velvets.	Quantity.	Quantity.
Pennsylvania	100.0	100.0	Connecticut	100.0	100.0
New Jersey	35.3	30.0	All other states	95.5	83.2
New York	34.9	46.3		3.5	16.8
Rhode Island	8.2	8.6	Plushes.	100.0	100.0
Connecticut	6.3	2.7	Connecticut	78.7	26.3
Massachusetts	6.2	6.2	All other states	21.3	73.7
All other states	5.2	3.1	Machine twist.	100.0	100.0
	4.0	2.4	New York	14.2	4.7
All-silk	100.0	100.0	Pennsylvania	10.8	4.4
New Jersey	45.6	53.2	Massachusetts	10.0	27.3
Pennsylvania	36.2	30.1	All other states	64.9	63.6
New York	7.0	5.8	Sewing, embroidery, and wash silks.	100.0	100.0
Connecticut	6.7	7.0	Massachusetts	33.4	35.7
All other states	3.9	3.9	New York	10.6	3.9
Silk-mixed	100.0	100.0	All other states	56.0	60.4
Pennsylvania	33.8	32.8	Fringe and floss silks.	100.0	100.0
New Jersey	17.5	21.8	Pennsylvania	65.0	49.0
New York	9.2	18.5	Massachusetts	30.4	8.0
Connecticut	5.3	3.4	All other states	4.5	43.0
All other states	34.2	23.5	Organzine and tram, for sale	100.0	100.0
Plain and fancies:			Pennsylvania	59.9	69.8
All-silk	100.0	100.0	New York	12.0	2.0
New Jersey	44.9	52.8	New Jersey	9.7	12.8
Pennsylvania	43.8	33.4	All other states	18.3	15.4
New York	7.2	7.2	Spun silk, for sale	100.0	100.0
Massachusetts	2.1	1.2	Connecticut	43.5	38.0
All other states	2.0	5.4	All other states	56.5	62.0
Silk-mixed	100.0	100.0	Ribbons.	Value.	Value.
Pennsylvania	30.2	7.5	New Jersey	100.0	100.0
New Jersey	24.6	26.0	New Jersey	45.7	45.2
New York	8.0	11.7	Pennsylvania	30.6	23.7
All other states	37.3	54.8	New York	19.1	26.4
Jacquard:			Connecticut	3.4	3.6
All-silk	100.0	100.0	All other states	1.2	1.2
New Jersey	82.1	85.7	Laces, nets, veils, veilings, etc.	100.0	100.0
Pennsylvania	8.3	12.0	New York	58.8	46.9
New York	3.2	1.4	New Jersey	39.4	62.7
All other states	6.4	0.9	All other states	1.8	0.3
Silk-mixed	100.0	100.0	Fringes and gimps.	100.0	100.0
New Jersey	45.1	87.4	New York	67.9	44.0
Pennsylvania	15.1	3.4	Pennsylvania	20.8	38.4
New York	0.3	3.7	All other states	11.3	17.7
All other states	39.5	5.6	Braids and bindings.	100.0	100.0
Piece-dyed:			New York	57.3	26.5
All-silk	100.0	100.0	New Jersey	16.9	10.7
New Jersey	24.2	23.1	Pennsylvania	12.0	7.9
Pennsylvania	23.2	24.2	All other states	13.8	56.0
New York	12.0	0.3	Trimnings.	100.0	100.0
All other states	40.6	52.4	New York	49.3	37.7
Silk-mixed	100.0	100.0	Pennsylvania	38.9	49.7
Pennsylvania	38.9	65.0	New Jersey	6.3	.....
Massachusetts	26.3	0.2	All other states	5.4	12.6
New York	11.3	28.6			
New Jersey	9.0	4.5			
Connecticut	8.3	1.7			
All other states	6.2	.....		

New Jersey was the leading state in the production of all-silk broad silks, reporting 45.6 per cent of the total. Pennsylvania was second, with 36.2 per cent. Pennsylvania and New Jersey together reported over one-half of the production of silk-mixed broad silks, Pennsylvania alone reporting 33.8 per cent. The increase in output in this state during the decade amounted to 281.2 per cent. New Jersey and Pennsylvania also led in the output of plain and fancy silks, reporting for 1909, 44.9 per cent and 43.8 per cent respectively, of the all-silk fabrics, and 24.6 per cent and 30.2 per cent, respectively, of the silk-mixed goods. The production of all-silk Jacquards reported for New Jersey represented 82.1 per cent of the total for the United States, while New Jersey also reported 45.1 per cent of the total output of silk-mixed Jacquards. New Jersey and Pennsylvania together reported nearly one-half of the total production of all-silk piece-dyed broad silks, the output of the former state being slightly larger than that of the

latter; Pennsylvania, however, led in the production of silk-mixed goods, with 38.9 per cent of the total, New Jersey reporting only 9 per cent. Pennsylvania reported about three-fifths of the organzine and tram sold as such, much of this being sold to establishments in other states.

More than three-fourths of the total value of ribbons for the United States was reported from New Jersey and Pennsylvania. The production of laces, nets, veils, etc., was practically confined to two states, New York reporting 58.8 per cent of the total value and New Jersey 39.4 per cent. New York also reported about two-thirds of the total value of fringes and gimps, nearly three-fifths of the value of braids and bindings, and about one-half of the value of trimmings. Connecticut reported almost the entire output of velvet produced, and nearly four-fifths of the plushes, and also led in the production of machine twist, and of sewing, embroidery, and wash silks, as well as in that of spun-silk yarn.

Contract work.—Table 32 shows by states the distribution of the establishments in the silk manufacturing industry reporting contract work. Of the 852 establishments in the industry in 1909, 139 reported that they finished or printed their own goods, 10 did finishing or printing for others, and 193 did custom spinning or weaving.

Table 32

ESTABLISHMENTS IN THE SILK MANUFACTURING INDUSTRY: 1909

STATE.	Total number.	Dyeing, finishing, or printing—		Doing custom spinning or weaving.
		Their own goods.	For others.	
California.....	3	2		1
Connecticut.....	47	23	4	13
Delaware.....	3			1
Georgia.....	1	1		1
Illinois.....	1	1		
Maine.....	4	1		1
Maryland.....	19	7		3
Massachusetts.....	2	2		1
Michigan.....	348	38	5	77
New Jersey.....	170	40	1	16
New York.....	4	1		2
North Carolina.....	226	22		77
Pennsylvania.....	13	1		
Rhode Island.....	7			1
Virginia.....	2			
New Hampshire and Ohio.....				

EQUIPMENT.

Spindles.—Table 33 shows the number of producing and winding spindles reported respectively by the independent throwing plants and by the other silk mills for 1909, 1904, and 1899, so far as comparative figures are available.

Table 33

SPINDLES USED IN THE SILK MANUFACTURING INDUSTRY.

KIND.	1909	1904	1899	Per cent of increase. ¹		
				1899-1909	1904-1909	1899-1904
				Producing spindles.....	1,777,962	1,394,020	1,213,493	46.5	27.5	14.0
In independent throwing plants.....	1,129,497	664,236	(²)		70.0	
In other silk mills.....	648,465	729,784	(²)		-11.1	
Winding spindles.....	637,565	624,686	442,410	44.1	2.1	41.2
In independent throwing plants.....	338,078	150,050	(²)		125.3	
In other silk mills.....	299,487	474,636	(²)		-36.9	

¹ A minus sign (—) denotes decrease. ² Figures not available.

Table 34 shows, by states, the number of producing and winding spindles in independent throwing plants and in other silk mills, as reported at the census of 1909.

Table 34

SPINDLES USED IN THE SILK MANUFACTURING INDUSTRY: 1909

STATE.	Producing spindles.									Winding spindles.		
	Aggregate.			In independent throwing plants.			In other silk mills.			Total.	In independent throwing plants.	In other silk mills.
	Total.	Spinning and twisting.	Spinning only (spun silk).	Total.	Spinning and twisting.	Spinning only (spun silk).	Total.	Spinning and twisting.	Spinning only (spun silk).			
California.....	1,958	1,958					1,958	1,958		1,216		1,216
Connecticut.....	118,302	93,214	25,088	47,480	47,480		70,822	45,734	25,088	53,235	21,620	31,615
Delaware.....	3,264	3,264					3,264	3,264		618		618
Georgia.....	17,136	17,136		17,136	17,136					1,766	1,766	
Illinois.....	3,100	3,100		3,100	3,100					4,200	4,200	
Maine.....	4,740	4,740					4,740	4,740		1,160		1,160
Maryland.....	20,148	20,148		20,148	20,148					6,789	6,789	18
Massachusetts.....	99,699	88,175	11,524	29,707	19,863	9,844	69,992	68,312	1,680	20,418	9,850	10,568
Michigan.....	12,326	12,326					12,326	12,326		10,932		10,932
New Hampshire.....	3,696	3,696		3,696	3,696					896	896	
New Jersey.....	249,644	215,484	34,160	170,801	148,141	22,660	78,843	67,343	11,500	179,161	87,615	91,546
New York.....	159,559	133,264	26,395	127,498	118,098	11,800	32,061	17,556	14,505	69,022	35,271	33,751
North Carolina.....	25,500	25,500		19,500	19,500		6,000	6,000		8,524	7,656	868
Pennsylvania.....	1,017,992	992,242	25,750	650,253	640,585	9,668	387,739	351,657	16,082	267,171	164,196	112,975
Rhode Island.....	7,720		7,720	7,000	7,000		720	720		4,222	4,222	4,222
Virginia.....	33,178	33,178		33,178	33,178					8,228	8,228	

The percentages of increase during the decade in the number of producing and of winding spindles were practically the same. The increase in the number of winding spindles, however, was confined mainly to the first half of the decade, while the greater part of the increase in the number of producing spindles took place during the five-year period 1904-1909.

There was an increase during the five-year period 1904-1909 in the number of spindles in independent throwing plants corresponding to the marked increase in the amount of silk reported as thrown by such concerns. There was a decrease, however, in the

number in other silk mills, establishments doing weaving being included under the latter head.

Pennsylvania, New Jersey, and New York together reported 80.3 per cent of the total number of producing spindles in 1909, as compared with 82.1 per cent in 1904 and 81.1 per cent in 1899. In 1909 Pennsylvania reported 1,017,992 producing spindles, or 57.3 per cent of the total for the United States, and in 1899, 638,851, or 52.6 per cent of the total. New Jersey shows a decrease both in number of spindles and in the proportion which they represented of the total, reporting 249,644 spindles, or 14 per cent of the total number, in 1909, as compared with 281,590, or 23.2

per cent of the total in 1899. New York, on the other hand, which reported only 63,486 spindles, or 5.2 per cent of the total, in 1899, reported 159,559, or 9 per cent of the total number, in 1909. In Connecticut and Massachusetts, the only other states reporting as many as 50,000 spindles, the number of producing spindles increased 22.7 per cent and 46.4 per cent, respectively, during the decade.

Of the total number of producing spindles in 1909, 1,647,415, or 92.7 per cent, were spinning and twisting spindles, and of these 1,068,525, or 64.9 per cent, were reported by independent throwing plants. The spindles for use in connection with spun silk numbered 130,547, or 7.3 per cent of the total number of producing spindles. These were about equally divided between independent throwing plants and other silk mills.

Spinning and twisting spindles in independent throwing plants were reported from 11 of the 17 states in which the industry was carried on. Pennsylvania led with 640,585, or 60 per cent of the total number, New Jersey was second with 148,141, or 13.9 per cent of the total, and New York third, with 115,698, or 10.8 per cent, these three states together reporting more than five-sixths (84.7 per cent) of the total for the United States. Three states, Pennsylvania, Massachusetts, and New Jersey, reported practically all of this class of spindles employed in the other silk mills, Pennsylvania alone reporting 60.7 per cent.

The spindles used in connection with spun silk in independent throwing plants were confined to five states, New Jersey, New York, Massachusetts, Pennsylvania, and Rhode Island. The use of such spindles in other silk mills was confined to the same five states together with Connecticut.

Winding spindles were reported for every state where the industry was carried on except Ohio. They were fairly well distributed between independent throwing plants and silk mills, the former reporting 53 per cent of the total, distributed through 11 states, and the latter 47 per cent, distributed through 12 states. Pennsylvania led in each case, reporting 154,196 winding spindles in independent throwing establishments, or 45.6 per cent of the total number in this class of establishments, and 112,975 in other silk mills, or 37.7 per cent of the total for such mills.

Table 35 shows, by states, the number of establishments in the industry reporting the throwing of silk in 1909, classified according to the number of spinning and twisting spindles reported. This table does not include the 130,547 spindles used in connection with spun silk.

Of the 245 establishments in the industry which carried on the operation of throwing, 107, or 43.7 per cent, reported less than 2,500 spinning and twisting spindles, and 26 reported 15,000 or over, 18 of the latter

class of establishments being in Pennsylvania. Pennsylvania also contained 18 of the 32 establishments reporting 10,000 and less than 15,000 spinning and twisting spindles. In New Jersey practically two-thirds of the establishments which did throwing had less than 2,500 spinning and twisting spindles. No throwing was reported from Ohio or Rhode Island.

Table 35

ESTABLISHMENTS IN THE SILK MANUFACTURING INDUSTRY ENGAGED IN THROWING SILK: 1909

STATE.	Total number.	Classified according to number of spinning and twisting spindles reported.					Total number of spinning and twisting spindles reported.
		Less than 2,500 spindles.	2,500 spindles but less than 5,000.	5,000 spindles but less than 10,000.	10,000 spindles but less than 15,000.	15,000 spindles or over.	
United States.....	245	107	36	44	32	26	1,647,415
California.....	1	1					1,958
Connecticut.....	30	18	6	4	1	1	93,214
Delaware.....	1						3,264
Georgia.....	1					1	17,136
Illinois.....	1		1				3,100
Maine.....	1		1				4,740
Maryland.....	2			1	1		20,148
Massachusetts.....	9	5	1		2	1	88,176
Michigan.....	1				1		12,326
New Hampshire.....	1		1				3,096
New Jersey.....	67	44	7	8	6	2	215,484
New York.....	26	12	4	6	2	2	133,254
North Carolina.....	4		2	1	1		25,500
Pennsylvania.....	94	23	12	23	18	18	992,242
Virginia.....	6	4		1		1	33,178

Looms and Jacquard machines.—Table 36 shows, by states, statistics as to the number of active looms in the industry for 1909, 1904, and 1899.

Table 36

NUMBER OF ACTIVE LOOMS IN THE SILK MANUFACTURING INDUSTRY.

STATE AND CLASS.	1909	1904	1899	Per cent of increase. ¹		
				1899-1909	1904-1909	1899-1904
United States.....	75,406	60,058	44,430	69.7	25.6	35.2
On broad silks (including velvets).....	64,836	50,449	36,989	75.3	28.5	36.4
On ribbons.....	10,570	9,609	7,441	42.1	10.0	29.1
Connecticut.....	5,006	4,200	2,975	68.3	17.5	43.2
On broad silks.....	4,477	3,500	2,681	67.0	27.9	30.5
On ribbons.....	529	700	294	79.9	-30.4	158.5
Massachusetts.....	2,717	1,010	1,040	101.2	68.8	54.8
On broad silks.....	2,708	1,466	896	202.2	84.7	63.0
On ribbons.....	9	144	144	-93.8	-93.8	.....
New Jersey.....	28,915	23,935	20,572	40.6	20.8	16.3
On broad silks.....	24,423	19,917	17,056	38.3	22.6	12.8
On ribbons.....	4,492	4,018	2,916	54.0	11.8	37.8
New York.....	7,575	6,980	5,268	43.8	8.4	32.7
On broad silks.....	5,375	4,761	3,020	78.0	12.9	57.6
On ribbons.....	2,200	2,228	2,248	-2.1	-1.3	-0.0
Pennsylvania.....	26,249	19,336	12,949	102.7	35.8	49.3
On broad silks.....	23,031	16,999	11,161	106.4	35.5	52.3
On ribbons.....	3,218	2,337	1,788	80.0	37.7	30.7
Rhode Island.....	2,511	1,706	533	371.1	47.2	220.1
On broad silks.....	2,511	1,706	533	371.1	47.2	220.1
On ribbons.....						
All other states.....	2,433	2,222	1,093	122.6	9.5	103.3
On broad silks.....	2,311	2,100	1,042	121.8	10.0	101.5
On ribbons.....	122	122	51	139.2	(²)	139.2

¹ A minus sign (-) denotes decrease.² Less than one-tenth of 1 per cent.

The total number of looms in operation increased from 44,430 in 1899 to 75,406 in 1909, a gain of 69.7 per cent for the decade. The figures include 173 hand looms for 1899 and 283 for 1904, but the number of

hand looms in use in 1909 was not separately reported. The number of looms employed on broad silks and velvets constituted 86 per cent of the total in 1909, 84 per cent in 1904, and 83.3 per cent in 1899. Between 1899 and 1909 the silk mills of New Jersey increased their loom equipment 40.6 per cent, those in Pennsylvania 102.7 per cent, and those in New York 43.8 per cent. The percentages of increase were still higher in Massachusetts and Rhode Island.

Table 37 presents a summary, by states, of the number of the different kinds of looms and the number of Jacquard machines in use in the silk manufacturing industry during 1909.

STATE.	Looms.					Jacquard machines. ¹
	Total.	Over 36-inch reed space.	36-inch or less reed space.	Velvet.	Ribbon.	
United States	75,406	35,214	28,426	1,196	10,570	8,985
California	10	7	3			4
Connecticut	5,006	2,092	714	1,071	529	305
Delaware	210	57	117		36	
Maine	158		158			
Maryland	86				86	
Massachusetts	2,717	1,801	907		9	211
Michigan	716	716				
New Jersey	28,915	11,084	12,707	32	4,492	5,707
New York	7,575	3,430	1,918	27	2,200	594
North Carolina	361	45	316			
Ohio	504	504				
Pennsylvania	26,249	11,659	11,306	66	3,218	1,874
Rhode Island	2,511	2,431	80			
Virginia	388	188	200			200

¹ Total number, whether or not connected with looms.

Fourteen of the seventeen states in which the industry was carried on reported looms, but nearly

three-fourths of the total number (73.1 per cent) were in the two leading states, New Jersey and Pennsylvania, which reported 38.3 per cent and 34.8 per cent, respectively, of the total number. New York reported 10 per cent of the total number of looms in operation.

New Jersey and Pennsylvania together reported about two-thirds of the looms of over 36-inch reed space, the number in the two states being practically the same; these states also reported more than five-sixths of the looms of 36-inch reed space or less, the number in New Jersey being somewhat the greater.

Connecticut reported about nine-tenths (89.5 per cent) of the velvet looms, and New Jersey, Pennsylvania, and New York together 93.8 per cent of the ribbon looms, New Jersey alone reporting 42.5 per cent of the total. Six states reported Jacquard machines, nearly two-thirds of the total number being in New Jersey, and over one-fifth in Pennsylvania.

Table 38 presents, by states, a summary of the spindle and loom equipment of the establishments in the silk manufacturing industry in 1909, classified according to mills (1) without spindles or looms; (2) doing spinning and weaving; (3) spinning only; and (4) weaving only.

Of the 852 establishments in the industry in 1909, 44, or 5.2 per cent, reported no looms or throwing or spun silk spindles. These are establishments engaged in the manufacture of braids and bindings, fringes and gimps, cords and tassels, trimmings, embroideries, etc., and equipped with braiders, cord and gimp machines, and other special machinery. New York reported 30 of these establishments.

STATE.	SPINDLE AND LOOM EQUIPMENT IN THE SILK MANUFACTURING INDUSTRY: 1909											Per cent of total.			
	Total.			Number of establishments without spindles or looms.	Spinning and weaving.			Spinning only.		Weaving only.		Spindles.		Looms.	
	Number of establishments.	Number of spindles.	Number of looms.		Number of establishments.	Number of spindles.	Number of looms.	Number of establishments.	Number of spindles.	Number of establishments.	Number of looms.	In establishments doing both spinning and weaving.	In establishments doing only spinning.	In establishments doing both spinning and weaving.	In establishments doing only weaving.
United States	852	2,415,527	75,406	44	210	899,956	35,394	247	1,515,571	351	40,012	37.3	62.7	47.0	53.0
California	3	3,174	10		1	40	7	1	3,134	1	3	1.3	98.7	70.0	30.0
Connecticut	47	171,537	5,006	4	12	82,905	4,294	26	88,632	5	712	48.3	51.7	85.8	14.2
Delaware	3	3,880	210		2	3,880	174			1	36	100.0		82.9	17.1
Georgia	1	18,902						1	18,902			100.0			
Illinois	2	7,300		1				1	7,300			100.0			
Maine	1	5,900	158		1	5,900	158					100.0		100.0	
Maryland	4	26,946	86		1	13	72	2	26,928	1	14	0.1	99.9	83.7	16.3
Massachusetts	19	120,117	2,717		6	79,126	2,003	8	40,991	5	714	65.9	34.1	73.7	26.3
Michigan	2	23,258	716		1	20,258	716	1	3,000			87.1	12.9	100.0	
New Hampshire	1	4,592						1	4,592			100.0			
New Jersey	348	428,805	28,915	6	75	169,345	10,845	68	259,460	199	18,070	39.5	60.5	37.7	63.3
New York	170	228,581	7,575	30	40	46,105	3,504	51	182,476	49	4,071	20.2	79.8	46.3	53.7
North Carolina	4	34,024	361		1	6,868	361	3	27,156			20.2	79.8	100.0	
Ohio	1		504							1	504				100.0
Pennsylvania	226	1,285,103	26,249	2	64	480,569	12,333	77	804,594	83	13,916	37.4	62.6	47.0	53.0
Rhode Island	13	11,942	2,511	1	6	4,942	927	7	7,000	5	1,584	41.4	58.6	36.9	63.1
Virginia	7	41,406	388					6	41,406	1	388	100.0			100.0

Establishments doing both spinning and weaving formed 24.6 per cent of the total number, and reported 37.3 per cent of the spindles and 46.9 per cent of the looms; establishments doing spinning only formed 29 per cent of the total number and reported 62.7 per cent of the spindles; and establishments doing weaving only formed 41.2 per cent of the total number and reported 53.1 per cent of the looms. Establishments doing weaving only also constituted the

largest of the four groups distinguished in Table 38 in the two leading states, 199 establishments, or 56.7 per cent of the total number, in New Jersey, and 83 establishments, or 23.6 per cent of the total number, in Pennsylvania. In New York the number of establishments doing spinning only was slightly larger than the number doing weaving only. In Connecticut 26 out of 47 establishments were engaged solely in spinning.

DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the silk manufacturing industry are presented by states in Tables 39 and 40.

Table 39 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in

the industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture.

Table 40 gives more detailed statistics for the industry for 1909 only.

SILK AND SILK GOODS, INCLUDING THROWSTERS—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	852	105,238	664	5,537	99,037	97,947	\$152,158	\$7,527	\$38,570	\$107,767	\$196,912	\$89,145
	1904	624	84,153	525	4,027	79,661	71,760	109,557	4,742	26,768	75,851	138,288	57,427
	1899	483	68,550	477	2,657	65,416	57,397	81,082	3,134	20,982	62,407	107,256	44,849
Connecticut.....	1909	47	9,385	37	645	8,703	8,564	19,730	996	3,749	11,834	21,063	9,229
	1904	43	8,157	38	327	7,792	7,821	16,676	479	3,124	9,698	15,624	6,526
	1899	38	6,860	23	323	6,514	5,415	12,167	403	2,393	7,198	12,379	5,181
Maryland.....	1909	4	681	2	24	655	915	488	32	160	237	512	275
	1904	3	188		13	175	765	421	9	48	171	273	102
	1899												
Massachusetts.....	1909	19	4,308	24	175	4,109	5,305	7,801	201	1,840	5,430	8,942	3,512
	1904	18	3,397	10	126	3,261	4,221	5,523	142	1,102	4,157	7,012	2,855
	1899	20	3,277	11	156	3,110	4,331	5,650	227	1,110	3,824	5,958	2,134
New Jersey.....	1909	348	32,365	306	1,774	30,285	22,376	43,615	2,317	13,917	33,265	65,430	32,165
	1904	239	20,980	227	1,278	25,481	16,903	33,645	1,550	9,893	22,339	42,863	20,524
	1899	180	25,313	197	959	24,157	15,964	29,286	1,145	9,233	21,631	39,907	18,336
New York.....	1909	170	14,136	140	1,093	12,903	11,110	20,972	1,493	5,385	13,949	26,519	12,570
	1904	123	12,348	105	960	11,283	7,250	15,751	1,104	4,268	10,490	20,181	9,691
	1899	92	8,318	94	363	7,861	5,111	9,800	514	2,802	6,570	12,706	6,136
Pennsylvania.....	1909	226	38,178	143	1,566	36,469	41,962	49,679	2,132	11,443	35,166	62,061	26,895
	1904	163	28,240	133	1,192	26,915	28,390	31,312	1,300	6,973	24,267	39,334	15,067
	1899	121	21,904	131	745	21,028	23,210	20,894	719	4,630	19,885	31,073	11,188
Rhode Island.....	1909	13	1,750	6	59	1,685	2,318	3,496	80	788	3,188	4,584	1,396
	1904	8	1,328	4	31	1,291	1,645	2,652	41	480	1,696	2,556	850
	1899	6	466	3	8	455	250	680	12	167	819	1,311	492
All other states.....	1909	25	4,435	6	201	4,228	5,397	6,377	276	1,288	4,698	7,801	3,103
	1904	22	3,511	8	100	3,403	4,765	3,577	111	820	3,643	5,445	1,802
	1899	26	2,412	18	103	2,291	3,116	2,605	114	587	2,480	3,802	1,382

1 Figures can not be shown without disclosing individual operations.

THE SILK INDUSTRY.

SILK AND SILK GOODS, INCLUDING THROWSTERS—DETAILED STATISTICS, BY STATES: 1909.

Table 40

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.							WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		Female.
								Maximum month.	Minimum month.						
United States ..	852	105,238	664	1,572	3,060	905	99,037	Mh 100,753	Jy 98,534	102,369	35,785	58,441	2,483	5,660	97,947
Connecticut.....	47	9,385	37	135	418	92	8,703	Se 9,248	Ja 8,370	9,296	4,283	4,614	145	254	8,554
Delaware.....	3	229	.....	6	4	1	218	Mh 246	Oc 188	193	18	154	6	15	205
Maryland.....	4	681	2	8	8	8	655	Ap 717	No 555	663	196	280	58	129	915
Massachusetts.....	19	4,308	24	51	77	47	4,109	De 4,370	Ja 3,745	4,370	1,293	2,607	101	369	5,305
New Jersey.....	348	32,365	306	518	1,032	224	30,285	Mh 30,951	Jy 29,726	31,342	13,628	10,585	398	731	22,376
New York.....	170	14,136	140	274	587	232	12,903	Mh 13,616	Jy 11,726	13,231	4,641	8,255	78	257	11,110
Pennsylvania.....	226	38,178	143	498	817	261	36,469	Ap 37,031	Ja 35,775	37,290	9,772	22,378	1,578	3,552	41,962
Rhode Island.....	13	1,750	6	31	10	18	1,685	No 1,908	Ja 1,452	1,893	825	1,007	13	48	2,318
Virginia.....	7	857	.....	13	21	4	819	De 869	Fe 798	862	335	410	44	78	1,888
All other states ¹	15	3,349	6	38	86	28	3,191	.....	.....	3,229	794	2,151	62	223	3,334

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States ..	\$152,158,002	\$177,175,719	\$3,815,770	\$3,711,509	\$38,570,085	\$1,687,981	\$106,078,935	\$1,118,478	\$451,903	\$12,008,744	\$9,732,314	\$196,911,667	\$89,144,751
Connecticut.....	19,730,268	18,022,348	404,230	591,920	3,749,186	214,763	11,619,582	47,287	84,964	369,832	940,584	21,062,687	9,228,342
Delaware.....	175,692	242,568	4,836	2,050	64,223	3,848	147,673	1,550	296	15,229	2,863	255,434	103,913
Maryland.....	487,503	459,727	22,815	9,396	159,943	11,210	235,419	.....	818	7,143	22,983	511,968	275,339
Massachusetts.....	7,800,736	8,337,761	106,004	94,705	1,840,247	82,862	5,346,989	17,330	42,362	504,326	302,936	8,942,246	3,512,395
New Jersey.....	43,615,438	59,576,339	1,201,586	1,115,270	13,917,360	537,514	32,727,663	532,230	145,655	5,503,935	3,895,126	65,429,550	32,164,373
New York.....	20,972,116	23,853,493	709,385	783,908	5,385,355	249,977	13,698,612	325,414	48,145	1,269,206	1,383,491	26,518,821	12,570,232
Pennsylvania.....	49,679,061	55,614,244	1,173,305	958,637	11,442,878	495,850	34,669,721	178,854	94,043	3,851,881	2,749,075	62,061,302	26,895,731
Rhode Island.....	3,495,555	4,210,400	57,010	23,013	788,229	36,091	3,151,594	5,793	13,188	38,524	90,958	4,584,431	1,396,746
Virginia.....	1,226,412	1,491,203	23,307	13,742	260,598	10,164	1,000,729	900	3,541	78,024	100,198	1,543,723	532,830
All other states ¹	4,975,221	5,367,636	113,292	118,863	962,066	45,702	3,490,953	9,120	18,891	370,644	238,100	6,001,505	2,464,850

¹ All other states embrace: California, 3 establishments; Georgia, 1; Illinois, 2; Maine, 1; Michigan, 2; New Hampshire, 1; North Carolina, 4; Ohio, 1.

CORDAGE AND TWINE
AND JUTE AND LINEN GOODS

THE MANUFACTURE OF CORDAGE AND TWINE AND JUTE AND LINEN GOODS.

GENERAL STATISTICS.

Scope of the industry.—This industry includes four classes of establishments, distinguished with respect to their primary products, as follows: (1) Those producing rope, binder twine, and cordage; (2) those producing gunny bagging and other goods in which jute is the principal material; (3) those producing crash, towels and toweling, linen thread, and other goods made chiefly from flax; and (4) those producing nets and seines. Separate statistics for these four classes of establishments are presented in a few of the tables, but in most cases figures are given only for the industry as a whole.

Summary for the four branches of the industry.—Table 1 presents a summary of the statistics of the industry as a whole and of each of the four branches for 1909.

The total value of products and the total cost of materials for the combined industry and for some of its branches involve a large amount of duplication by reason of the use of the products of one establishment as materials for other establishments in the industry or branch. Practically all of the material used in the manufacture of nets and seines, for example, is the product of the cordage and twine factories, and some of the establishments that make cordage and twine use as material yarn produced by other establishments engaged in the same industry. Similar duplications exist in the statistics for the jute goods and linen goods branches of the industry. This duplication must be taken into account in using the figures for statistical purposes. In the value added by manufacture, however, practically all duplication is eliminated, so that this item affords a fair basis for a comparison of the different branches of the industry.

The cordage and twine branch of the industry reported 68.3 per cent of the total number of establishments, 56.7 per cent of the average number of wage earners, and 68.7 per cent of the total value of products; the jute goods branch reported 14.6 per cent of the total number of establishments, 25.8 per cent of the total number of wage earners, and 17.7 per cent of the total value of products; the 15 establishments engaged in making linen goods employed 13.8 per cent of the wage earners and reported 10.5 per cent of the total value of products; and the 13 establishments making nets and seines employed 3.7 per cent of the

wage earners and contributed 3.1 per cent of the total value of products.

	Total for the industry.	Establishments engaged primarily in manufacturing—			
		Cordage and twine.	Jute goods.	Linen goods.	Nets and seines.
Number of establishments.	164	112	24	15	13
Persons engaged in the industry.	27,214	15,559	6,901	3,733	1,021
Proprietors and firm members.	80	61	10	1	8
Salaried employees.	1,314	869	227	159	59
Wage earners (average number).	25,820	14,629	6,664	3,573	954
Primary horsepower.	78,549	47,269	20,993	8,829	1,458
Capital.	\$70,020,366	\$52,304,938	\$13,789,951	\$7,457,426	\$2,468,051
Expenses.	50,076,532	38,057,147	10,302,272	5,831,908	1,885,205
Services.	10,995,545	6,605,512	2,701,172	1,422,959	306,762
Salaries.	1,862,546	1,201,122	375,531	208,888	77,005
Wages.	9,132,999	5,304,390	2,325,641	1,213,211	289,757
Materials.	40,914,810	29,815,402	6,254,918	3,966,572	1,377,918
Miscellaneous.	4,166,177	2,230,233	1,346,182	443,237	146,525
Value of products.	61,019,986	41,941,541	10,795,230	6,386,218	1,897,997
Value added by manufacture (value of products less cost of materials).	20,105,176	12,626,129	4,540,312	2,418,646	520,079

The total cost of the materials used by the establishments in the industry as a whole in 1909 was \$40,914,810, which is equal to a little more than two-thirds (67.1 per cent) of the total value of products, while the value added by manufacture (that is, the value of products less the cost of materials) was \$20,105,176.

Comparative summary for the industry as a whole.—The manufacture of rope and twine was among the earliest industries established in the United States, and statistics for it have appeared in the reports of practically all the censuses of manufactures. The statistics for the censuses prior to 1879, however, are not strictly comparable with those for the more recent years. Table 2 summarizes the statistics for the combined industry for each census from 1879 to 1909, inclusive.

Most of the important items for which comparative figures are given show an increase for each decade covered by the table, the value of products and the cost of materials reported for 1909 being about four times as great as in 1879. Between 1899 and 1909 the average number of wage earners increased 19.3 per cent and the value of products 24.3 per cent. The decrease of 5.6 per cent in the value of products between 1904 and 1909 was due largely to a falling off in the production of binder twine in 1909.

MANUFACTURES.

Table 2

CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.

	Number or amount.					Per cent of increase. ¹				
	1909	1904	1899	1880	1879	1899-1909	1904-1909	1899-1904	1889-1899	1870-1889
	Number of establishments.....	164	145	160	184	188	2.5	13.1	-0.4	-13.0	-2.1
Persons engaged in the industry.....	27,214	26,442	22,450	(?)	(?)	21.2	2.9	17.8		
Proprietors and firm members.....	80	60	117	(?)	(?)	-31.6	33.3	-48.7		
Salaried employees.....	1,314	1,050	982	(?)	(?)	92.7	25.1	54.0		
Wage earners (average number).....	25,820	25,332	21,051	16,137	7,584	10.3	1.0	17.0	31.2	(?)
Primary horsepower.....	78,549	66,244	47,999	27,911	(?)	63.6	18.0	38.0	72.0	
Capital.....	\$76,020,366	\$56,466,936	\$43,152,544	\$28,867,413	\$8,602,025	76.2	34.6	30.9	49.5	235.5
Expenses.....	56,079,532	60,271,610	43,398,120	33,068,374	(?)	20.2	-7.0	38.9	27.8	
Services.....	10,995,545	10,421,016	7,574,022	5,699,544	2,138,813	45.2	5.5	37.6	32.0	166.5
Salaries.....	1,862,546	1,506,680	1,020,735	(?)	(?)	82.5	16.7	56.4		
Wages.....	9,132,999	8,914,336	6,553,287	(?)	(?)	30.4	3.5	34.6		
Materials.....	40,914,810	46,031,002	33,093,793	26,782,978	11,089,445	23.7	-11.1	39.2	23.4	141.5
Miscellaneous.....	4,166,177	3,819,532	2,759,714	1,485,852	(?)	51.0	0.1	38.4	85.7	
Value of products.....	61,019,988	64,664,241	49,077,020	38,315,217	15,283,369	24.3	-5.6	31.8	28.1	150.7
Value added by manufacture (value of products less cost of materials).....	20,105,476	18,633,170	16,013,836	11,532,230	4,193,924	25.5	7.9	16.4	38.0	175.0

¹ A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.² Comparable figures not available.³ Figures not strictly comparable.

Summary, by states.—Table 3 summarizes the more important statistics of the industry as a whole, by states, for 1909, 1904, and 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.					Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).	Expressed in thousands.							
United States.....	1909	164	27,214	80	1,314	25,820	78,549	\$76,020	\$1,863	\$9,133	\$40,915	\$61,020	\$20,105	
	1904	145	26,442	60	1,050	25,332	66,244	56,467	1,597	8,824	40,031	64,664	18,633	
	1899	160	22,450	117	682	21,051	47,999	43,153	1,021	6,554	33,064	49,078	16,014	
Alabama.....	1909	5	452			25	427	749	27	117	470	696	217	
	1904	4	305			12	293	396	13	64	381	490	118	
	1899	4	202			10	282	298	11	48	193	254	88	
Connecticut.....	1909	8	314	7	21	286	1,134	481	10	85	431	501	130	
	1904	15	210	3	5	202	910	280	5	56	258	301	103	
	1899	27	255	0	4	245		277	3	63	170	285	106	
Illinois.....	1909	7	1,884			85	1,790	13,014	92	660	5,042	8,237	2,295	
	1904	3	106	1	16	80	12	363	10	31	140	238	98	
	1899	23	98	1	10	87		149	10	25	125	186	61	
Kentucky.....	1909	6	778	1	26	751	1,801	1,565	33	225	709	1,080	371	
	1904	13	475		23	452	1,448	943	27	115	307	508	291	
	1899	24	404	2	18	384		404	22	116	260	470	210	
Massachusetts.....	1909	31	7,003	22	201	6,690	24,864	17,510	498	2,560	11,198	16,632	5,434	
	1904	27	5,061	13	156	4,802	11,140	12,698	264	1,667	11,623	15,523	3,909	
	1899	33	5,292	20	152	5,120		11,008	234	1,700	8,028	12,250	4,222	
New Jersey.....	1909	12	3,174	1	148	3,025	6,442	6,598	192	954	3,890	5,527	1,631	
	1904	6	2,602		67	2,535	4,310	4,070	100	858	2,060	3,371	1,311	
	1899	0			57	2,127		3,413	81	625	1,700	2,050	1,199	
New York.....	1909	16	6,230	9	260	5,952	15,056	15,777	375	2,164	7,589	12,215	4,626	
	1904	20	7,025	8	275	6,742	16,060	14,416	412	2,417	10,908	15,866	5,258	
	1899	22			148	5,450		10,312	306	1,714	7,516	11,675	4,159	
North Carolina.....	1909	7	542	2	40	491	1,755	1,260	50	104	550	824	265	
	1904	0	565	2	20	543	1,007	886	21	101	815	1,036	221	
	1899													
Ohio.....	1909	8	848	3	54	791	3,225	2,743	81	313	1,984	2,728	744	
	1904	18	1,140		70	1,070	3,285	2,396	104	301	2,518	3,250	732	
	1899	10	1,101	2	47	1,052		2,148	54	318	2,326	2,958	632	
Pennsylvania.....	1909	18	2,228	12	97	2,110	4,630	5,161	185	685	3,001	4,805	1,604	
	1904	20	2,328	16	80	2,232	4,344	4,798	150	666	3,648	5,138	1,490	
	1899	21	2,798	25	90	2,683		6,163	104	762	5,448	7,257	1,609	
Rhode Island.....	1909	0	156	8	9	139	477	190	8	48	170	257	81	
	1904	4	100	4	4	98	275	122	4	29	121	178	57	
	1899	5	95	7	4	84		96	3	20	64	109	45	
Wisconsin.....	1909	3	123	2	4	117	270	206	5	33	91	150	59	
	1904	3	33	2		31	35	41		9	50	82	23	
	1899	7			14	210		219	10	40	112	197	85	
All other states.....	1909	37	3,482	13	236	3,233	10,736	10,826	298	1,184	4,860	7,308	2,448	
	1904	36	0,480	11	322	6,153	22,793	15,142	472	2,450	13,493	18,524	5,031	
	1899	39			128	3,927		8,066	174	1,112	7,071	10,472	3,401	

¹ Excluding statistics for one establishment, to avoid disclosure of individual operations.² Excluding statistics for two establishments, to avoid disclosure of individual operations.³ Excluding statistics for three establishments, to avoid disclosure of individual operations.⁴ Figures can not be shown without disclosing individual operations.

Massachusetts was the most important state in the industry in 1909, ranking first in average number of wage earners, value of products, and value added by manufacture. The number of wage earners employed in the industry in that state increased 30.7 per cent during the decade 1899-1909, and the value of products 35.8 per cent. New York ranked second in 1909, the value of products reported for his state decreasing 23 per cent during the five-year period 1904-1909, although for the decade 1899-1909 this item shows an increase of 4.6 per cent. Other notable increases in value of products from 1899 to 1909 among the less important states in the industry were increases of 174 per cent in Alabama and 135.8 per cent in Rhode Island. A decided decrease, on the other hand, took place in Pennsylvania and in Ohio.

Persons engaged in the industry.—Table 4 shows for 1909 the number of persons engaged in the industry as a whole and in each of the four branches, classified according to occupational status and sex, and in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the introduction.

The average number of persons engaged in the industry as a whole during 1909 was 27,214, of whom 25,820, or 94.9 per cent, were wage earners, 474, or 1.7 per cent, proprietors and officials, and 920, or 3.4 per cent, clerks, this class including other subordinate salaried employees. Of the total number of wage earners, 51.8 per cent were males, and 48.2 per cent females. Male wage earners predominated only in the cordage and twine branch of the industry, in which they constituted 59.4 per cent of the total number of wage earners. In establishments making jute goods males represented 44.9 per cent of the total number, in those manufacturing linen goods 42.2 per cent, and in those making nets and seines 18.8 per cent.

The 1,763 wage earners under 16 years of age, 50.5 per cent of whom were males and 49.5 per cent females, formed 6.8 per cent of the total number of wage earners. The proportion of children varied decidedly in the different branches of the industry, this class of wage earners constituting 5.7 per cent of the total number in the cordage and twine factories, 5.7 per cent in the jute goods establishments, 10.6 per cent in establishments making linen goods, and 17.3 per cent in those making nets and seines.

The average number of wage earners employed in each state in 1909, 1904, and 1899 is given in Table 3. The average number distributed by sex and age is not shown for the individual states, but Table 19 gives such a distribution of the number employed on December 15, or the nearest representative day, for 1909. Of the total number of male wage earners over 16 years of age employed in the industry as a whole, Mas-

sachusetts reported 26.9 per cent, New York 21.4 per cent, and New Jersey 10.9 per cent, while of the female wage earners 16 years of age or over the proportions in these states were 23.7 per cent, 26.2 per cent, and 11.7 per cent, respectively.

BRANCH OF INDUSTRY AND CLASS OF PERSONS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
Cordage and twine and jute and linen goods.....	27,214	14,520	12,688
Proprietors and officials.....	474	461	13
Proprietors and firm members.....	80	72	8
Salaried officers of corporations.....	150	140	4
Superintendents and managers.....	244	243	1
Clerks.....	920	698	222
Wage earners (average number).....	25,820	13,367	12,453
16 years of age and over.....	24,057	12,477	11,580
Under 16 years of age.....	1,763	890	873
Cordage and twine.....	15,550	9,458	6,101
Proprietors and officials.....	331	320	11
Proprietors and firm members.....	61	53	8
Salaried officers of corporations.....	108	105	3
Superintendents and managers.....	162	162	.....
Clerks.....	599	440	159
Wage earners (average number).....	14,029	8,089	5,940
16 years of age and over.....	13,793	8,197	5,596
Under 16 years of age.....	836	492	344
Jute goods.....	6,901	3,160	3,711
Proprietors and officials.....	64	63	1
Proprietors and firm members.....	10	10	.....
Salaried officers of corporations.....	22	21	1
Superintendents and managers.....	32	32	.....
Clerks.....	173	137	36
Wage earners (average number).....	6,664	2,990	3,674
16 years of age and over.....	6,281	2,760	3,512
Under 16 years of age.....	383	221	162
Linen goods.....	3,733	1,646	2,087
Proprietors and officials.....	47	47	.....
Proprietors and firm members.....	1	1	.....
Salaried officers of corporations.....	15	15	.....
Superintendents and managers.....	31	31	.....
Clerks.....	113	90	23
Wage earners (average number).....	3,573	1,599	2,004
16 years of age and over.....	3,194	1,350	1,844
Under 16 years of age.....	379	159	220
Nets and seines.....	1,021	232	789
Proprietors and officials.....	32	31	1
Proprietors and firm members.....	8	8	.....
Salaried officers of corporations.....	5	5	.....
Superintendents and managers.....	19	18	1
Clerks.....	35	22	13
Wage earners (average number).....	954	179	775
16 years of age and over.....	789	161	628
Under 16 years of age.....	165	18	147

In order to compare the distribution of the persons engaged in the industry in 1909 according to occupational status with that in 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison for the industry as a whole is made in Table 5.

Table 5

PERSONS ENGAGED IN THE CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.

CLASS.	1909		1904		Per cent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
	Total	27,214	100.0	26,442		100.0	2.9
Proprietors and firm members.....	80	0.3	60	0.2	33.3
Salaried employees.....	1,314	4.8	1,050	4.0	25.1
Wage earners (average number).....	25,820	94.9	25,332	95.8	1.9

The average number of wage earners increased only 1.9 per cent from 1904 to 1909, while the proportion which they formed of the total number of persons engaged in the industry decreased slightly. The number of salaried employees increased 25.1 per cent during the five-year period, and the proportion which such employees formed of the total also increased.

Table 6 shows the average number of wage earners in the industry as a whole distributed according to age, and in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899.

A noteworthy fact brought out in this table is the decrease in the number of children employed as wage earners and in their proportion of the total. The

number of males over 16 years of age increased 23.8 per cent during the decade and the number of females 24.6 per cent, almost the entire increase among the men taking place in the first half of the decade.

Table 6

AVERAGE NUMBER OF WAGE EARNERS IN THE CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.

CLASS.	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
	Total	25,820	100.0	25,332	100.0	21,651	100.0
16 years of age and over..	24,057	93.2	23,215	91.6	19,373	89.5
Male.....	12,477	48.3	12,427	49.0	10,079	46.6
Female.....	11,580	44.9	10,788	42.6	9,294	42.9
Under 16 years of age....	1,763	6.8	2,117	8.4	2,278	10.5

Wage earners employed, by months.—Table 7 gives for the industry as a whole the number of wage earners employed on the 15th (or the nearest representative day) of each month during the year 1909 in the eight states in which an average of 500 or more wage earners were employed in the industry during the year and for which the statistics can be given separately without disclosing individual operations.

Table 7

WAGE EARNERS EMPLOYED IN THE CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY: 1909¹

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		United States	25,820	26,337	26,694	26,008	26,440	26,084	25,088	25,712	25,220	25,703	25,530	24,313	25,522
Illinois.....	1,799	1,782	1,780	1,754	1,737	1,755	1,779	1,782	1,610	1,783	1,777	1,905	2,147
Kentucky.....	751	742	752	750	761	740	730	691	718	821	814	814	808
Massachusetts.....	6,660	7,077	7,060	7,109	7,132	7,070	6,991	6,948	6,851	6,839	6,307	5,788	5,678
Missouri.....	820	835	852	828	804	832	801	800	791	836	806	801	858
New Jersey.....	3,025	3,075	3,085	3,081	3,052	2,975	2,985	2,963	2,988	2,983	2,907	3,027	3,096
New York.....	5,952	5,856	5,973	6,089	6,005	6,014	5,716	5,851	5,983	5,985	5,993	5,973	6,040
Ohio.....	791	900	922	930	932	892	745	738	748	678	735	715	807
Pennsylvania.....	2,119	2,095	2,123	2,116	2,053	2,000	2,053	2,104	2,140	2,170	2,176	2,106	2,193

¹ The month of maximum employment for each state is indicated by boldface figures and that of minimum employment by italic figures.

This table shows that the industry as a whole is not subject to any considerable seasonal variation. The largest number of wage earners reported for any month of 1909 was 26,698, in March, and the smallest number, 24,313, in November, the minimum number being equal to 91.1 per cent of the maximum. In 1904 conditions were practically the same, the maximum number, 26,117, being reported for April, and the minimum number, 24,275, equal to 92.9 per cent of the maximum, for September. In some of the individual states, however, considerable variation is shown, the minimum number of wage earners employed in any month of 1909 being equal to only 72.7 per cent of the maximum in Massachusetts and 75.4 per cent in Illinois. In New York the minimum number was equal to 94.2 per cent of the maximum, and in New Jersey, to 95.7 per cent.

The months of maximum and minimum employment in 1909, and the number of wage earners reported

for these months, are given for a larger number of states in Table 19.

Prevailing hours of labor.—In Table 8 the wage earners in the industry as a whole have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

Nearly two-thirds (63 per cent) of the wage earners employed in the industry as a whole in 1909 were in establishments where the prevailing hours per week were more than 54 but less than 60, this being the most common working time in seven of the eight states shown in the table, while practically all (96.1 per cent) were employed in establishments where the

prevailing hours were from 54 to 60 per week, inclusive. Only 2.6 per cent worked in establishments where the prevailing hours of employment were more than 60 per week, and only 1.3 per cent in establishments where the prevailing hours were less than 54 per week.

the value of their products represented 96.4 per cent of the total value of products for the industry in 1909 and 97 per cent in 1904.

Table 8

STATE.	AVERAGE NUMBER OF WAGE EARNERS IN THE CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY: 1909						
	In establishments with prevailing hours—						
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.
United States.....	25,820	138	208	2,505	10,270	6,023	607
Illinois.....	1,709		65		1,570	104	
Kentucky.....	751	5			5,208	746	
Massachusetts.....	6,690	52	1	1,347	5,208	5	17
Missouri.....	820			52	768		
New Jersey.....	3,025	1		301	2,471	52	
New York.....	5,952			3	3,260	2,680	
Ohio.....	791				637	154	
Pennsylvania.....	2,119	49	111		1,110	849	

Character of ownership.—Table 9 presents statistics with respect to the character of ownership of the establishments in the industry.

Establishments under corporate ownership formed 69.5 per cent of the total number of establishments in 1909, as compared with 70.3 per cent in 1904, while

Table 9

CHARACTER OF OWNERSHIP.	CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	164	145	61,019,986	64,664,241
Individual.....	33	33	1,011,355	1,136,674
Firm.....	17	10	1,171,345	819,956
Corporation.....	214	102	258,837,286	62,707,611
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	20.1	22.8	1.7	1.8
Firm.....	10.4	6.9	1.9	1.3
Corporation.....	69.5	70.3	96.4	97.0

¹ Includes one establishment under another form of ownership, to avoid disclosure of individual operations.
² Includes one establishment under cooperative ownership, to avoid disclosure of individual operations.

Table 10 gives statistics for establishments classified according to form of ownership for each state in which an average of more than 500 wage earners were employed in 1909, and for which separate figures can be shown without disclosing individual operations. The one establishment under cooperative ownership has in this table been included with those under corporate ownership.

Table 10

STATE.	CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY: 1909											
	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	33	17	114	515	596	24,709	\$1,011,355	\$1,171,345	\$58,837,286	\$310,544	\$468,288	\$19,326,344
Illinois.....			7			1,709			8,237,165			2,295,534
Kentucky.....			5	(X)		751	(X)		1,079,370	(X)		370,478
Massachusetts.....		5	19	60	201	6,420	171,684	273,280	16,189,679	50,606	136,507	5,246,824
New Jersey.....			11	(X)		3,025	(X)		5,525,721	(X)		1,631,021
New York.....		2	11	149	(X)	5,803	300,307	(X)	11,914,093	115,690	(X)	4,510,354
Ohio.....		1	0	(X)	(X)	791	(X)	(X)	2,727,854	(X)	(X)	748,825
Pennsylvania.....		1	8	205	(X)	1,914	350,160	(X)	4,454,600	126,329	(X)	1,677,030

NOTE.—In some states, in order to avoid disclosing individual operations, the figures for one group have been consolidated with those for establishments under some other form of ownership. In such cases an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics. One establishment under cooperative ownership is included with those under corporate ownership.

Establishments under corporate ownership outnumbered both of the other classes combined in all of the states shown in the table except Pennsylvania, and in this state, although such establishments formed only 44.4 per cent of the total number, they gave employment to 90.3 per cent of the wage earners and contributed 92.7 per cent of the total value of products for the industry.

Size of establishments.—Table 11 presents statistics for 1909 and 1904 for the establishments in the industry as a whole grouped according to the value of their products.

Establishments with products valued at \$1,000,000 or over constituted the most important class, as measured by value of products, in both 1909 and 1904, reporting 54.3 per cent of the total for the industry in 1909 and 60.2 per cent in 1904. The number of such establishments decreased from 15 to 12 during the 5-year period, while the aggregate value of their products decreased \$5,806,472, or 15 per cent. The other groups shown in the table, except that comprising the very smallest establishments, show an increase both in number of establishments and in value of products.

Table 11

VALUE OF PRODUCTS PER ESTABLISHMENT.	CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.			
	Number of establishments.		Value of products.	
	1900	1904	1900	1904
Total.....	164	145	\$61,019,086	\$64,664,241
Less than \$5,000.....	12	14	32,089	36,207
\$5,000 and less than \$20,000.....	20	13	218,217	119,674
\$20,000 and less than \$100,000.....	48	130	2,738,115	12,053,652
\$100,000 and less than \$1,000,000.....	72	64	24,887,181	23,503,852
\$1,000,000 and over.....	12	15	33,144,384	38,950,856
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	7.3	9.7	0.1	0.1
\$5,000 and less than \$20,000.....	12.2	9.0	0.4	0.2
\$20,000 and less than \$100,000.....	29.3	126.9	4.5	13.2
\$100,000 and less than \$1,000,000.....	43.9	44.1	40.8	36.3
\$1,000,000 and over.....	7.3	10.3	54.3	60.2

¹ Includes one establishment with products valued at \$5,000 and less than \$20,000.

Table 12 shows for the industry as a whole, and for each of its four branches, the average number of wage earners, value of products, and value added by manufacture per establishment for 1909 and 1899.

During the decade 1899-1909 the average value of products per establishment for the industry as a whole increased from \$306,735 to \$372,073, the average value added by manufacture from \$100,086 to \$122,593, and

the average number of wage earners per establishment from 135 to 157. Of the four branches of the industry, the establishments engaged in manufacturing jute goods showed the largest averages for 1909, while those manufacturing linen goods showed the largest gains in these averages from 1899 to 1909.

Table 12

BRANCH OF INDUSTRY.	AVERAGE PER ESTABLISHMENT.		
	Number of wage earners.	Value of products.	Value added by manufacture.
The industry as a whole:			
1909.....	157.4	\$372,073	\$122,593
1899.....	135.3	306,735	100,086
Cordage and twine:			
1909.....	130.6	374,478	112,733
1899.....	124.9	360,473	106,835
Jute goods:			
1909.....	277.7	449,801	189,180
1899.....	250.3	299,100	131,580
Linen goods:			
1909.....	238.2	425,681	161,243
1899.....	182.4	242,676	100,930
Nets and seines:			
1909.....	73.4	146,000	40,006
1899.....	39.4	77,685	32,111

Table 13 classifies the establishments in each of the nine leading states according to the number of wage earners employed.

Table 13

STATE.	CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.																			
	Total.		Establishments employing in 1900—																	
			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.		
Es-tab-lish-ments.	Wago earners (average number).	Es-tab-lish-ments.	Es-tab-lish-ments.	Wago earners.	Es-tab-lish-ments.	Wago earners.	Es-tab-lish-ments.	Wago earners.	Es-tab-lish-ments.	Wago earners.	Es-tab-lish-ments.	Wago earners.	Es-tab-lish-ments.	Wago earners.	Es-tab-lish-ments.	Wago earners.	Es-tab-lish-ments.	Wago earners.		
United States..	164	25,820	2	20	53	31	371	26	946	26	1,863	34	5,066	12	4,407	8	5,071	5	8,043	
Illinois.....	7	1,799	.....	.....	.....	2	17	.....	.....	1	56	2	296	.....	.....	2	1,430	.....	.....
Kentucky.....	6	751	.....	1	5	.....	.....	1	23	.....	89	2	229	.....	1	405	.....	.....	.....
Massachusetts.....	31	6,690	1	7	21	5	68	3	115	1	82	10	1,727	1	417	1	635	2	3,625
Missouri.....	4	820	.....	.....	.....	.....	.....	.....	.....	.....	52	1	100	2	578	.....	.....	.....	.....
New Jersey.....	12	3,025	.....	1	1	1	12	1	40	2	142	2	226	3	1,065	1	510	1	1,029
New York.....	10	5,952	.....	3	6	.....	.....	2	66	1	80	5	744	2	840	1	827	2	3,389
Ohio.....	8	791	.....	.....	.....	1	7	.....	.....	2	104	5	680	.....	.....	.....	.....	.....	.....
Pennsylvania.....	18	2,110	.....	3	10	6	78	1	26	3	203	2	220	1	473	2	1,100	.....	.....

Of the 164 establishments reported in 1909, 1.2 per cent employed no wage earners, 31.1 per cent employed from 1 to 20 wage earners, 31.7 per cent from 21 to 100, 28 per cent from 101 to 500, and 7.9 per cent over 500. Of the wage earners, 1.6 per cent were in establishments reporting from 1 to 20 wage earners each, 10.9 per cent in those employing from 21 to 100, 36.7 per cent in those employing from 101 to 500, and 50.8 per cent in the thirteen establishments employing more than 500.

Expenses.—As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no

account of interest or depreciation; 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 expenses which were reported. Table 1 shows the total expenses in 1909 to have been \$56,076,532, distributed as follows: Cost of materials, \$40,914,810, or 73 per cent; wages, \$9,132,999, or 16.3 per cent; salaries, \$1,862,546, or 3.3 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$4,166,177, or 7.4 per cent.

The following table gives, for the four branches of the industry, the percentages of the total reported expenses represented by the several classes in 1909:

BRANCH OF INDUSTRY.	PER CENT OF TOTAL REPORTED EXPENSES.			
	Cost of materials.	Salaries.	Wages.	Miscellaneous expenses.
The industry as a whole.....	73.0	3.3	16.3	7.4
Cordage and twine.....	77.0	3.2	13.9	5.9
Jute goods.....	60.7	3.6	22.6	13.1
Linen goods.....	68.0	3.6	20.8	7.0
Nets and seines.....	73.1	4.1	15.4	7.5

The cost of materials represented a smaller proportion of the total expenses and wages a larger proportion in the jute goods and the linen goods branches of the industry than in the other two branches. This condition is largely due to the more complicated manufacturing operations carried on in these two branches.

Engines and power.—Comparable figures as to the amount of power used in the industry as a whole are not available for the census of 1879, but Table 2 shows that the power employed in the industry increased from 27,911 horsepower in 1889 to 78,549 horsepower in 1909. Table 15 shows the statistics of power as reported for the industry as a whole at the censuses of 1909, 1904, and 1889.

The total primary power used in the industry increased from 47,999 horsepower in 1899 to 78,549 horsepower in 1909, or 63.6 per cent. In 1899 steam power constituted slightly more than four-fifths of the total primary power, but in spite of a considerable increase between 1899 and 1909, formed only about three-fourths of the total in 1909. Water power, on the other hand, formed 20.1 per cent of the total

primary power in 1909, as compared with 17.2 per cent in 1899, and rented electric power formed 3.4 per cent of the total in 1909, as against seven-tenths of 1 per cent in 1899.

The horsepower of motors used for distributing power by means of current generated in the establishments in the industry increased from 1,596 in 1899 to 13,294, or nearly nine times as much, in 1909.

POWER.	CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	478	321	248	78,549	66,244	47,999	100.0	100.0	100.0
Owned.....	301	301	248	75,908	65,234	47,073	96.6	98.5	99.3
Steam.....	107	208	159	58,855	52,532	38,473	74.9	79.3	80.2
Gas.....	14	7	11	1,285	103	951	1.6	0.2	2.0
Water wheels....	89	85	78	15,761	12,589	8,249	20.1	19.0	17.2
Water motors....	1	1	(1)	7	10	(2)	(2)	(2)	.....
Other.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rented.....	172	20	(1)	2,641	1,010	326	3.4	1.5	0.7
Electric.....	172	20	(1)	2,522	750	28	3.2	1.1	0.1
Other.....	.....	.....	.....	119	251	298	0.2	0.4	0.6
Electric motors.....	570	211	44	15,816	8,293	1,624	100.0	100.0	100.0
Run by current generated by establishment.....	308	101	44	13,294	7,534	1,596	84.1	90.8	98.3
Run by rented power.....	172	20	(1)	2,522	750	28	15.9	0.2	1.7

¹ Not reported.

² Less than one-tenth of 1 per cent.

Table 16 shows, for 1909, the amount of the several kinds of power and of the different kinds of fuel used in the industry as a whole in each of the eight leading states.

STATE.	CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY: 1909																
	Primary horsepower.							Electric horsepower.		Fuel used.							
	Number of establishments reporting.	Total horsepower.	Owned by establishments reporting.				Rented.		Total, rented and generated in the establishment.	Generated in the establishment reporting.	Coal.						
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.			Other.	Anthracite (long tons).	Bituminous (short tons).	Coal (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
United States.....	156	78,549	75,908	58,855	1,285	15,768	.....	2,522	119	15,816	13,294	69,397	181,492	.....	392	22,113	31,273
Illinois.....	7	6,450	6,310	6,300	10	.....	.....	140	.....	261	112	.....	36,293	.....	.....	30	.....
Kentucky.....	5	1,801	1,650	1,400	.....	250	.....	151	.....	161	10	.....	13,375	.....	.....	.....	.....
Massachusetts.....	29	24,804	24,769	12,180	1,204	11,385	.....	36	59	5,793	5,757	2,033	40,425	.....	59	2,031	812
Missouri.....	4	1,683	1,683	1,683	.....	.....	.....	.....	.....	.....	.....	.....	9,498	.....	.....	.....	.....
New Jersey.....	11	6,442	6,440	6,380	.....	60	.....	2	.....	2,213	2,211	27,095	1,223	.....	.....	.....	.....
New York.....	14	15,056	14,704	14,386	8	370	.....	202	.....	3,629	3,337	20,748	32,532	.....	.....	.....	377
Ohio.....	8	3,225	3,225	3,205	20	.....	.....	.....	.....	75	75	.....	13,390	.....	.....	.....	200
Pennsylvania.....	17	4,630	4,593	4,462	11	120	.....	37	.....	240	103	12,773	7,534	.....	2	120	381
All other states.....	61	14,389	12,474	8,859	32	3,583	.....	1,855	69	3,454	1,590	148	27,192	.....	331	19,932	29,503

In 1909, Massachusetts, New York, Illinois, and New Jersey, together reported 52,821 horsepower, or 67.2 per cent of the aggregate for the industry. Steam was the most important form of power in all of the states shown separately in the table. The largest amount of steam power, 14,386 horsepower, is shown for New York, and the largest

amount of water power, 11,385 horsepower, for Massachusetts.

Fuel consumed.—Bituminous coal was the principal kind of fuel used in 1909, the largest amount being reported by establishments in Massachusetts. The largest amount of anthracite coal was reported by establishments in New Jersey.

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

Materials.—Table 17 shows the quantity and cost of the materials used in the industry as a whole in 1909 and 1899, and the percentages of increase for each item. The fibers reported for the census years 1909 and 1899 as used in the manufacture of cordage and twine and jute and linen goods are assembled in three groups, hard fibers, soft fibers, and cotton. The hard fibers are those that form a structural part of the leaf of the plants from which they are derived and include manila hemp, sisal, New Zealand hemp, and istle or tampico fiber. The soft fibers include those found within the stem of the plant from which they are derived, such as true hemp, flax, and jute. In addition to the long, clean fibers of flax, hemp, and jute, there are used short and otherwise imperfect fibers of the same plants. In the case of flax and hemp these are called "tow," and in the case of jute they are known as "butts" or "rejections."

MATERIAL.	MATERIALS USED IN THE MANUFACTURE OF CORDAGE AND TWINE AND JUTE AND LINEN GOODS.		
	1909	1899	Per cent of increase: 1899-1909
Total	\$40,914,810	\$33,063,793	23.7
Hard fibers:			
Sisal and manila hemp—			
Pounds.....	335,460,574	260,594,673	24.4
Cost.....	\$19,314,306	\$17,743,624	8.9
Other kinds—			
Pounds.....	17,222,098	6,344,371	171.5
Cost.....	\$707,802	\$352,528	100.8
Soft fibers:			
Jute—			
Pounds.....	121,092,427	87,443,201	39.5
Cost.....	\$4,134,265	\$2,431,429	70.0
Jute butts—			
Pounds.....	138,304,122	118,806,925	16.5
Cost.....	\$2,033,176	\$1,795,653	13.2
Flax and flax tow—			
Pounds.....	26,954,785	16,980,046	58.7
Cost.....	\$3,174,609	\$2,080,862	52.6
Hemp and hemp tow—			
Pounds.....	19,724,070	25,588,715	-22.9
Cost.....	\$1,496,125	\$1,404,653	6.5
Cotton:			
Pounds.....	27,624,490	13,022,755	112.1
Cost.....	\$2,922,933	\$849,426	244.1
Yarns, purchased:			
Cotton—			
Pounds.....	7,077,050	4,073,080	42.3
Cost.....	\$1,291,599	\$709,880	81.9
Flax, hemp, jute, and ramie—			
Pounds.....	2,676,367	1,890,792	41.5
Cost.....	\$445,378	\$304,161	46.4
All other materials.....	\$5,304,617	\$5,301,568	0.1

¹ A minus sign (—) denotes decrease.

The total cost of the materials used in the industry increased from \$33,063,793 in 1899 to \$40,914,810 in 1909, or 23.7 per cent. Of the total for 1909, the cost of hard fibers represented 48.9 per cent; that of soft fibers, 26.5 per cent, that of cotton, 7.1 per cent, and that of yarns, 4.2 per cent; the corresponding percentages for 1899 were 54.7, 23.3, 2.6, and 3.1, respectively.

Sisal and manila hemp constituted 95.1 per cent of the total quantity of hard fibers used in 1909, and 97.7 in 1899. Jute and jute butts combined constituted 84.8 per cent of the total quantity of soft fibers used in 1909, as compared with 82.9 per cent of that used in 1899. Of the materials shown separately in the table,

"other" hard fibers show the largest percentage of increase in quantity (171.5), while cotton shows the largest relative increase in cost (244.1 per cent).

Products.—Table 18 shows the quantity and value of the principal products of the industry as a whole for 1909 and 1899.

PRODUCT.	PRODUCTS OF THE CORDAGE AND TWINE AND JUTE AND LINEN GOODS INDUSTRY.		
	1909	1899	Per cent of increase: 1899-1909
Total value	\$61,019,986	\$49,077,629	24.3
Rops and binder twine	\$33,930,306	\$26,909,027	26.1
Rope—			
Pounds.....	230,031,893	141,841,052	68.5
Value.....	\$19,850,635	\$12,723,446	56.0
Binder twine—			
Pounds.....	189,172,151	165,609,429	14.2
Value.....	\$14,079,671	\$14,185,581	-0.7
Sisal—			
Pounds.....	225,756,526	172,238,291	31.1
Value.....	\$15,960,280	\$14,005,596	14.0
Manila—			
Pounds.....	150,169,682	123,584,201	21.5
Value.....	\$12,892,347	\$12,192,798	5.7
Cotton rope—			
Pounds.....	16,760,763	1,615,824	937.3
Value.....	\$3,011,613	\$247,250	1,118.0
Jute rope—			
Pounds.....	27,740,512	10,012,165	177.2
Value.....	\$1,666,160	\$463,413	238.0
All other—			
Pounds.....	7,767,561	(²)	.....
Value.....	\$499,006	(²)	.....
Twine, other than binder twine	\$8,034,352	\$4,341,444	105.8
Cotton—			
Pounds.....	20,412,631	8,691,707	134.9
Value.....	\$3,518,036	\$1,133,640	210.3
Jute—			
Pounds.....	35,516,217	1,679,427	2,015.2
Value.....	\$2,657,744	\$117,530	2,076.1
Hemp—			
Pounds.....	8,013,349	9,065,024	-11.6
Value.....	\$1,091,291	\$1,019,596	7.0
Flax—			
Pounds.....	2,067,053	3,845,078	-22.9
Value.....	\$330,069	\$969,469	-14.3
Flax or hemp mixed with jute—			
Pounds.....	8,007,403	12,924,067	-31.1
Value.....	\$930,312	\$1,101,263	-15.0
Yarns for sale	\$5,434,037	\$4,455,734	22.0
Jute—			
Pounds.....	62,512,247	54,271,869	15.2
Value.....	\$4,301,550	\$3,230,835	35.0
Flax and hemp—			
Pounds.....	5,486,891	8,250,653	-33.6
Value.....	\$982,742	\$1,125,974	-12.7
Other—			
Pounds.....	732,120	946,567	-23.7
Value.....	\$89,745	\$98,928	-9.3
Linen thread:			
Pounds.....	6,530,503	4,021,044	62.4
Value.....	\$3,407,008	\$2,332,287	46.1
Gunny bagging:			
Square yards.....	69,311,288	74,090,760	-6.5
Value.....	\$3,507,482	\$3,462,470	1.3
Jute carpets and rugs:			
Square yards.....	2,206,114	2,053,658	-25.3
Value.....	\$540,221	\$357,568	53.6
All other products.....	\$5,257,580	\$7,210,093	-27.2

¹ A minus sign (—) denotes decrease.

² In addition, cordage and twine and jute and linen goods to the value of \$890,620 were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

³ Not reported.

The total production of rope and twine in 1909 (exclusive of the production in penal institutions) was 512,196,164 pounds; of this amount 504,020,697 pounds were made by establishments in the cordage and twine and jute and linen goods industry, as shown in Table 18, while 8,175,467 pounds were produced by establishments in other industries.

At the census of 1909 two establishments reported the manufacture of rope, and one the manufacture of linen thread, on contract, from material furnished by the parties for whom the work was done. The total production of the three establishments, however, did not exceed 4,500,000 pounds.

The production of rope shows an increase of 68.5 per cent in quantity and 56 per cent in value during the decade 1899-1909. The output of binder twine

increased 14.2 per cent in amount but decreased slightly in value.

Separate statistics for linen toweling and for other linen woven goods can not be given without disclosing the operations of individual establishments, and their total value is included in the amount shown for "all other products" in Table 18. Both of these products, however, show a decided increase between 1899 and 1909.

DETAILED STATE TABLE.

The principal statistics secured by the census inquiry concerning the industry as a whole are presented by states in Table 19, showing, for 1909, the number of

establishments, number of persons engaged in the industry, primary horsepower, capital, salaries, wages, value of products, and value added by manufacture.

CORDAGE AND TWINE AND JUTE AND LINEN GOODS--DETAILED STATISTICS, BY STATES: 1909.

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS--DEC. 15, OR NEAREST REPRESENTATIVE DATE.					Primary horsepower.
		Total.	Proprietors and firm managers.	Salaries, officers, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.				
					Male.	Female.		Maximum month.	Minimum month.		Male.	Female.	Male.	Female.			
															Number, 15th day of--		
		Mo.		No.													
United States.....	104	27,214	80	394	698	222	25,820	Mo 26,098	No 23,313	26,941	13,019	12,083	928	911	78,540		
Alabama.....	5	452	.....	11	7	7	427	Ja 502	No 300	402	108	102	47	55	1,700	
Connecticut.....	8	314	7	13	3	5	283	Aug 315	No 114	297	140	148	7	2	1,134		
Illinois.....	7	1,854	.....	49	28	8	1,799	Dec 2,147	Aug 1,010	2,102	1,142	14	14	50	6,450	
Kentucky.....	6	778	1	13	0	4	751	Oct 821	Oct 621	815	393	399	21	2	1,501		
Maryland.....	4	363	2	5	0	4	340	Oct 375	Jan 310	351	80	191	18	62	1,115		
Massachusetts.....	31	7,003	22	64	147	80	6,600	Apr 7,132	Nov 5,188	6,017	3,400	2,803	266	202	24,864		
New Jersey.....	12	3,174	1	31	103	14	3,025	Dec 3,005	July 2,903	3,006	1,421	1,410	140	116	6,442		
New York.....	10	6,230	0	62	105	42	6,052	Mar 6,030	Feb 5,716	5,991	2,781	3,105	21	24	16,056		
North Carolina.....	7	542	2	17	30	2	491	May 505	Jan 475	523	224	178	75	46	1,755		
Ohio.....	8	848	3	17	25	12	791	Apr 932	Aug 498	912	678	227	5	2	3,225		
Pennsylvania.....	18	2,228	12	37	52	8	2,110	Nov 2,100	May 2,000	2,103	1,048	906	134	105	4,630		
Rhode Island.....	0	156	8	5	3	1	130	Jan 165	Aug 103	160	60	64	.....	6	477	
Virginia.....	3	102	4	1	.....	.....	88	May 112	Feb 61	69	22	45	.....	2	32
Wisconsin.....	3	123	2	1	3	.....	117	Oct 156	May 93	121	48	40	24	.....	270
All other states ²	30	3,017	7	60	110	35	2,790	.....	.....	2,932	1,430	1,193	154	149	9,589

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States.....	\$76,020,366	\$50,076,532	\$1,005,084	\$850,562	\$9,132,900	\$687,184	\$40,227,026	\$141,531	\$454,484	\$13,875	\$3,556,587	\$61,010,986	\$20,105,176
Alabama.....	740,281	680,601	21,647	5,647	117,307	15,900	462,705	1,047	4,314	.....	61,604	605,010	217,305
Connecticut.....	480,582	555,743	13,570	5,224	84,737	4,003	427,248	3,005	2,368	.....	15,508	561,264	120,003
Illinois.....	13,014,494	6,888,306	60,908	24,658	659,584	60,222	5,875,409	3,000	50,079	.....	142,386	8,237,165	2,295,534
Kentucky.....	1,505,196	1,058,143	25,150	7,780	224,046	16,011	692,486	2,332	5,580	.....	83,252	1,079,570	370,473
Maryland.....	1,072,400	711,882	8,635	9,767	94,083	9,071	530,519	1,260	6,083	.....	61,564	708,520	168,930
Massachusetts.....	17,510,244	15,436,123	236,750	261,534	2,560,324	157,481	11,040,225	8,057	148,283	2,404	1,021,050	16,631,043	5,433,937
New Jersey.....	6,598,245	5,395,607	68,720	93,711	953,702	78,875	3,816,825	3,000	38,363	369	312,033	5,529,721	1,631,021
New York.....	15,770,078	11,442,917	105,330	179,800	2,163,500	150,452	7,420,498	93,460	104,184	10,602	1,107,022	12,215,000	4,626,050
North Carolina.....	1,259,585	748,888	24,850	24,948	103,778	8,201	551,228	4,485	2,146	.....	20,243	823,864	264,435
Ohio.....	2,743,480	2,501,362	48,205	32,725	312,704	20,774	1,957,255	2,100	18,499	.....	163,040	2,727,854	743,825
Pennsylvania.....	5,161,005	3,997,428	110,660	65,801	685,170	41,932	2,950,484	1,050	8,860	200	115,281	4,804,775	1,803,359
Rhode Island.....	190,197	245,578	0,750	1,356	48,444	6,117	170,084	4,150	808	.....	7,800	256,857	80,050
Virginia.....	109,000	161,202	3,330	4,600	27,660	650	146,025	2,225	1,138	.....	5,740	212,740	66,156
Wisconsin.....	205,585	130,409	3,000	3,000	35,004	2,287	88,043	.....	1,381	.....	6,204	150,482	50,252
All other states ²	9,554,389	6,017,103	134,817	130,005	1,003,900	93,600	4,070,072	12,300	61,448	.....	435,250	6,387,612	2,214,241

¹ Same number reported for one or more other months.

² All other states embrace: California, 2 establishments; Delaware, 1; Georgia, 2; Indiana, 2; Iowa, 1; Louisiana, 1; Maine, 2; Michigan, 1; Minnesota, 1; Mississippi, 3; Missouri, 4; New Hampshire, 2; Oklahoma, 1; Oregon, 2; South Carolina, 3; Tennessee, 1; Washington, 1.

DYEING AND FINISHING TEXTILES

(185)

THE DYEING AND FINISHING OF TEXTILES.

GENERAL STATISTICS.

Scope of the industry.—The census classification "dyeing and finishing textiles" includes all establishments engaged primarily in the dyeing and finishing of textiles. It covers the bleaching, dyeing, and mercerizing of raw fibers, and of yarns and woven cloth, and the printing of piece goods, and also includes establishments engaged in the beaming and winding of yarns and in the spooling of thread, as well as a few establishments engaged in dyeing and bleaching straw braids. Although some establishments make a specialty of dyeing and finishing silk yarns and fabrics, and a number specialize in work on other classes of textiles, so large a number dye and finish more than one variety of fabric that it is impossible to compile statistics which will correctly represent the work done on any particular class.

A considerable number of the cotton, silk, and woolen mills carry on, in the same establishment, one or more of these subordinate processes in connection with the manufacture of textiles, and where practicable, separate returns were secured for the dyeing and finishing departments of such mills, in which case these departments were treated as separate establishments and the statistics concerning them were included in the present report on the dyeing and finishing industry. Most of these mills, however, made no separate report

for the operations of the dyeing and finishing department, such statistics being included with those for the entire establishment in a single report. The statistics for the dyeing and finishing industry, therefore, do not fully cover the dyeing and finishing operations carried on in connection with the textile industries.

Comparison with earlier censuses.—Statistics for the dyeing and finishing industry were first obtained at the census of 1849, when 42 establishments were reported, giving employment to an average of 4,080 hands. The returns for cost of materials and value of products included the value of the cloth treated and are therefore not comparable with those for later censuses, but the value added by manufacture was \$3,218,761. At the census of 1859 there were 29 establishments engaged in the industry, giving employment to an average of 4,005 hands and reporting products to the value of \$7,971,064; the value added by manufacture was \$4,086,249. At the census of 1869, 42 establishments, employing an average of 8,894 hands, were reported; the value of the cloth treated was included with the value of products at this census also, but the value added by manufacture amounted to \$8,072,686.

Table 1 summarizes the statistics for the industry for each census from 1879 to 1909, inclusive.

Table 1

	DYEING AND FINISHING TEXTILES.					Per cent of increase. ¹				
	Number or amount.									
	1909	1901	1899	1889	1879	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889
Number of establishments.....	420	360	298	248	191	43.0	18.3	20.8	20.2	29.8
Persons engaged in the industry.....	47,303	38,071	31,394	(²)	(²)	50.7	24.2	21.3	.....	.....
Proprietors and firm members.....	318	310	300	(²)	(²)	6.0	2.6	3.3	.....	.....
Salaried employees.....	2,939	2,106	1,318	(²)	(²)	123.0	33.8	66.6	.....	(²)
Wage earners (average number).....	44,946	35,565	29,776	10,601	16,698	47.9	23.8	19.4	(²)	(²)
Primary horsepower.....	107,746	84,808	60,238	67,035	(²)	55.6	27.0	22.6	21.4	45.6
Capital.....	\$114,092,654	\$88,708,570	\$69,643,104	\$38,450,800	\$26,223,981	88.1	25.6	46.3	57.7	25.3
Expenses.....	68,647,853	44,476,116	37,080,528	25,233,312	20,138,659	85.1	54.3	19.9	47.0	45.6
Services.....	20,261,634	18,876,586	14,993,444	9,717,011	6,474,364	75.2	39.1	25.9	54.3	50.1
Salaries.....	5,034,710	3,407,381	2,267,128	(²)	(²)	122.1	47.8	50.3	.....	.....
Wages.....	21,226,924	15,469,205	12,726,316	(²)	(²)	66.8	37.2	21.6	45.0	-9.4
Materials.....	36,261,301	19,621,253	17,958,137	12,385,220	13,664,295	96.4	79.7	9.3	32.2	.....
Miscellaneous.....	7,124,918	5,978,277	4,137,947	3,131,081	(²)	72.2	19.2	44.5	55.6	-10.5
Value of products.....	83,550,432	60,849,545	44,993,331	28,900,560	32,297,420	85.8	64.3	13.1	.....	.....
Value added by manufacture (value of products less cost of materials).....	48,295,131	31,228,292	27,005,194	16,515,340	18,633,125	78.8	54.7	15.6	63.5	-11.4

¹ A minus sign (-) denotes decrease. Where the percentages are omitted, comparable figures can not be given.
² Comparable figures not available.
³ Figures not strictly comparable.

The number of independent dyeing and finishing establishments shows a considerable increase for each of the intercensal periods covered by the table, the number in 1909 being more than twice that in 1879.

A substantial increase in value of products took place during each of the decades between 1889 and 1909; there was a decrease of 10.5 per cent, however, during the decade 1879-1889, this decrease probably being

due to the fact that competition and improved processes had reduced the rates charged for work done.¹ The value of products in 1909 was more than two and one-half times that in 1879. Between 1899 and 1909 the average number of wage earners increased 14,270, or 47.9 per cent, and the value of products \$38,593,101, or 85.8 per cent, the greater part of these increases taking place during the second half of the decade. In general, the cost of materials consists chiefly of the amount expended for dyestuffs and other chemicals used, and the value of products represents the amount which is charged for performing the dyeing and finishing processes, the goods dyed or finished in most instances belonging to other concerns; but in some instances the goods dyed or finished are owned by the establishments which perform these final operations and under such circumstances the cost of the fabric is included in the cost of materials while the value of the finished cloth is included in the value of products. The large increases in cost of materials and value of products shown for the five-year period 1904-1909, therefore, may be due in part to the fact that a larger proportion of the value of the fabrics treated was included in the cost of materials in 1909 than in 1904.

¹ Eleventh Census of the United States, 1890, Part III, Selected Industries, page 231.

At the census of 1909, 426 establishments were returned as engaged in the dyeing and finishing industry, these establishments giving employment to an average of 47,303 persons during the year, paying out \$26,261,634 in salaries and wages, and reporting products to the value of \$83,556,432, to produce which materials costing \$35,261,301 were utilized. The value added by manufacture—that is, the value of products less the cost of materials—was \$48,295,131, equal to 57.8 per cent of the total value of products.

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 1909. The states shown in this table are given their actual ranking among all states, the rank of certain states for which figures can not be presented being higher than that of some named in the table. The extent to which the establishments in the several states owned the materials upon which they worked greatly influences their rank in value of products, and no doubt largely accounts for the seeming discrepancy between the proportion of the total value of products contributed by certain states as compared with the proportion which the same states contributed of the total number of wage earners, or the value added by manufacture.

Table 2

DYEING AND FINISHING TEXTILES.

	Number of establishments: 1909	Wage earners.			Value of products.				Value added by manufacture.				Per cent of increase. ¹									
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).			Value of products.			Value added by manufacture.		
				1909	1904			1909	1904			1909	1904	1909	1904	1899	1904	1899	1899	1904	1899	1904
United States	426	44,046	100.0	.....	.....	\$83,556,432	100.0	.....	.....	\$48,295,131	100.0	.....	.....	47.9	23.8	19.4	85.8	64.3	13.1	78.8	54.7	15.6
Massachusetts.....	48	9,070	20.6	2	3	21,892,800	26.2	1	2	11,423,024	23.7	1	2	94.1	20.0	60.5	146.0	98.1	24.6	98.4	66.3	19.3
New Jersey.....	67	10,129	23.0	1	1	15,795,788	18.9	2	1	9,443,002	19.0	2	1	43.2	33.3	7.4	50.0	31.0	14.2	31.9	36.3	15.0
Rhode Island.....	45	7,792	17.7	3	2	13,056,700	16.7	3	3	8,636,419	17.9	3	3	31.1	3.0	27.3	64.5	30.8	17.0	60.0	30.2	17.5
Pennsylvania.....	135	6,086	13.8	4	4	12,059,297	14.4	4	4	6,728,610	13.9	4	4	20.0	32.7	-2.8	71.3	77.7	-3.0	74.2	64.7	5.7
New York.....	81	5,252	11.9	5	5	9,673,228	11.6	5	5	5,533,967	11.5	5	5	68.5	46.5	15.0	166.8	121.8	20.3	148.8	83.1	35.0
Connecticut.....	10	1,719	3.9	6	6	3,561,027	4.3	6	6	2,081,859	4.3	6	6	32.2	22.3	8.2	56.0	60.8	-2.4	52.8	61.0	-5.5
Ohio.....	6	184	0.4	11	.....	423,144	0.5	10	.....	180,368	0.4	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois.....	12	172	0.4	12	12	362,787	0.4	11	14	257,303	0.5	10	12	.....	30.8	.....	.....	125.5	317.2	.....	60.0	.....
North Carolina.....	4	330	0.7	10	10	306,853	0.4	13	10	194,327	0.4	11	10	79.3	0.6	63.6	74.4	22.3	42.6	139.5	17.6	.....
Maryland.....	3	79	0.2	17	.....	126,570	0.2	17	.....	65,985	0.1	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	15	3,224	7.3	.....	.....	5,398,248	6.5	.....	.....	3,749,577	7.8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

¹ Percentages are based on figures in Table 14. A minus sign (-) denotes decrease. Percentages not shown 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 comparative figures can not be given without disclosing individual operations.

In 1909 Massachusetts ranked first in respect to value of products, reporting 26.2 per cent of the total for the industry in the United States, and in value added by manufacture, but was second in average number of wage earners, New Jersey ranking first in this respect. The number of wage earners employed in the industry in Massachusetts increased 94.1 per cent during the decade ending with 1909, and the value of products 146.9 per cent. In 1909 New Jersey ranked second in value of products and value added by manufacture, having dropped from first place since

1904. Rhode Island ranked third in value of products and in value added by manufacture in both 1909 and 1904, and third in number of wage earners in 1909, having changed places with Massachusetts since 1904. Of the states for which the percentages of increase are given in the table, New York shows the largest relative gain from 1899 to 1909 in value of products and value added by manufacture, the increases being 166.8 per cent and 148.8 per cent, respectively; Massachusetts, however, shows the largest percentage of increase in number of wage earners.

The largest number of wage earners reported for any month of 1909 was 44,863 for March, and the smallest number, 43,212, for July, the minimum number being equal to 96.3 per cent of the maximum. In 1904 the maximum number, 37,072, was reported for December, and the minimum number, 33,793, equal to 91.2 per cent of the maximum, for August. The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for a larger number of states in Table 15.

Prevailing hours of labor.—In Table 7 the wage earners in the industry have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

STATE.	Total.	In establishments with prevailing hours—					
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.
United States	44,046	107	1,102	398	28,172	12,639	1,628
Connecticut	1,719			2	351	1,366	
Delaware	1,680				1,680		
Maine	523					523	
Massachusetts	9,079	8	119	50	8,009	542	345
New Hampshire	625				625		
New Jersey	10,129	4	33	60	6,194	2,968	870
New York	5,252	65	816	197	2,830	1,324	20
Pennsylvania	6,086	10	30	33	2,078	3,874	52
Rhode Island	7,792				6,334	1,458	20

Over nine-tenths (96.4 per cent) of the wage earners in the industry were employed in establishments where the prevailing number of hours was more than 54 per week. Almost two-thirds (64 per cent) of the total number worked in establishments where the prevailing

hours were between 54 and 60 per week, while somewhat more than one-fourth (28.7 per cent) were in establishments where they were 60 per week. In six of the states for which figures are given in the table, the most common working time was between 54 and 60 hours; in Connecticut, Maine, and Pennsylvania, however, the largest number of wage earners were employed in establishments where the prevailing hours were 60 per week. Only 3.7 per cent of the total number of wage earners in the industry were in establishments where the prevailing number of hours of employment per week exceeded 60, and only 3.6 per cent in establishments where it was as low as 54.

Character of ownership.—Table 8 presents statistics with respect to the character of ownership of the dyeing and finishing establishments.

CHARACTER OF OWNERSHIP.	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total	426	360	\$83,556,432	\$59,849,545
Individual	123	110	5,502,502	4,760,339
Firm	89	187	5,805,379	4,411,722
Corporation	214	163	72,248,551	41,677,484
Per cent of total	100.0	100.0	100.0	100.0
Individual	28.0	30.6	6.6	7.4
Firm	20.9	51.9	6.9	7.4
Corporation	50.2	45.3	86.5	82.0

¹ Includes two establishments under "other" ownership, to avoid disclosure of individual operations.

In 1909, of the total number of establishments reported, 50.2 per cent were under corporate ownership, as compared with 45.3 per cent in 1904; the value of the products of these establishments represented 86.5 per cent of the total value of products for all establishments engaged in the industry in 1909 and 82 per cent in 1904.

Table 9 gives statistics for establishments classified according to form of ownership in the five leading states.

STATE.	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States	123	89	214	3,166	2,483	38,397	\$5,502,502	\$5,805,379	\$72,248,551	\$3,532,366	\$2,061,607	\$41,801,258
Massachusetts	6	7	35	243	306	8,525	283,436	660,369	20,040,085	176,657	357,144	10,889,923
New Jersey	19	6	42	206	466	9,367	388,837	702,380	14,704,571	300,449	373,391	8,709,452
New York	31	16	34	422	334	4,466	1,119,353	1,537,007	6,715,038	627,868	684,967	4,221,132
Pennsylvania	48	50	37	350	1,160	4,067	1,432,603	2,056,104	8,570,600	886,080	1,256,886	4,586,744
Rhode Island	10	3	32	1,171	57	6,564	2,023,878	69,469	11,862,353	1,370,911	46,378	7,210,100

Of the total number of wage earners employed in the industry in 1909, 3,166, or 7.2 per cent, were employed in establishments under individual ownership;

2,483, or 5.6 per cent, in those under firm ownership; and 38,397, or 87.2 per cent, in those owned by corporations.

interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total reported expenses in 1909 to have been \$68,647,853, distributed as follows: Cost of materials, \$35,261,301, or 51.4 per cent; wages, \$21,226,924, or 30.9 per cent; salaries, \$5,034,710, or 7.3 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$7,124,918, or 10.4 per cent. The variations in the proportions represented by the different classes of expenses in the several states which are shown in Table 15 are largely due to differences in the relative importance of the various classes of work covered by the industry designation (dyeing, bleaching, finishing, etc.), and to differences in the extent to which the work was done on purchased materials.

Engines and power.—Table 12 shows the statistics of power as reported at the censuses of 1909, 1904, and 1899.

The total primary power used in the industry increased from 69,238 horsepower in 1899 to 107,746 horsepower in 1909, or 55.6 per cent. At each census steam power constituted the major part of the primary power employed in the industry, the proportion which it formed of the total increasing from 82.6 per cent in 1899 to 85.6 per cent in 1909. The amount of water-power increased only 640 horsepower, or 6.8 per cent from 1899 to 1909, while the proportion which it formed of the total primary power decreased from 13.7 per cent to 9.3 per cent. There was a considerable

increase in the horsepower of electric motors operated by purchased current (rented electric power). The number and horsepower of electric motors used for distributing power by means of current generated in the establishments in the industry show a very decided increase, the horsepower of such motors in 1909 amounting to 21,346, as compared with only 1,949 10 years earlier.

Table 12 DYEING AND FINISHING TEXTILES.

POWER.	Number of engines or motors.			Horsepower.			Per cent (distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total	2,181	1,663	1,023	107,746	84,808	69,238	100.0	100.0	100.0
Owned.....	1,990	1,021	1,023	103,605	81,396	68,322	99.2	95.0	98.7
Steam.....	1,893	1,533	1,535	92,284	70,385	57,216	85.6	82.9	82.6
Gas.....	20	10	2	1,207	711	8	1.1	0.8	(1)
Water wheels.....	70	71	80	10,074	10,125	9,474	9.3	11.9	13.7
Water motors.....	1	7	(2)	40	5	(2)	(1)	(1)	(2)
Other.....					170	1,024		0.2	2.3
Rented.....	191	42	(2)	4,141	3,472	010	3.8	4.1	1.3
Electric.....	191	42	(2)	2,065	1,087	50	2.5	1.3	0.1
Other.....				1,476	2,385	806	1.4	2.8	1.2
Electric motors.	1,419	488	131	24,011	11,724	1,999	100.0	100.0	100.0
Run by current generated by establishment.....	1,228	440	131	21,346	10,037	1,049	88.0	90.7	97.5
Run by rented power.....	191	42	(2)	2,665	1,687	50	11.1	9.3	2.5

¹ Less than one-tenth of 1 per cent. ² Not reported.

Table 13 shows for 1909 statistics as to the power and the fuel used in the industry in the six leading states.

Table 13 DYEING AND FINISHING TEXTILES.

STATE.	Number of establishments reporting.	Total horsepower.	Primary horsepower.					Electric horsepower.		Fuel used.							
			Owned by establishments reporting.					Rented.		Total, rented and generated in the establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).				
United States..	388	107,746	103,605	92,284	1,207	10,114		2,665	1,476	24,011	21,346	593,093	869,216	2,576	746	10,037	64,657
Connecticut.....	10	5,851	5,851	2,011	15	2,925			974	974	1,456	63,795		10	903	3,850	
Massachusetts.....	46	24,513	23,956	21,466		2,490		370	187	7,524	7,154	100,083	171,315	2,016		1,143	46
New Jersey.....	61	19,989	19,521	18,935	16	540		401	67	3,607	3,206	304,610	104,535	190		1,640	39,122
New York.....	63	8,750	7,588	7,239	114	235		758	404	1,284	520	49,371	65,844	2	74	24	7,953
Pennsylvania.....	126	13,560	12,986	12,829	62	95		203	371	1,513	1,310	69,512	160,532	228	22	22	5,756
Rhode Island.....	44	21,179	20,987	18,131	1,000	1,859		75	117	6,248	6,173	57,081	192,327	140	635	0,213	7,443
All other states.....	38	13,904	12,716	10,743		1,973		858	330	2,861	2,003	5,000	109,869		27	2	487

The states which ranked highest with respect to the amount of power used were Massachusetts, Rhode Island, New Jersey, and Pennsylvania. The total horsepower reported for these states in 1909 was 79,241, or 73.5 per cent of the total for the United States. Steam was the most important form of power in all of the states shown in the table except Connecticut. The largest amount of steam power

was reported for Massachusetts, the largest amount of water power for Connecticut, and the largest amount of rented electric power for New York.

Fuel consumed.—Bituminous coal was the principal class of fuel used, 869,216 short tons being consumed in 1909. The largest quantity of anthracite coal, 304,610 long tons, or more than one-half of the total for the industry, was reported for New Jersey.

DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the dyeing and finishing of textiles are presented, by states, in Tables 14 and 15.

Table 14 shows for 1909, 1904, and 1899 the number of establishments, number of persons engaged in the

industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture. Table 15 gives the statistics of the industry for 1909 in somewhat greater detail.

DYEING AND FINISHING TEXTILES—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	426	47,303	318	2,930	44,046	107,746	\$114,093	\$5,035	\$21,227	\$35,261	\$83,556	\$48,295
	1904	380	38,071	310	2,196	35,565	84,868	88,709	3,407	15,469	19,621	50,850	31,229
	1899	298	31,394	300	1,318	29,776	69,238	60,843	2,267	12,726	17,968	44,963	27,005
Connecticut.....	1909	10	1,817	3	95	1,710	5,851	5,375	198	872	1,480	3,562	2,082
	1904	10	1,496	2	88	1,406	4,883	4,562	162	640	927	2,215	1,288
	1899	5	1,339	.....	39	1,300	4,724	3,244	101	579	907	2,270	1,393
Illinois.....	1909	12	203	0	22	172	380	339	21	92	105	363	258
	1904	8	153	2	28	123	532	247	32	45	30	161	131
	1899	4	93	2	7	84	160	114	7	28	33	87	54
Massachusetts.....	1909	48	6,083	21	583	9,070	24,513	30,597	1,143	4,430	10,469	21,893	11,424
	1904	46	7,935	24	403	7,508	10,242	30,875	759	3,262	4,179	11,049	6,870
	1899	37	4,941	24	230	4,678	14,262	15,206	548	2,081	3,111	8,808	5,757
New Jersey.....	1909	67	10,722	32	501	10,120	19,989	23,315	1,033	5,016	6,353	15,796	9,443
	1904	57	8,180	31	552	7,597	12,835	13,069	847	3,466	5,052	11,080	6,928
	1899	50	7,474	47	353	7,074	12,335	11,601	615	3,003	4,514	10,489	5,975
New York.....	1909	81	5,782	68	462	5,252	8,750	11,269	765	2,321	4,130	6,673	5,534
	1904	55	3,850	60	204	3,586	7,128	7,530	258	1,578	1,338	4,362	3,023
	1899	42	3,274	50	107	3,117	6,885	6,231	134	1,425	1,402	3,626	2,224
North Carolina.....	1909	4	358	3	25	330	556	618	25	86	113	307	194
	1904	4	330	2	27	301	705	829	28	83	86	251	165
	1899	5	197	5	8	184	345	294	7	45	95	176	81
Pennsylvania.....	1909	135	6,688	155	447	6,086	13,600	13,242	598	2,988	5,331	12,059	6,728
	1904	123	5,070	161	324	4,585	9,712	9,023	445	2,076	2,701	6,786	4,085
	1899	105	5,087	165	216	4,710	10,100	7,680	260	2,066	3,175	7,038	3,863
Rhode Island.....	1909	45	8,405	16	597	7,792	21,170	21,926	981	3,616	5,319	13,956	8,637
	1904	37	7,984	19	403	7,562	18,705	16,970	672	3,182	3,639	9,981	6,342
	1899	24	6,204	0	250	5,042	14,820	12,853	450	2,474	3,068	8,485	5,397
All other states.....	1909	24	3,645	11	147	3,487	12,962	7,427	271	1,806	1,952	5,947	3,995
	1904	20	3,073	9	107	2,897	11,120	4,704	204	1,437	1,668	4,065	2,897
	1899	17	2,785	11	93	2,681	5,578	3,420	145	1,025	1,633	3,924	2,291

MANUFACTURES.

DYEING AND FINISHING TEXTILES—DETAILED STATISTICS, BY STATES: 1909.

Table 15

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.							WAGE EARNERS—DEG. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.	
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.		
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.		Female.
								Maximum month.	Minimum month.						
United States ..	426	47,303	318	900	1,595	444	44,046	Mo 44,863	Ja 43,212	45,841	36,486	8,269	769	317	107,746
Connecticut.....	10	1,817	3	36	46	13	1,719	Ap 1,768	So 1,679	1,730	1,474	211	33	12	5,851
Illinois.....	12	203	0	8	2	12	172	My 178	Ja 162	174	134	40	.....	.....	386
Maryland.....	3	85	1	3	2	.....	79	Fe ¹ 86	So ¹ 72	80	59	18	.....	3	93
Massachusetts.....	48	0,683	21	142	354	87	0,079	Se 9,278	Oc 8,778	10,053	7,600	2,060	231	162	24,513
New Jersey.....	67	10,722	32	102	340	50	10,129	Fe 10,557	Jy 9,526	10,186	8,718	1,361	75	32	19,989
New York.....	81	5,782	68	131	247	84	5,252	Oc 5,571	De 4,682	5,553	3,883	1,640	24	6	8,750
North Carolina.....	4	358	3	10	10	5	330	De 366	Oe 293	366	244	98	12	12	556
Ohio.....	6	206	1	5	12	4	184	Ap 218	Ja 169	176	150	26	.....	.....	4,578
Pennsylvania.....	135	6,688	155	156	216	75	6,086	De 6,376	Jy 5,954	6,222	5,230	753	202	37	13,560
Rhode Island.....	45	8,405	16	106	313	88	7,792	No 7,994	Ja 7,548	7,961	6,186	1,585	144	46	21,179
All other states ²	15	3,354	0	51	53	17	3,224	.....	.....	3,340	2,808	477	48	7	8,291

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States ..	\$114,092,054	\$68,647,853	\$3,007,431	\$2,027,270	\$21,226,924	\$4,451,077	\$30,810,224	\$282,090	\$565,126	\$337,422	\$5,940,280	\$83,556,432	\$48,295,131
Connecticut.....	5,375,233	2,828,323	122,880	75,404	872,202	199,458	1,280,610	1,000	32,326	.....	244,443	3,561,927	2,081,850
Illinois.....	339,036	250,067	11,000	9,098	91,961	13,816	91,668	7,520	1,333	800	22,181	362,787	257,303
Maryland.....	101,208	113,560	5,900	910	31,583	5,041	55,544	.....	791	.....	13,800	126,570	65,985
Massachusetts.....	30,597,070	18,010,736	625,038	517,883	4,429,978	997,417	9,471,849	11,041	209,184	10,453	1,737,893	21,892,890	11,423,624
New Jersey.....	23,314,817	13,518,868	639,264	393,846	5,015,561	980,052	5,372,644	47,700	70,473	.....	999,319	15,795,788	9,444,092
New York.....	11,258,653	8,248,384	489,897	274,814	2,321,016	409,060	3,730,192	99,293	55,483	320,232	548,478	9,673,228	5,533,967
North Carolina.....	612,655	246,102	18,200	6,922	85,850	14,284	98,242	.....	2,907	496	10,132	306,853	194,327
Ohio.....	692,580	406,581	16,500	10,627	94,361	23,840	218,927	1,628	3,447	.....	37,242	423,144	180,398
Pennsylvania.....	13,241,764	10,070,920	356,531	241,374	2,088,496	650,393	4,689,204	70,035	51,199	2,741	1,038,857	12,059,297	6,728,610
Rhode Island.....	21,926,333	10,804,221	565,302	410,157	3,616,496	852,376	4,466,965	11,830	92,688	2,700	779,791	13,955,700	8,636,419
All other states ²	0,024,039	4,141,082	156,820	70,644	1,679,411	305,322	1,343,349	32,118	45,235	.....	490,174	5,398,248	3,749,577

¹ Same number reported for one or more other months.

² "All other states" embrace: Alabama, 1 establishment; Delaware, 1; Indiana, 2; Iowa, 1; Kentucky, 2; Maine, 1; Michigan, 1; Missouri, 1; New Hampshire, 2; Oregon, 1; South Carolina, 1; West Virginia, 1.