SILK MANUFACTURES

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By Franklin Allen, Expert Special Agent.

The statistics for the silk industry in the United States, as reported at the census of 1905, which covers the calendar year 1904, show a gratifying increase in volume of manufacture over the census of 1900. The year 1904 was preceded by a poor year for the silk industry in this as well as in foreign countries on account of lessened production and higher prices of raw materials. It was not until late in 1904 (October-November) that more favorable conditions ensued in the United States because of increased supplies of raw silk in the world's silk markets and more moderate prices of raw materials. These prime factors developed a greater activity in the silk mills of this country. This activity continued without interruption until late in the spring of 1905, but it commenced so late in 1904 that the census figures of that year were not materially affected by it.

The silk industry as treated in this report is the census classification of "silk and silk goods," and embraces only products in which silk is the material of predominant value. Silk hose and silk knit goods are not included, as these articles have been included in the classification of "hosiery and knit goods," and treated as an independent branch of the textile industry since the census of 1890.

Table 1 presents a comparative summary of the industry as returned at each census from 1860 to 1905, inclusive, with the per cent of increase for each census period.

Table 1. COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1860 TO 1905.

	Census.						Per cent of increase.				
	1905	1900	1890	1880	1870	1860	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870
Number of establishments	624	483	472	382	86	130	29.2	2.3	23.6	344.2	[1] 38.1
Capital	$109,556,621	$81,082,201	$51,007,537	$19,125,300	$6,231,130	$2,926,980	35.1	59.0	166.7	206.9	112.9
Salaried officials, clerks, etc., number	4,027	2,657	[2] 1,531	(3)	(3)	(3)	51.6	73.5	.....	.....	.....
Salaries	$4,742,270	$3,134,352	[2] $1,017,877	(3)	(3)	(3)	51.3	63.4	.....	.....	.....
Wage-earners, average number	79,601	65,416	49,382	31,537	6,649	5,435	21.7	32.5	57.6	371.3	22.3
Total wages	$26,767,943	$20,982,194	$17,762,441	$9,146,705	$1,942,286	$1,050,224	27.6	18.1	94.2	370.9	84.9
Men 16 years and over	27,037	24,206	17,602	9,375	1,734	1,585	11.7	37.5	87.8	440.7	9.4
Wages	$12,787,322	$10,699,483	$9,349,531	(3)	(3)	(3)	19.5	14.4	.....	.....	.....
Women 16 years and over	45,198	34,707	28,914	16,396	3,529	3,850	29.9	20.3	76.3	364.6	[1] 8.3
Wages	$12,859,156	$9,377,696	$7,970,065	(3)	(3)	(3)	37.1	17.7	.....	.....	.....
Children under 16 years	7,366	6,413	2,866	5,566	1,386	(3)	14.8	123.8	[1] 48.5	301.6	.....
Wages	$1,121,405	$905,015	$442,845	(3)	(3)	(3)	23.9	104.4	.....	.....	.....
Miscellaneous expenses	$14,052,777	$10,264,208	$4,259,623	(4)	(4)	(4)	36.9	141.0	.....	.....	.....
Cost of materials used	$75,861,188	$62,406,665	$51,004,425	$22,467,701	$7,817,559	$3,001,777	21.6	22.4	127.0	187.4	160.4
Value of products, including amount received for contract work	$133,288,072	$107,256,258	$87,208,454	$41,033,045	$12,210,602	$6,607,771	24.3	22.9	112.8	236.0	84.8
Raw silk used, pounds	11,572,783	9,760,770	6,376,881	2,690,482	684,488	462,965	18.6	53.1	137.0	293.1	47.8

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[3] Not reported separately.
[4] Not reported.

MATERIALS AND PRODUCTS TWICE INCLUDED.

As was fully explained in the report on silk manufacture at the last census,[1] there is considerable duplication in the materials and products reported for the silk industry. But to give due credit to each state for its manufacturing operations, and in order that the silk statistics be comparable with those of other industries and prior censuses, it is necessary to present the total cost of materials and total value of products, including duplications. The method of eliminating the duplication may be briefly stated as follows:

1. Organzine and tram, reported as material and product, is deducted from both materials and products, respectively.

2. Spun silk, reported as a product, is deducted from both materials and products.

3. Fringe and floss, reported as material, is deducted from both materials and products.

4. Amount received for contract work, reported as product, is deducted from products.

The following tabular statement shows for the United States the quantities and values of the materials and products twice included at the census of 1905:

[1] Twelfth Census, Manufactures, Part III, pages 200 and 201.

Materials and products twice included: 1905.

	MATERIALS.		PRODUCTS.	
	Pounds.	Value.	Pounds.	Value.
Total	3,857,084	$16,400,231	2,645,985	$14,754,512
Organzine and tram	3,236,744	14,552,425	[1] 2,025,645	[1] 9,190,050
Fringe and floss, bought as such and used in manufacture	49,811	187,159	49,811	187,159
Spun silk, made for sale	570,529	1,660,647	570,529	1,660,647
Amount received for contract work	.....	.....	.....	3,716,056

[1] Organzine and tram, made for sale.

Table 2 shows, by states, for 1890, 1900, and 1905, the cost of materials used and the value of products as reported; the cost and value, respectively, of the materials and products twice included; and the cost of materials and value of products, exclusive of duplications. The value of finished goods is shown to be $118,533,560, which is $26,082,348, or 28.2 per cent, greater than the merchantable product of the silk industry in 1900, and $49,378,961, or 71.4 per cent, greater than the net product for 1890.

TABLE 2.—MATERIALS AND PRODUCTS TWICE INCLUDED, AND MATERIALS AND PRODUCTS EXCLUSIVE OF DUPLICATIONS, BY STATES: 1890 TO 1905.

STATE.	Census.	MATERIALS.			PRODUCTS.		
		Cost of materials as reported.	Cost of materials twice included.	Cost of materials exclusive of duplications.	Value of products as reported.	Value of products twice included.	Value of products exclusive of duplications.
United States	1905	$75,861,188	$16,400,231	$59,460,957	$133,288,072	$14,754,512	$118,533,560
	1900	62,406,665	11,840,267	50,566,398	107,256,258	14,805,046	92,451,512
	1890	51,004,425	15,537,520	35,466,905	87,298,454	18,143,855	69,154,299
California	1905	217,068	12,280	204,788	351,949	19,300	332,649
	1900	146,219	8,420	137,799	255,902	9,300	246,602
	1890	146,406	3,500	142,906	271,912	5,600	266,312
Connecticut	1905	9,098,196	1,190,426	7,907,770	15,623,693	1,642,299	13,981,394
	1900	7,198,008	557,713	6,640,295	12,378,981	1,041,714	11,337,267
	1890	6,201,876	889,756	5,312,120	9,788,951	1,665,390	8,123,561
Illinois	1905	486,015	23,475	462,540	735,242	159,310	575,932
	1900	187,514	51,042	136,472	421,088	29,893	391,195
	1890	314,855	.....	314,855	785,845	.....	785,845
Massachusetts	1905	4,156,919	423,413	3,733,506	7,012,062	540,856	6,471,206
	1900	3,823,963	354,697	3,469,266	5,957,532	290,730	5,666,802
	1890	3,251,893	746,175	2,505,718	5,557,569	945,610	4,611,959
New Jersey	1905	22,339,447	5,852,365	16,487,082	42,862,907	1,796,351	41,066,556
	1900	21,631,118	5,704,322	15,926,796	39,966,662	2,268,720	37,697,942
	1890	17,908,883	5,205,501	12,703,382	30,760,371	5,354,389	25,405,982
New York	1905	10,490,474	3,297,528	7,192,946	20,181,212	1,067,042	19,114,170
	1900	6,570,037	1,144,973	5,425,064	12,706,246	751,034	11,955,212
	1890	10,174,818	1,318,742	8,856,076	19,417,796	1,681,481	17,736,315
Pennsylvania	1905	24,267,122	5,543,762	18,723,360	39,333,520	8,272,332	31,061,188
	1900	19,884,869	3,979,831	15,905,038	31,072,926	9,359,279	21,713,647
	1890	12,094,389	7,017,604	5,076,785	19,357,546	7,953,323	11,404,223
Rhode Island	1905	1,695,950	4,567	1,691,383	2,555,986	61,800	2,494,186
	1900	818,561	37,730	780,831	1,311,333	22,294	1,289,039
	1890	149,763	68,242	81,521	229,062	94,062	135,000
All other states	[1] 1905	3,109,997	52,415	3,057,582	4,631,501	1,195,222	3,436,279
	[2] 1900	2,146,376	1,539	2,144,837	3,185,588	1,032,082	2,153,506
	[3] 1890	761,542	288,000	473,542	1,129,402	444,000	685,402

[1] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Virginia.
[2] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, North Carolina, Utah, and Virginia.
[3] Includes states as follows: Maine, Maryland, Michigan, Missouri, North Carolina, Ohio, and Virginia.

IMPORTED SILK MATERIALS AND FINISHED FABRICS.

The quantity and value of the imports of raw silk, spun silk, raw silk waste, and manufactured silk goods, for 1850, 1860, 1870, 1880, and for each fiscal year between 1880 and 1905, inclusive, together with the value of domestic silk manufactures at each census from 1850 to 1905, inclusive, are shown in Table 3.

An increase of 31.2 per cent in the value of silk materials, and of 33.7 per cent in the value of raw silk alone imported between the censuses of 1900 and 1905 is shown. As explained in this report under "Interchange of fibers in the textile industries," 1,221,586 pounds of reeled and spun silk were consumed in the cotton, wool, and hosiery and knit goods industries, as reported for the census of 1905.

TABLE 3.—IMPORTS OF SILK MATERIAL AND SILK GOODS, AND DOMESTIC PRODUCTION: 1850 TO 1905.

YEAR ENDING JUNE 30—	IMPORTED SILK MATERIALS.[1]							VALUE OF MANUFACTURED SILK GOODS.	
	Total cost.	Raw silk.		Spun silk.		Raw silk waste, including cocoons and noils.		Imported.[1]	Domestic.
		Pounds.	Cost.	Pounds.	Cost.	Pounds.	Cost.		
1905	$64,160,203	17,812,133	$59,542,892	2,305,847	$3,120,210	4,545,174	$1,497,161	$28,702,445	$133,288,072
1904	49,139,607	12,630,883	44,461,564	2,053,077	3,039,107	4,091,826	1,638,936	28,443,901	.....
1903	52,836,810	13,637,206	49,002,597	1,924,251	2,825,760	1,633,653	1,008,453	33,222,113	.....
1902	45,551,269	12,620,682	41,714,331	2,002,672	2,915,918	1,614,144	921,020	29,326,310	.....
1901	32,550,637	9,130,617	29,353,777	1,652,177	2,505,272	1,205,938	697,588	24,330,995	.....
1900	48,884,997	11,259,310	44,549,672	2,336,947	3,555,237	1,814,405	780,088	26,803,534	107,256,258
1899	34,442,215	9,691,145	31,827,061	1,703,704	1,962,588	1,559,238	652,560	23,063,916	.....
1898	33,287,883	10,315,162	31,446,800	956,974	1,177,817	1,772,789	663,266	21,457,249	.....
1897	20,001,899	6,513,612	18,496,944	801,336	1,083,016	1,479,832	421,339	25,433,477	.....
1896	27,762,032	8,000,621	26,246,902	782,706	998,604	1,363,366	516,526	25,029,128	.....
1895	23,805,675	7,974,810	22,029,068	843,647	1,239,619	1,341,650	596,988	29,783,520	.....
1894	16,953,572	4,956,875	15,627,822	437,428	719,390	945,610	606,360	23,441,139	.....
1893	31,175,837	7,422,430	29,055,557	758,502	1,338,851	1,075,047	781,429	36,681,097	.....
1892	26,152,709	7,521,342	24,321,494	489,652	1,003,384	1,312,707	737,831	30,348,796	.....
1891	20,897,502	4,917,688	17,994,654	856,706	1,821,421	1,348,941	1,081,427	35,478,966	.....
1890	25,209,175	5,943,360	23,285,099	411,621	883,644	1,567,080	1,040,432	37,363,143	87,298,454
1889	19,990,955	5,329,646	18,544,025	274,362	659,045	1,315,478	787,885	34,207,684	.....
1888	20,509,092	5,173,840	19,151,208	197,130	578,950	1,196,482	778,934	32,363,678	.....
1887	20,079,384	4,599,574	18,687,245	172,617	441,299	1,428,517	950,840	30,822,978	.....
1886	18,696,578	4,754,626	17,232,505	178,383	442,310	2,063,434	1,021,763	27,013,545	.....
1885	13,112,641	3,424,076	12,421,739	78,890	226,412	884,832	464,490	27,880,386	.....
1884	13,427,851	3,222,546	12,481,496	91,750	189,722	1,062,342	756,633	37,840,852	.....
1883	15,269,984	3,253,370	14,043,340	43,812	126,832	1,477,736	1,099,812	33,180,280	.....
1882	13,610,072	2,879,402	12,890,392	14,726	47,296	341,867	672,384	38,280,055	.....
1881	11,509,008	2,550,103	10,888,264	19,325	60,830	240,310	559,914	32,316,396	.....
1880	13,385,134	2,562,236	12,024,699	37,239	111,999	.....	1,248,436	31,348,948	41,033,045
1870	3,055,626	583,589	3,017,058	7,521	37,068	.....	.....	24,219,981	12,210,062
1860	1,340,676	[2] 297,877	1,340,676	(3)	(3)	.....	.....	32,061,120	6,007,771
1850	401,385	[2] 120,010	401,385	(3)	(3)	.....	.....	17,694,658	1,800,476

[1] Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."
[2] Estimated from current prices, the value only being on record.
[3] Not reported separately.

The values of imported manufactured goods are foreign invoice values, to which an average of about 70 per cent should be added for freight, revenue duty, importers' profits, and occasional advances on invoices in order to determine the actual cost to consumers. While the increase in the value of manufactured silk goods imported in 1905 over 1900 was only 7.1 per cent, it is important to note that the value of the goods imported in 1905 is distributed as follows:

KIND.	Value.
Total	$28,702,445
Dress and piece goods	15,165,053
Laces and embroideries	4,070,853
Ribbons	1,880,071
Clothing, ready-made, and wearing apparel	2,254,003
Velvets, plushes, and other pile fabrics	1,380,047
All other, not specially provided for	3,355,518

Spun silk yarns, known in Europe outside of England, as "schappe" yarns, are excluded from finished goods imported, as they are classified for Census purposes as materials used.

MATERIALS AND PRODUCTS.

Table 4 shows the quantity and cost of materials used and the value of products, with the per cent of increase for each item, for 1890, 1900, and 1905.

In the silk industry the cost of materials per $100 of products has varied but slightly. In 1880 it was $54.76; in 1890, $58.43; in 1900, $58.18; and in 1905, $56.92.

The quantity of organzine and tram bought as such and used in manufacturing in 1905 was 38.4 per cent greater than in 1900 and the cost 38.1 per cent greater. No similar comparison with the census figures of 1890

is possible, for the reason that the amount of organzine and tram reported as material at that census included organzine and tram thrown under contract for silk manufacturers by commission throwsters, while the amounts reported for the censuses of 1900 and 1905 represent only organzine and tram purchased.

TABLE 4.—MATERIALS USED, BY KIND, QUANTITY, AND COST; AND PRODUCTS, BY KIND AND VALUE, WITH PER CENT OF INCREASE: 1890 TO 1905.

	CENSUS.			PER CENT OF INCREASE.	
	1905	1900	1890	1900 to 1905	1890 to 1900
Materials used, total cost	$75,861,188	$62,406,665	$51,004,425	21.6	22.4
Raw silk—					
Pounds	11,572,783	9,760,770	6,376,881	18.6	53.1
Cost	$45,318,416	$40,721,877	$26,087,371	11.3	56.1
Waste silk, cocoons, and noils—					
Pounds	(1)	1,667,195	1,357,618	.....	22.8
Cost	(1)	$734,539	$1,106,608	.....	[2]33.6
Organzine and tram—					
Pounds	3,236,744	2,338,464	3,305,372	38.4	[2]29.3
Cost	$14,552,425	$10,539,632	$16,518,979	38.1	[2]36.2
Spun silk—					
Pounds	1,951,201	1,550,291	(1)	25.9	.....
Cost	$4,310,061	$3,406,059	(1)	26.5	.....
Other silk materials—					
Pounds	515,962	74,040	744,223	596.9	[2]90.1
Cost	$1,810,632	$284,788	$2,638,242	535.8	[2]89.2
Yarns, other than silk—					
Pounds	9,730,769	7,116,728	5,624,960	36.7	26.5
Cost	$3,713,794	$2,406,354	$2,327,684	54.3	3.4
Fuel and rent of power and heat	$1,130,556	$684,002	$485,516	65.3	40.9
All other materials, including mill supplies and freight	$5,025,304	$3,629,414	$1,840,025	38.5	97.2
Products, total value	$133,288,072	$107,256,258	$87,298,454	24.3	22.9
Organzine and tram made for sale	$9,190,650	$11,167,191	$16,880,366	[2]17.7	[2]33.8
Spun silk yarn made for sale	$1,660,647	$1,026,227	$1,263,489	61.8	[2]18.8
Machine twist and sewing, embroidery, fringe, floss, and wash silks	$10,146,071	$10,246,190	$8,917,844	[2]1.0	14.9
Dress goods, figured and plain, and other silk broad goods, except velvets and plushes	$66,917,762	$52,152,816	$22,955,750	28.3	127.2
Velvets and plushes	$4,502,021	$4,959,971	$3,141,026	[2]9.2	57.9
Tapestries, curtains, and other upholstery broad goods	$1,559,982	$1,009,835	$3,712,332	54.5	[2]72.8
Ribbons and laces	$22,636,093	$19,270,283	$17,343,197	17.5	11.1
Braids and bindings	$3,493,977	$1,522,565	$2,771,382	129.5	[2]45.1
Dress, cloak, millinery, and military trimmings, including fringes and gimps	$4,124,651	$2,295,010	$8,554,566	79.7	[2]73.2
All other products, including embroideries	$5,340,162	$1,268,950	$1,758,502	320.8	[2]27.8
Amount received for contract work	$3,716,056	$2,337,220	(1)	59.0	.....

[1] Not reported separately. [2] Decrease.

Throwsters.—The work of commission throwsters, although an important branch of the industry, is now treated by the Bureau of the Census as done on commission for other establishments engaged in weaving, the latter furnishing the raw silk and accounting for the products. The relation of commission throwing to the silk industry of the United States grows more and more important. Table 5 shows the relation at the census of 1905.

Of the 11,572,783 pounds of raw silk consumed by silk mills at this census, 7,101,851 pounds, or 61.4 per cent, were thrown under contract into organzine and tram by establishments throwing raw silk for others; 1,744,709 pounds, or 15.1 per cent, were consumed by the "machine twist," "sewing, embroidery, and wash silk," and "fringe and floss" branches of the industry. The remainder, 2,726,223 pounds, or 23.5 per cent of the total, was thrown in silk mills which operate their own throwing plants.

TABLE 5.—*Total consumption of raw silk, and raw silk thrown under contract, by states: 1905.*

STATE.	Total consumption of raw silk (pounds).	RAW SILK THROWN UNDER CONTRACT.		
		Total (pounds).	Organzine (pounds).	Tram (pounds).
United States	11,572,783	7,101,851	3,635,384	3,466,467
California	46,255	.....	.....	.....
Connecticut	1,320,509	216,454	131,038	85,416
Illinois	78,100	.....	.....	.....
Massachusetts	739,004	.....	.....	.....
New Jersey	3,553,090	1,689,088	702,055	987,033
New York	1,006,793	705,078	359,248	345,830
Pennsylvania	3,970,044	4,116,299	2,288,174	1,828,125
Rhode Island	262,112	88,000	68,000	20,000
All other states[1]	596,876	286,932	86,869	200,063

[1] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Virginia.

Table 6 shows, by states, the number of throwing spindles in commission throwing plants and in silk mills, as reported at the census of 1905.

TABLE 6.—THROWING SPINDLES IN COMMISSION THROWING PLANTS AND SILK MILLS: 1905.

STATE.	THROWING SPINDLES (NUMBER).								
	Aggregate.	Commission throwing plants.				Silk mills.			
		Total.	Organzine.		Tram.	Total.	Organzine.		Tram.
			First time over.	Second time over.			First time over.	Second time over.	
United States	1,197,408	628,914	350,549	204,885	73,480	568,494	302,431	211,012	55,051
California	2,034	.....	.....	.....	.....	2,034	838	38	1,158
Connecticut	28,172	8,440	4,092	2,728	1,620	19,732	9,198	6,914	3,620
Massachusetts	22,390	.....	.....	.....	.....	22,390	9,454	10,156	2,780
New Jersey	232,673	151,972	86,370	46,114	19,488	80,701	39,384	30,256	11,061
New York	102,428	57,170	28,420	17,628	11,122	45,258	27,578	14,632	3,048
Pennsylvania	743,765	387,798	221,229	131,695	34,874	355,967	192,817	135,606	27,544
Rhode Island	6,836	6,836	3,400	1,436	2,000	.....	.....	.....	.....
All other states[1]	59,110	16,698	7,038	5,284	4,376	42,412	23,162	13,410	5,840

[1] Includes states as follows: Commission throwing plants—Maryland, New Hampshire, North Carolina, and Virginia. Silk mills—Delaware, Maine, Michigan, North Carolina, and Virginia.

The total number of throwing spindles reported in 1905 was 1,197,408, an increase of 14.6 per cent since 1900. They were classified as follows:

Throwing spindles: 1905 and 1900.

	1905	1900	Per cent of increase.
Total	1,197,408	1,045,304	14.6
Organzine, first time over	652,980	582,180	12.2
Organzine, second time over	415,897	345,145	20.5
Tram spindles	128,531	117,979	8.9

It is to be noted that the statistics preserve the proper technical proportion between the number of second time over and first time over spindles, namely, about two-thirds.

During the year 1905, immediately following the census, the following additions were made to the throwing spindle equipment of the United States:[1]

	Total.	Belt-driven spindles.	Band-driven high speed spindles.
Total	98,040	87,924	10,116
Organzine, first time over	50,270	43,526	6,744
Organzine, second time over	36,882	33,510	3,372
Tram spindles	10,888	10,888	.....

In silk spinning, the belt system, so called, where the spindles are driven by contact with an endless belt instead of with bands, was referred to in the special report on silk at the census of 1900 as having been first practically introduced in the United States in the year 1889. The belt-drive system was adapted to the modern self-oiling spindle and promptly won favor and adoption.

[1] Thirty-fourth Annual Report of the Silk Association of America, 1906, pages 68 and 104.

At this census an effort has been made to further classify the throwing equipment of the throwing plants into belt-driven spindles, band-driven high speed spindles, and band-driven step and bolster spindles for organzine first time over and second time over, and for tram spindles. The total number of commission throwing plants in 1905 was about 100. Replies were not received from all of the throwsters, but the information secured indicated that the belt-driven spindle predominates greatly in the plants of the commission throwsters. The relative proportion of the returns received was, approximately, belt-driven spindles, 75 per cent; band-driven high speed spindles, 24 per cent; and step and bolster spindles, not over 1 per cent. No attempt was made to secure a similar classification from the silk weaving mills which operate their own throwing plants. It has been found that the belt system gives more uniform twist and requires less attention than the band-driven frames, and the economy of the system favors its substitution for the old band-driven type.

During the past five years great progress has been made in perfecting throwing machinery, thereby improving the product both in quantity and quality, the constantly increasing wages having made it imperative that some such gains be made possible. Winding frames have been improved by introducing adjustable balanced swifts, improved take-up spindles, and redrawing attachments, all combining to make a more perfect spinning bobbin.

The combination process of making organzine by spinning, doubling, and twisting, and tram by doubling and twisting, in one operation, which was referred to in the Census report of 1900 as newly introduced, has been fully perfected, and many large establishments are now equipped entirely with this system. The combination process saves over the best style of the single processes, 33 per cent being gained in floor space

alone, and also enables the throwsters to employ a superior class of operatives at higher wages and thus to improve greatly the quality of the finished organzine and tram. These changes alone have done more to improve the product without a material increase in cost than all others combined since the introduction of the high speed Atwood spindle, twenty-five years previous.

The present high efficiency and superior quality of throwing machinery in the United States is acknowledged by the rest of the silk world and has contributed largely to the wonderful growth of the silk industry in this country.

Table 7 presents a summary, by states, of establishments reporting throwing spindles, classified according to the number reported.

TABLE 7.—ESTABLISHMENTS CLASSIFIED BY NUMBER OF THROWING SPINDLES, BY STATES: 1905.

STATE.	Number of establishments reporting throwing spindles.	ESTABLISHMENTS REPORTING— Under 2,500.	2,500 and under 5,000.	5,000 and under 7,500.	7,500 and under 10,000.	10,000 and under 12,500.	12,500 and under 15,000.	15,000 and under 20,000.	20,000 and under 25,000.	25,000 and under 40,000.	40,000 and under 45,000.	45,000 and under 50,000.	50,000 and over.	Number of throwing spindles.	Per cent of increase in number of throwing spindles, 1900 to 1905.
United States	162	54	27	22	19	14	8	5	6	4	1	1	1	1,197,408	14.6
Pennsylvania	70	16	6	12	12	6	6	2	4	3	1	1	1	743,765	21.6
New Jersey	52	25	9	6	2	7	1	1	1					232,673	[1] 15.5
New York	13	1	5	3	1			2		1				102,428	112.6
Connecticut	8	5	1		1		1							28,172	[1] 5.0
Virginia	2				1				1					28,090	[1] 1.0
Massachusetts	5	2	1		1	1								22,390	[1] 28.5
North Carolina	3	2			1									11,266	16.4
Rhode Island	2	1		1										6,836	(2)
Michigan	1		1											4,902	344.0
Maine	1		1											4,760	81.5
Maryland	1		1											3,420	427.8
New Hampshire	1		1											3,408	(3)
Delaware	1		1											3,264	(3)
California	2	2												2,034	2,211.4

[1] Decrease. [2] No throwing spindles reported in 1900. [3] Same number reported in 1900 and 1905.

The total number of accessory spindles, as shown in Table 25, is 1,256,180, an increase of 33.3 per cent since 1900. Of the total number of accessory spindles in 1905, 28.6 per cent were reported by commission throwing plants, and 71.4 per cent by all other silk mills.

Interchange of fibers in the textile industries.—The quantity of reeled silk yarns and spun silk yarns consumed by the textile industries of the United States other than the silk industry is shown for the censuses of 1890, 1900, and 1905 in Table 8.

TABLE 8.—*Silk yarn used by cotton, wool, and hosiery and knit goods manufactures: 1890 to 1905.*

INDUSTRY.	Census.	Total (pounds).	Reeled silk yarn (pounds).	Spun silk yarn (pounds).
Total	1905	1,221,586	638,092	583,494
	1900	1,147,270	574,922	572,348
	1890	427,269	277,157	150,112
Cotton manufactures [1]	1905	412,589	265,256	147,333
	1900	560,680	342,425	218,255
	1890	51,434	32,851	18,583
Wool manufactures [2]	1905	488,326	202,578	285,748
	1900	320,343	70,073	250,270
	1890	255,494	166,709	88,785
Hosiery and knit goods	1905	320,671	170,258	150,413
	1900	266,247	162,424	103,823
	1890	120,341	77,597	42,744

[1] Includes cotton goods and cotton small wares.
[2] Includes worsted goods, woolen goods, carpets and rugs, felt goods, and wool hats.

The fact that the Census statistics show a decrease of 77,169 pounds in the quantity of reeled silk yarns consumed by the cotton industry in 1905, as compared with 1900, and of 70,922 pounds of spun silk yarns, is a great surprise to silk manufacturers and to many cotton manufacturers. In view of the well-established fact that the manufacture of mixed cotton and silk cloths, especially in large cotton mills, has markedly increased in recent years, the following is believed to be a correct explanation of the seeming anomaly:

1. The figures for the census of 1905 are for the calendar year 1904.

2. In the year 1903 there was a great demand on the cotton mills for woven colored wash fabrics which were made from cotton warps, and silk stripes, and silk filling either partly or wholly. So great was the demand that it was supposed it would continue in 1904. Some of the large cotton mills acted on this supposition and made heavy stocks of similar goods, but early in 1904 a demand sprang up for plain white goods as a cheaper fabric and the striped goods became a drug on the market, resulting in great loss to some of the cotton mills. To illustrate, prices of these goods fell from 30 to 10 cents a yard. The movement in this direction was helped by the substitution of mercerized cotton yarn for silk, the price of mercerized cotton having materially declined since the year 1903, and the commercial result was a lessened consumption of silk yarns in the following year.

Fashion continued to favor the cotton converting trade in 1905 and since, but the demand for silk yarns

for silk warps or filling increased considerably in the last named year. This is corroborated by an independent inquiry made of the silk manufacturers and dealers, who are the chief sellers of silk yarns to cotton manufacturers. Their returns show conclusively that the aggregate sales of this character were over 50 per cent greater in the calendar year 1905 than in the calendar year 1904.

In other respects the Census figures indicate a constantly growing demand for reeled silk yarns and spun silk yarns by the knit goods trade, and of spun silk yarns by the wool industry. The above figures illustrate also the well-known fact that the business of legitimate silk manufacturers is being invaded with increasing success by a new class of competitors in the domestic textile industries.

Table 9 indicates the extent of the interchange of fibers in the silk industry, and shows the quantity and cost of the different materials used in silk manufacture at the censuses of 1890, 1900, and 1905, with the per cent which each item forms of the total.

The total cost of all materials consumed by the silk industry at this census increased $13,454,523, or 21.6 per cent, over the year 1900. Reeled silk increased 18.6 per cent in quantity, spun silk, 25.9 per cent, and artificial silk nearly seventy-six fold. The great increase in the consumption of artificial silk is accounted for by its adaptability for braids and fringes, dress trimmings, millinery trimmings, etc. The consumption of cotton yarns by the silk industry increased 30.1 per cent in quantity and has reached a total of 8,387,048 pounds; mercerized cotton yarns increased 187.1 per cent; woolen yarns, 85.1 per cent; mohair yarns, 32 per cent; and other yarns, 20.8 per cent.

TABLE 9.—MATERIALS USED, BY KIND, QUANTITY, AND COST, WITH PER CENT OF TOTAL: 1890 TO 1905.

	MATERIALS USED.						PER CENT OF TOTAL.					
	Pounds.			Cost.			Pounds.			Cost.		
	1905	1900	1890	1905	1900	1890	1905	1900	1890	1905	1900	1890
Total	27,007,450	22,507,488	17,409,054	$75,861,188	$62,406,665	$51,004,425	100.0	100.0	100.0	100.0	100.0	100.0
Silk materials	17,276,690	15,390,760	11,784,094	65,091,534	55,686,895	46,351,200	64.0	68.4	67.7	87.0	89.2	90.9
Textile yarns other than silk	9,730,760	7,116,728	5,624,960	3,713,794	2,406,354	2,327,684	36.0	31.6	32.3	4.9	3.9	4.6
Cotton yarn	8,387,048	6,444,208	(1)	2,586,954	1,830,550	(1)	31.1	28.6	.....	3.4	2.9	.....
Mercerized cotton yarn	631,247	219,861	(1)	471,035	165,683	(1)	2.3	1.0	.....	0.6	0.3	.....
Woolen yarn	443,155	239,461	(1)	409,867	167,770	(1)	1.6	1.1	.....	0.5	0.3	.....
Mohair yarn	138,389	104,810	(1)	137,097	107,365	(1)	0.5	0.4	.....	0.2	0.2	.....
Other yarns	130,930	108,388	(1)	108,841	134,086	(1)	0.5	0.5	.....	0.2	0.2	.....
All other materials, cost	.....	.....	.....	6,155,860	4,313,416	2,325,541	.....	.....	.....	8.1	6.9	4.5

[1] Not reported separately in 1890.

Sewing silk and machine twist.—The making of sewing silk became a household industry in New England, chiefly in Massachusetts and Connecticut, in the first half of the last century. The invention of the sewing machine developed a demand for machine twist, a silk thread specially suited for use in sewing machines, and first applied to that purpose in February, 1852.

The following tabular statement illustrates the growth of the sewing silk and machine twist branch of the industry, omitting fringe and floss silks, at the several census periods since 1850:

CENSUS.	Pounds.	Value.	Per cent of increase in quantity.
1905	1,539,355	$9,449,009	5.0
1900	1,465,575	9,274,800	30.9
1890	[1] 1,119,825	7,068,213	41.5
1880	[1] 791,525	6,783,855	53.2
1870	516,621	(2)	26.2
1860	409,420	(2)	.....
1850	(2)	[3] 1,209,426	.....

[1] Sewing silk and machine twist only.
[2] Not reported separately.
[3] All sewing silk; machine twist first made in 1852.

New England continues in the lead in the production of sewing silk and machine twist, Connecticut alone contributing 50.8 per cent and Massachusetts 25.7 per cent in 1905 of the total production. The steady growth of this branch of the silk industry, as shown in the above statement, up to 1900, and which continued through the years 1901, 1902, and 1903, practically came to a halt in 1904. As a matter of fact, the consumption of raw silk for spool silks and skein silks was actually less in 1904 than it was in any one of the years from 1901 to 1903. Manufacturers of cheaper grades of boots and shoes and clothing began to substitute mercerized cotton thread for silk. To illustrate the volume of business in this line of production, it is estimated that to operate the sewing machines in the United States requires more than 25,000 miles in length of spool silk daily. The manufacturing trade consumes about two-thirds of the output of spool silk and the retail dressmaking trade about one-third.

The partial supplanting of reeled silk threads by inferior and cheaper sewing materials is an undoubted fact and has contributed somewhat to the reduction

in selling value of machine twist and sewing silks. The average value per pound of machine twist for 1905 shows a reduction of 2.5 per cent, and of sewing and embroidery silks a reduction of 5.6 per cent, as compared with 1900. In addition to the competition caused by the substitution of materials above referred to, competition among the silk manufacturers themselves in naming low selling prices did the rest. While lively competition continues among the silk manufacturers as to prices, it may be said, however, that the silk trade is a unit in the belief that the use of mercerized cotton yarns for high class manufacturing in the clothing and boot and shoe trade is but a temporary and a more or less unsatisfactory expedient.

Table 10 shows the quantity and value of machine twist, sewing, embroidery, and wash silks, and fringe and floss silks produced, as reported at the censuses of 1900 and 1905.

TABLE 10.—MACHINE TWIST, SEWING, AND FRINGE AND FLOSS SILKS—QUANTITY AND VALUE OF PRODUCTION, BY STATES: 1905 AND 1900.

STATE.	Census.	Total pounds, less fringe and floss, used as material.	MACHINE TWIST.		SEWING, EMBROIDERY, AND WASH SILKS.		FRINGE AND FLOSS.		Fringe and floss used as material (pounds).
			Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	
United States	1905	1,694,898	932,998	$5,521,055	606,357	$3,927,954	205,354	$697,062	49,811
	1900	1,659,234	987,917	5,997,974	477,658	3,276,826	261,643	971,390	67,984
Per cent of increase		2.1	[1] 5.6	[1] 8.0	26.9	19.9	[1] 21.5	[1] 28.2	.....
Connecticut	1905	782,434	614,729	3,618,824	167,485	953,636	220	1,122	.....
	1900	785,518	545,423	3,354,546	145,032	977,213	95,806	217,043	743
Per cent of increase		0.4	12.7	7.9	15.5	[1] 2.4	[1] 99.8	[1] 99.5	.....
Massachusetts	1905	402,942	134,256	746,296	262,076	1,852,108	6,610	34,906	.....
	1900	459,953	269,241	1,413,004	170,423	1,246,445	20,964	147,773	675
Per cent of increase		[1] 12.4	[1] 50.1	[1] 47.2	53.8	48.6	[1] 68.5	[1] 76.4	.....
New York	1905	53,330	35,325	191,628	12,960	77,752	12,125	70,056	7,080
	1900	44,422	46,500	240,405	18,528	113,468	.....	.....	20,606
Per cent of increase		20.1	[1] 24.0	[1] 20.3	[1] 30.1	[1] 31.6	.....	.....	.....
Pennsylvania	1905	150,816	28,223	196,409	49,480	296,384	106,073	344,173	32,960
	1900	211,486	43,476	285,288	74,475	451,800	128,262	542,130	34,727
Per cent of increase		[1] 28.7	[1] 35.1	[1] 31.2	[1] 33.6	[1] 34.3	[1] 17.3	[1] 36.5	.....
All other states	[2] 1905	305,376	120,465	767,898	114,356	747,574	80,326	246,805	9,771
	[3] 1900	157,855	83,277	704,731	69,200	487,900	16,611	64,444	11,233
Per cent of increase		93.5	44.7	9.0	65.3	53.2	383.6	283.0	.....

[1] Decrease.
[2] Includes states as follows: California, Illinois, Michigan, and New Jersey.
[3] Includes states as follows: California, Illinois, Michigan, New Jersey, and Rhode Island.

Broad silk production.—The increase in the production of piece-dyed goods since the census of 1900 has been notable. All-silk, piece-dyed goods have increased from 7,331,501 yards, average value 45.6 cents per yard, in 1900, to 21,334,584 yards, average value of 43.5 cents per yard, in 1905. Silk mixed, piece-dyed goods have increased from 8,558,884 yards, average value 33.5 cents per yard, in 1900, to 15,603,353 yards, average value of 28.2 cents per yard, in 1905. The main increases in the all-silk, piece-dyed output have been—in Pennsylvania, from 1,775,255 to 7,325,103 yards; in New Jersey, from 1,694,675 to 3,874,771 yards; in Connecticut, from 3,371,127 to 4,959,991 yards. The same states increased their output of silk mixed piece-dyed goods, as follows: Pennsylvania, from 5,562,097 to 8,461,557 yards; New Jersey, from 381,000 to 1,331,233 yards; Connecticut, from 147,833 to 582,580 yards. The greatest increase in the output of silk mixed, piece-dyed goods since the census of 1900 occurred in Rhode Island. New York shows a surprising change in the relative production of the two classes of piece-dyed goods at the two censuses, the following being the figures:

Piece-dyed goods, for New York: 1905 and 1900.

CENSUS.	TOTAL.		ALL-SILK.		SILK MIXED.	
	Yards.	Value.	Yards.	Value.	Yards.	Value.
1905	4,275,669	$1,910,789	4,272,422	$1,906,468	3,247	$4,321
1900	2,469,570	1,124,050	22,000	84,561	2,447,570	1,039,489

The localities where piece-dyed goods have been chiefly manufactured in 1905 and 1900 are indicated in Table 11.

TABLE 11.—PRODUCTION OF PIECE-DYED SILKS, BY STATES: 1905 AND 1900.

STATE.	ALL-SILK (YARDS, SINGLE WIDTH).				SILK MIXED (YARDS, SINGLE WIDTH).			
	1905	1900	Increase.	Per cent of increase.	1905	1900	Increase.	Per cent of increase.
Total	21,334,584	7,331,501	14,003,083	191.0	15,603,353	8,558,884	7,044,469	82.3
Connecticut	4,959,991	3,371,127	1,588,864	47.1	582,580	147,833	434,747	294.1
New Jersey	3,874,771	1,694,675	2,180,096	128.6	1,331,233	381,000	950,233	249.4
New York	4,272,422	22,000	4,250,422	19,320.1	3,247	2,447,570	[1] 2,444,323	[1] 99.9
Pennsylvania	7,325,103	1,775,255	5,549,848	312.6	8,461,557	5,562,097	2,899,460	52.1
All other states [2]	902,297	468,444	433,853	92.6	5,224,736	20,384	5,204,352	25,531.5

[1] Decrease.
[2] Includes states as follows: 1905—Maryland, Massachusetts, Michigan, Ohio, and Rhode Island. 1900—Maryland, Massachusetts, and Virginia.

The domestic production of velvets has increased from 5,122,249 yards in 1900 to 7,262,315 yards in 1905; the output of plushes has decreased from 3,848,684 yards in 1900 to 2,547,367 yards in 1905.

Tapestry and upholstery fabrics are the only kinds of broad goods in the silk schedules of 1905 that have advanced in price since the census of 1900; namely, tapestry, from 56 cents a yard to 83.3 cents; upholstery, from 82 cents to 98.8 cents per yard.

Table 12 presents, in detail, the production of silk broad goods by yardage, value, and average value per yard for the United States for the census of 1905.

Assuming that the first three classified items in Table 12 constitute the domestic production of silk dress goods in the United States, and estimating the value of foreign imports of dress goods fabrics (duty paid) at $25,000,000, we find the American consumption of silk dress goods fabrics to be $92,000,000, of which 72.8 per cent were made in the United States, compared with 67.3 per cent at the census of 1900.

TABLE 12.—PRODUCTION OF SILK BROAD GOODS, BY CLASSES: 1905.

CLASS.	TOTAL.			ALL-SILK.			SILK MIXED.		
	Yards, single width.	Value.	Average value per yard (cents).	Yards, single width.	Value.	Average value per yard (cents).	Yards, single width.	Value.	Average value per yard (cents).
Total	136,447,107	$72,979,765	53.5	97,870,717	$55,944,988	57.2	38,576,390	$17,034,777	44.2
Broad silks:									
Plain and fancies	77,454,067	46,084,952	59.5	68,393,042	40,741,480	59.6	9,061,025	5,343,472	59.0
Jacquards	10,479,211	7,156,711	68.3	8,143,091	5,927,063	72.8	2,336,120	1,229,648	52.6
Piece-dyed	36,937,937	13,676,099	37.0	21,334,584	9,276,445	43.5	15,603,353	4,399,654	28.2
Velvets	7,262,315	3,161,206	43.5	.....	.....	.....	7,262,315	3,161,206	43.5
Plushes	2,547,367	1,340,815	52.6	.....	.....	.....	2,547,367	1,340,815	52.6
Tapestry	1,193,326	994,036	83.3	.....	.....	.....	1,193,326	994,036	83.3
Upholstery	572,884	565,946	98.8	.....	.....	.....	572,884	565,946	98.8

The development of silk broad goods weaving in the United States is well illustrated by a comparison of the production of such goods in each census year since 1870. The following tabular statement presents the yardage, the value, and the per cent of increase at the periods mentioned. All goods of which silk is the material of chief value and which are woven on broad looms are included:

CENSUS.	Yards, single width.	Value.	Per cent of increase in quantity.
1905	136,447,107	$72,979,765	39.3
1900 [1]	97,940,935	58,122,622	160.1
1890	37,648,220	20,809,108	240.8
1880	10,856,284	11,224,895	957.7
1870	1,026,422	(2)	.....

[1] The census of 1900 separates the yardage and value as follows: All-silk, 68,437,218 yards, valued at $42,573,279; silk mixed, 29,503,717 yards, valued at $15,549,343.
[2] Not reported separately.

The production of all-silk broad goods reported at the census of 1905 (97,870,717 yards) is 43 per cent greater in quantity than in 1900 and the production of silk mixed broad goods is 30.8 per cent greater.

At the census of 1900 power looms used on broad goods numbered 36,825, classified as follows:

Plain looms, 36 inches or over, reed space	13,077
Plain looms, under 36 inches, reed space	16,161
Jacquard broad looms	7,587

At the present census they number 50,252, an increase of 36.5 per cent, and are in detail as follows:

Plain looms, 36 inches or over, reed space, 26,338, an increase of over 101.4 per cent.

Plain looms, under 36 inches, reed space, 18,022, an increase of 11.5 per cent.

Jacquard broad looms, 5,892, a decrease of 22.3 per cent.

During the year 1905, immediately following the census year, 4,439 new broad fabric power looms were

supplied to the silk mills of the United States by our domestic loom builders.[1]

The advancement and the improvement of the power loom during the past five years have not, perhaps, shown as many additions and new attachments as during the few years preceding, but the number of improvements in all the working parts has been much greater, with the result of not only increasing the output but also producing a much better grade of cloth. The silk loom of to-day is so built that labor of ordinary skill is able to operate the loom and bring out good results. The dobby multiplier and all the other parts and motions mentioned in the Census report of 1900 are still in use, but, as stated above, have been materially changed, with very satisfactory results.

Among the new attachments may be mentioned the two-weave motion for the Gem silk loom. This was previously confined to the dobby loom and will prove of great value in increasing the variety of weaves of cloths that can be produced on this same loom. There has also been added a graduating tension roll which gives more uniform tension on the cloth, and therefore improves the quality of the goods; also a device for disconnecting the lower cloth roll from the take-up roll, so that in taking the cloth from the loom it is not necessary to disturb the tension, thereby insuring uniform goods. Another addition has been the patent temple for holding the goods to a proper width. This is a very important improvement to the loom and is the result of years of experimenting, as it was found very difficult to produce a temple that would in no way mark or injure the cloth. There has also been added a very important attachment in the shape of a shuttle check. This prevents the shuttle from rebounding after entering the box, thereby making more nearly perfect goods, particularly by preventing kinks in the filling.

Table 13 indicates the states where the principal changes in the loom equipment for broad and narrow fabrics have taken place in the industry since the census of 1900.

Table 14 presents a summary, by states, of establishments classified according to the number of looms operating on broad silks, not including velvets, plushes, tapestries, and upholstery goods, for the census of 1905.

[1] Thirty-fourth Annual Report of the Silk Association of America, 1906, pages 68 and 104.

TABLE 13.—POWER LOOMS IN SILK MILLS, BY STATES: 1905 AND 1900.

STATE.	Census.	Aggregate.	ON BROAD SILKS, INCLUDING VELVETS, ETC. (NUMBER).				ON NARROW FABRICS (NUMBER).			
			Total.	36 inches or over, reed space.	Under 36 inches, reed space.	Jacquard.	Total.	High-speed ribbon.	German ribbon (warps on top).	Jacquard.
United States	1905	59,775	50,252	26,338	18,022	5,892	9,523	3,966	3,875	1,682
	1900	44,257	36,825	13,077	16,161	7,587	7,432	2,105	4,471	856
Per cent of increase		35.1	36.5	101.4	11.5	[1] 22.3	28.1	88.4	[1] 13.3	96.5
Connecticut	1905	4,260	3,500	2,194	885	421	760	303	105	352
	1900	2,975	2,681	1,660	777	244	294	194	95	5
Per cent of increase		43.2	30.5	32.2	13.9	72.5	158.5	56.2	10.5	6,940.0
Massachusetts	1905	1,581	1,437	945	492	.....	144	144	.....	.....
	1900	1,017	873	451	422	.....	144	.....	144	.....
Per cent of increase		55.5	64.6	109.5	16.6	.....	.....	.....	.....	.....
New Jersey	1905	23,923	19,905	8,851	6,913	4,141	4,018	1,631	1,710	677
	1900	20,557	17,641	4,573	7,282	5,786	2,916	882	1,601	433
Per cent of increase		16.4	12.8	93.5	[1] 5.1	[1] 28.4	37.8	84.9	6.8	56.4
New York	1905	6,944	4,716	2,581	1,753	382	2,228	932	1,073	223
	1900	5,175	2,933	1,510	1,175	248	2,242	425	1,594	223
Per cent of increase		34.2	60.8	70.9	49.2	54.0	[1] 0.6	119.3	[1] 32.7	.....
Pennsylvania	1905	19,227	16,899	8,679	7,272	948	2,328	942	971	415
	1900	12,920	11,135	3,709	6,166	1,260	1,785	604	986	195
Per cent of increase		48.8	51.8	134.0	17.9	[1] 24.8	30.4	56.0	[1] 1.5	112.8
Rhode Island	1905	1,706	1,706	1,626	80	.....	.....	.....	.....	.....
	1900	533	533	465	68	.....	.....	.....	.....	.....
Per cent of increase		220.1	220.1	249.7	17.6	.....	.....	.....	.....	.....
All other states	[2] 1905	2,134	2,089	1,462	627	.....	45	14	16	15
	[3] 1900	1,080	1,029	709	271	49	51	.....	51	.....
Per cent of increase		97.6	103.0	106.2	131.4	.....	[1] 11.8	.....	[1] 68.6	.....

[1] Decrease.
[2] Includes states as follows: California, Delaware, Illinois, Maine, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Virginia.
[3] Includes states as follows: California, Delaware, Illinois, Maine, Maryland, Michigan, New Hampshire, North Carolina, and Virginia.

TABLE 14.—BROAD SILK WEAVING MILLS,[1] CLASSIFIED BY NUMBER OF BROAD LOOMS, BY STATES: 1905.

STATE.	Number of establishments reporting broad looms.	ESTABLISHMENTS REPORTING— Under 50.	50 and under 150.	150 and under 250.	250 and under 500.	500 and under 750.	750 and under 1,000.	1,000 and under 1,250.	1,250 and over.	NUMBER OF BROAD LOOMS. 1905	1900	Per cent of increase.
United States	305	107	92	44	42	11	4	2	3	49,534	35,446	39.7
New Jersey	150	66	48	12	16	6	1	.....	1	19,844	17,552	13.1
Paterson	117	64	36	9	8	3	.....	.....	.....	10,971	10,475	4.7
Outside of Paterson	33	5	12	3	8	3	1	.....	1	8,873	7,077	25.4
Pennsylvania	87	21	27	15	17	3	3	.....	1	16,994	10,662	59.4
New York	35	11	9	12	2	1	.....	.....	.....	4,761	2,867	66.0
Connecticut	9	1	3	1	3	.....	.....	.....	1	2,666	1,894	40.8
Rhode Island	5	2	.....	.....	2	.....	.....	1	.....	1,706	533	220.1
Massachusetts	7	3	2	1	.....	.....	.....	1	.....	1,466	896	63.6
New Hampshire	1	.....	.....	.....	.....	1	.....	.....	.....	564	209	184.2
Virginia	1	.....	.....	.....	1	.....	.....	.....	.....	323	147	119.7
Michigan	1	.....	.....	.....	1	.....	.....	.....	.....	208	62	332.3
Delaware	2	.....	2	.....	.....	.....	.....	.....	.....	234	191	22.5
Ohio	1	.....	.....	1	.....	.....	.....	.....	.....	206	.....	.....
Maryland	1	.....	.....	1	.....	.....	.....	.....	.....	200	144	38.9
Maine	1	.....	.....	1	.....	.....	.....	.....	.....	150	120	25.0
North Carolina	1	.....	1	.....	.....	.....	.....	.....	.....	100	125	[2] 20.0
California	2	2	.....	.....	.....	.....	.....	.....	.....	13	2	550.0
Illinois	1	1	.....	.....	.....	.....	.....	.....	.....	12	34	[2] 64.7
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....

[1] Exclusive of velvets, plushes, tapestries, and upholstery goods.

[2] Decrease.

Ribbons and narrow fabrics. The silk ribbon mills of the United States possess power loom equipment sufficient to supply any commercial demand that may be made upon them for any article of ribbon known to the trade. The progress of this branch of the industry since 1880 is shown in the following tabular statement:

CENSUS.	Value of products.
1905	$21,890,604
1900	18,467,179
1890	17,081,447
1880	6,023,100

The per cent of increase over 1900 is 18.5 in value of production, and 28.1 in power of production. The relative equipment of power looms at the two periods was as follows:

Power ribbon looms: 1905 and 1900.

	1905	1900	Per cent of increase.
Total	9,523	7,432	28.1
German (warps on top)	3,875	4,471	[1] 13.3
High speed	3,966	2,105	88.4
Jacquards	1,682	856	96.5

[1] Decrease.

During the year 1905, immediately following the census, additional narrow fabric looms were supplied to the silk ribbon mills of the United States as follows:[1]

Total	911
Ribbons, high speed automatic	129
Ribbons, high speed automatic double deck	421
German looms	46
Web looms, elastic webbing	67
Web looms, nonelastic webbing	248

[1] Thirty-fourth Annual Report of the Silk Association of America, 1906, pages 68 and 104.

One of the most notable features in the development of the ribbon manufacturing industry within recent years, is the forging to the front of the double deck batten. At the present time this style of batten has almost superseded the circular batten. Out of 100 battens that are built to-day there are 90 double deckers to 10 circulars. The advantage to be derived from this style of batten is, principally, the securing of an increased number of shuttles, thus insuring larger production.

An interchangeable high speed loom has also been perfected, which is so arranged that the loom may easily be changed from wide to narrow, or from narrow to wide spaces. In effecting this improvement many of the wooden parts have been replaced by metal ones, so that practically the only wood in the loom at present is that used in the shuttles and blocks, even the bed of the batten being made of iron. These looms are so constructed that they can be made of any length and yet run at a reasonably high rate of speed.

Early in the year 1903 a practically new era was inaugurated in the manufacture of narrow silk fabrics by the development of the silk label industry. The demand for silk labels has been steadily maintained, and the production of this class of goods is now one of the most important and promising branches of the silk industry. The label loom is usually about 20 feet in length, is cut in halves (each half working independently of the other), and is generally furnished with battens containing two or more banks of shuttles, and also with double lift top Jacquard machines.

Other improvements are:

1. The cut gear take-up motion, in which the gears are cut from solid stock. With this motion no calculation is required, one tooth in the ratchet giving one

pick in the goods, and absolute accuracy is maintained from the beginning of the piece to the end.

2. The parallel lathe motion, which is one of the most important advances ever made on quick running looms. This motion keeps the batten upright at every point of its stroke, which is very necessary in order to get good work and rapid production.

3. The elliptical gear shuttle motion and double acting side Jacquard machine, which is so constructed as to give practically a continuous rotary motion. It gives the softest, smoothest, and most delicate movement to the shuttles, and saves wear and tear on the batten. The Jacquard machine will handle the most tender warps with ease and safety. These attachments greatly increase the production as well as improve the product of the looms. Old looms equipped with the Jacquard machine and shuttle motion gain thereby from 15 to 25 picks per minute.

4. Adjustable breast beam brackets form another important feature in modern loom equipment. These are made vertically adjustable, and permit the top shed to be raised or lowered into the proper position for the shuttle to weave freely. This has been impossible heretofore, as the top row of glass was rigidly placed and not movable, resulting in the shuttle dragging through the shed, and thus causing undue trouble and wear in weaving.

There has also been a great advance within the last few years in the construction of web looms for the manufacture of suspender webs and the like, and the American loom manufacturers have, as usual, been found prepared to meet the demands of the trade. This class of loom, which is outside of the distinctively ribbon loom, is run more or less all the time, and uses silk filling during some parts of the year. The operator of these looms makes various grades of garter web and suspender web, some all silk webs, some cotton and some part silk and cotton. Among the noteworthy features of such looms should be mentioned cut cams, which constitute one of the most important developments in web looms in recent years, enabling the looms to be run much faster than with the old cast cams, and being vastly superior to them in every way.

At the St. Louis Exposition in 1904 one of the most progressive silk ribbon establishments in the United States, which was awarded a grand prize for its exhibit of silk and satin ribbons, exhibited also a double deck Jacquard ribbon loom of its own construction for which it received a gold medal award.

Finished silk goods.—Table 15 indicates the production by quantities (yardage and pounds), so far as is possible, of the different kinds of finished products, exclusive of duplication, in the census years 1900 and 1905. Comparison of production in censuses prior to 1900 is difficult as to some special articles, because the former system of classifying production by the commercial designation of fabrics was abandoned, and the present system was introduced in the year 1900.

TABLE 15.—*Finished goods: 1905 and 1900.*

	1905		1900	
	Quantity.	Value.	Quantity.	Value.
Total value	.....	$118,533,560	.....	$92,451,212
	Pounds.		*Pounds.*	
Machine twist	932,998	5,521,055	987,917	5,997,974
Sewing, embroidery, and wash silks	606,357	3,927,954	477,658	3,276,826
Fringe and floss silks	155,543	509,903	193,659	696,982
	Yards.		*Yards.*	
Broad goods, total	136,447,107	72,979,765	97,940,935	58,122,622
Broad silks, all-silk, and silk mixed:				
Plain and fancies	77,454,067	46,084,952	62,536,803	39,302,821
Jacquards	10,479,211	7,156,711	9,209,695	6,639,322
Piece-dyed	36,937,937	13,676,099	15,890,385	6,210,673
Velvets	7,262,315	3,161,206	5,122,249	2,479,903
Plushes	2,547,367	1,340,815	3,848,684	2,480,068
Upholstery and tapestry	1,766,210	1,559,982	1,333,119	1,009,835
Ribbons	.....	21,890,604	.....	18,467,179
Laces, nets, veils, veiling, etc.	.....	745,489	.....	803,104
Embroideries	.....	112,362	.....	57,625
Braids and bindings	.....	3,493,977	.....	1,522,565
Dress, cloak, millinery, and military trimmings, including fringes and gimps	.....	4,124,651	.....	2,295,010
All other products	.....	5,227,800	.....	1,211,325

There have been general increases in all the classes of the silk industry with the one exception of silk laces, nets, veils, veiling, etc. These increases have been referred to, and their percentages noted, in the subdivisions of this report dealing particularly with the several branches of the silk industry in the United States.

Silk lace manufacturing in the United States has always had a serious drawback in the difficulty of obtaining expert labor. New machinery and constantly improving methods of manufacture require experienced labor which only the older lace manufacturing centers abroad can furnish, but which conditions in the United States have made it difficult for the manufacturer to obtain. Even in the staple branches of silk manufacturing, in which home labor has been trained, the scarcity of expert workmen often prevents the domestic manufacturer from insisting upon such qualities of workmanship as would be demanded abroad. The silk lace branch of the industry is handicapped to some extent by the limitations of the contract labor law of the United States, and by the tendency toward the greater use of cotton and linen laces of elaborate design and high quality.

In embroideries the same tendency is marked, the amount of finished silk embroidery of domestic manufacture (apart from embroidery silk and yarns) consumed in proportion to cotton embroideries being small. Considerable impetus has been given to the cotton embroidery industry since the census of 1900, and the making of so-called "Swiss embroidery" by

power machinery has been considerably extended in the United States. The state of New York leads in the manufacture of silk lace and finished silk embroidery, while New Jersey leads New York in the manufacture of silk nets, veils, and veiling.

COMPARATIVE STATISTICS BY STATES.

Table 16 is a comparative summary, by states, from 1880 to 1905, of the data reported under the principal heads of the inquiry relating to silk manufactures.

TABLE 16.—COMPARATIVE SUMMARY, BY STATES: 1880 TO 1905.

STATE.	Census.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS AND WAGES.					Miscellaneous expenses.	Cost of materials used.	Value of products, including amount received for contract work.	Number of spindles.	NUMBER OF LOOMS.		
						Total.		Average number.									
				Number.	Salaries.	Average number.	Wages.	Men 16 years and over.	Women 16 years and over.	Children under 16 years.					Total.	Power.	Hand.
United States.	1905	624	$100,556,621	4,027	$4,742,270	79,601	$26,767,943	27,037	45,198	7,366	$14,052,777	$75,861,188	$133,288,072	2,453,588	60,058	59,775	283
	1900	483	81,082,201	2,057	3,134,352	65,416	20,982,194	24,206	34,797	6,413	10,264,208	62,406,695	107,256,258	1,987,404	44,430	44,257	173
	1890	472	51,007,537	[1] 1,531	[1] 1,017,877	49,382	17,762,441	17,602	28,914	2,866	4,259,623	51,004,425	87,298,454	1,087,395	22,569	20,822	1,747
	1880	382	19,125,300	(2)	(2)	31,337	9,146,705	9,375	16,396	5,566	(3)	22,467,701	41,033,045	426,530	8,474	5,321	3,153
California	1905	4	229,674	10	11,924	136	44,050	20	108	8	7,093	217,068	351,949	3,846	15	3	12
	1900	5	308,847	6	4,908	117	33,055	24	91	2	4,113	146,219	255,902	3,380	2	2	.....
	1890	9	112,283	11	15,276	203	68,290	49	152	2	10,438	146,406	271,912	2,817	36	1	35
	1880	5	164,300	.....	.....	151	41,400	20	106	25	.....	80,995	159,175	350	24	.....	24
Connecticut	1905	43	16,675,954	327	479,213	7,792	3,124,394	3,306	4,187	299	969,658	9,098,196	15,623,693	196,624	4,260	4,260	.....
	1900	38	12,166,775	323	403,423	6,514	2,392,873	2,763	3,585	166	637,450	7,198,008	12,378,981	160,743	2,075	2,075	.....
	1890	35	9,037,042	117	159,273	4,964	1,847,531	1,540	3,301	123	270,426	6,201,876	9,788,951	129,664	1,378	1,372	6
	1880	28	4,436,500	.....	.....	3,428	1,026,530	785	1,990	653	.....	3,311,206	5,881,000	88,825	615	603	12
Illinois	1905	3	390,672	25	31,342	524	135,579	50	436	38	35,444	486,015	735,242	11,880	104	44	60
	1900	4	259,540	33	51,180	412	121,644	81	310	21	42,410	187,514	421,088	.....	34	27	7
	1890	10	422,006	49	54,314	756	241,322	157	589	10	35,761	314,855	785,845	732	126	44	82
	1880	5	82,000	.....	.....	259	72,195	67	135	57	.....	125,895	244,150	.....	64	13	51
Maryland [4]	1890	4	50,400	3	3,600	72	20,633	28	44	.....	3,798	34,305	100,361	6	14	14	.....
	1880	4	20,000	.....	.....	82	11,000	12	56	14	.....	15,760	35,415	.....	30	.....	30
Massachusetts	1905	18	5,523,041	126	142,176	3,261	1,162,118	1,042	2,012	207	513,096	4,156,919	7,012,062	107,787	1,610	1,581	29
	1900	20	5,649,758	156	227,276	3,110	1,110,324	1,102	1,837	171	382,745	3,823,993	5,957,532	107,312	1,040	1,017	23
	1890	20	3,353,206	223	258,115	2,993	1,038,284	977	1,928	88	484,390	3,251,893	5,557,509	81,435	540	444	96
	1880	22	1,306,900	.....	.....	1,826	521,725	353	1,285	188	.....	1,990,515	3,764,260	30,450	241	88	153
New Jersey	1905	239	33,644,608	1,278	1,555,662	25,481	9,892,804	11,361	12,947	1,173	6,045,201	22,339,447	42,862,907	527,409	23,035	23,023	12
	1900	180	29,285,702	959	1,144,512	24,157	9,232,532	11,279	11,679	1,199	4,896,595	21,631,118	39,966,662	536,005	20,572	20,557	15
	1890	132	16,800,927	472	541,570	17,445	6,634,610	7,773	8,773	899	1,356,137	17,008,883	30,760,371	359,364	11,724	11,487	237
	1880	106	6,952,325	.....	.....	12,549	4,177,745	4,696	5,390	2,463	.....	9,678,536	17,122,230	210,783	4,553	2,956	1,597
New York	1905	123	15,751,246	960	1,103,702	11,283	4,267,867	3,664	7,211	408	2,614,112	10,490,474	20,181,212	251,367	6,989	6,944	45
	1900	92	9,800,207	363	514,439	7,861	2,801,818	3,149	4,299	413	1,601,527	6,570,637	12,706,246	136,703	5,268	5,175	93
	1890	185	11,165,918	432	601,336	12,719	4,983,063	4,456	7,983	280	1,123,671	10,174,818	19,417,796	154,969	4,940	3,888	1,052
	1880	151	4,696,775	.....	.....	9,633	2,590,025	2,405	5,459	1,769	.....	5,331,894	10,170,140	67,271	2,086	1,095	991
North Carolina [5]	1900	3	130,376	11	3,455	209	25,420	35	119	55	5,150	99,403	135,354	18,790	125	125	.....
Ohio [6]	1890	3	37,830	4	2,512	36	11,173	8	28	.....	2,662	13,983	33,927	96	16	.....	16
	1880	6	24,700	.....	.....	135	12,550	21	73	41	.....	19,495	53,110	.....	22	.....	22
Pennsylvania	1905	168	31,312,380	1,192	1,309,008	26,915	6,072,852	6,318	15,863	4,734	3,472,624	24,267,122	39,333,520	1,203,617	19,336	19,227	109
	1900	121	20,804,023	745	718,770	21,028	4,620,626	5,214	11,565	4,249	2,451,820	19,884,869	31,072,926	942,545	12,949	12,930	19
	1890	66	9,302,063	192	256,049	9,330	2,725,285	2,420	5,017	1,293	939,051	12,094,389	19,357,540	318,215	3,583	3,360	223
	1880	49	1,379,900	.....	.....	3,189	678,120	1,000	1,870	319	.....	1,836,985	3,491,840	25,241	828	566	262
Rhode Island [7]	1905	8	2,651,053	31	41,254	1,291	479,991	436	699	156	116,294	1,695,950	2,555,989	22,644	1,706	1,706	.....
	1900	6	680,252	8	12,320	455	166,675	124	326	5	103,454	818,561	1,311,333	4,212	533	533	.....
	1890	3	122,250	8	8,507	186	53,471	49	107	30	17,427	149,763	229,092	3,393	43	43	.....
Virginia [8]	1900	3	504,359	12	12,678	473	105,050	144	228	101	15,390	720,525	981,680	41,798	147	147	.....
All other states.	[8] 1905	18	3,377,297	78	76,830	2,918	688,288	840	1,735	343	279,255	3,109,097	4,631,501	128,414	2,103	2,087	16
	[9] 1900	11	1,312,272	41	41,205	1,080	303,171	291	758	31	123,635	1,326,448	2,068,554	35,856	785	779	6
	[10] 1890	5	534,426	20	17,325	678	138,779	145	392	141	15,862	713,254	995,114	36,704	169	169	.....
	[11] 1880	6	61,000	.....	.....	85	15,415	16	62	7	.....	82,510	111,725	3,610	2	.....	2

[1] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[2] Not reported separately.
[3] Not reported.
[4] Included in "all other states" in 1905 and 1900.
[5] Included in "all other states" in 1905 and 1890. No establishments reported in 1880.
[6] Included in "all other states" in 1905. No establishments reported in 1900.
[7] Included in "all other states" in 1880.
[8] Includes establishments distributed as follows: Delaware, 2; Maine, 1; Maryland, 3; Michigan, 2; New Hampshire, 2; North Carolina, 3; Ohio, 2; Virginia, 3.
[9] Includes establishments distributed as follows: Delaware, 2; Maine, 1; Maryland, 2; Michigan, 2; New Hampshire, 2; Utah, 2.
[10] Includes establishments distributed as follows: Maine, 1; Michigan, 1; Missouri, 1; North Carolina, 1; Virginia, 1.
[11] Includes establishments distributed as follows: Kansas, 1; Maine, 1; Missouri, 1; New Hampshire, 1; Rhode Island, 1; Vermont, 1.

According to the statistics New Jersey appears to be the leading silk state, but when the figures are analyzed Pennsylvania is in reality now the foremost silk manufacturing state in the Union. This is a notable achievement when it is remembered that silk manufacture was started in Paterson, N. J., in 1840; that

marked impetus was given to the industry there by increased tariff rates on imported silk goods as one result of the Civil War; and that it has been reasonably successful in that silk center ever since. On the other hand, so late as the census of 1880, the amount of capital invested in the silk industry in Pennsylvania was only $1,379,900; 3,189 wage-earners were employed, and wages paid amounted to $678,120. In 1905 the amount of capital invested in Pennsylvania was $31,312,386, and the wages paid to 26,915 wage-earners was $6,972,852. Although the aggregate capital was 7.4 per cent greater for New Jersey than for Pennsylvania, the latter state shows a larger investment in several of the items of capital. The value of land owned in Pennsylvania was 30.4 per cent greater than in New Jersey, while the value of buildings was 77.6 per cent greater and the value of machinery, tools, and implements 14.3 per cent greater. In the item of cash and sundries New Jersey exceeds Pennsylvania by 44.9 per cent, but this is accounted for by the different characteristics of the industry in the respective states. For example, silk weaving is carried on more largely in New Jersey than in Pennsylvania, the former having 23,923 power loom equipment and the latter 19,227. The silk mills of New Jersey employed 79.8 per cent more men wage-earners than Pennsylvania, but the latter state employed 22.5 per cent more women and 303.6 per cent more children in her silk mills than the former.

On the other hand, Pennsylvania does more silk spinning than New Jersey, the statistics showing 743,765 throwing spindles in Pennsylvania and 232,673 throwing spindles in New Jersey. Less cash capital and a lower wage are required for the spinning branch of the industry than for the weaving branch.

The growing importance of Pennsylvania as a silk manufacturing state is emphasized by the fact that since 1900 silk manufacturing in one form or another has been introduced into 35 new places or towns, 14 of which represent new throwing plants, whereas in New Jersey the extension was to only 11 new places, 3 of which represent new throwing plants. Among the chief causes which influence the establishment of new silk mills, the enlargement of old plants or their removal from other localities are:

1. Liberal credits by capital, which is always ready—often too ready and too liberal—to promote enterprises of this character.

2. Abundance of suitable labor and relatively cheap fuel, as has been the case in the eastern part of Pennsylvania.

The leading counties in silk manufacture in New Jersey are Passaic, Hudson, Warren, and Morris. Passaic county includes Paterson, known as the premier silk city of the United States. The statistics for Passaic county for the census of 1905 are shown in Table 17.

TABLE 17.—*Passaic county, N. J.—silk and silk goods: 1905.*

	1905	Per cent of total for state of New Jersey.
Number of establishments	195	81.6
Capital	$20,395,331	60.6
Salaried officials, clerks, etc., number	807	63.1
Salaries	$995,692	64.0
Wage-earners, average number	15,073	61.5
Wages	$6,470,992	65.4
Miscellaneous expenses	$3,7[illegible],240	61.8
Materials used, total cost	$13,624,731	61.0
Silk—		
Raw—		
Pounds	2,191,917	61.7
Cost	$8,298,973	59.6
Spun—		
Pounds	81,562	52.9
Cost	$192,317	56.3
Artificial—		
Pounds	3,266	40.5
Cost	$13,474	38.4
Yarns, other than silk—		
Cotton—		
Pounds	835,296	79.2
Cost	$315,061	78.3
Mercerized cotton—		
Pounds	204,981	78.3
Cost	$157,910	75.8
Woolen—		
Pounds	4,875	19.0
Cost	$8,559	30.6
Mohair—		
Pounds	13	0.1
Cost	$18	0.3
Other—		
Pounds	3,633	100.0
Cost	$3,838	100.0
Silk purchased in partially manufactured form—		
Organzine and tram—		
Pounds	848,512	63.2
Cost	$3,667,809	62.9
Fringe and floss—		
Pounds	2,763	62.5
Cost	$11,981	59.3
All other materials	$954,791	61.9
Raw silk thrown under contract:		
Organzine, pounds	467,582	66.6
Tram, pounds	780,102	79.0
Products, total value	$26,906,101	62.8
Organzine and tram made for sale—		
Pounds	23,714	13.9
Value	$86,320	11.1
Fringe and floss—		
Pounds	28,546	94.7
Value	$83,[illegible]05	87.4
Broad silk goods—		
Plain and fancies—		
All-silk—		
Yards, single width	13,933,077	42.3
Value	$8,608,086	45.2
Silk mixed—		
Yards, single width	1,413,588	77.6
Value	$1,199,858	85.4
Jacquard—		
All-silk—		
Yards, single width	4,283,349	78.2
Value	$3,226,047	73.5
Silk mixed—		
Yards, single width	798,875	65.5
Value	$434,825	58.0
Piece-dyed—		
All-silk—		
Yards, single width	1,245,348	32.1
Value	$705,815	32.5
Silk mixed—		
Yards, single width	197,571	14.8
Value	$144,466	32.8
Other broad goods—		
Plushes—		
Yards, single width	432,260	100.0
Value	$303,882	100.0
Tapestries—		
Yards, single width	659,806	100.0
Value	$454,774	100.0
Upholstery—		
Yards, single width	350,000	100.0
Value	$300,000	100.0
Ribbons	$9,288,461	92.5
Laces, nets, veils, veiling, etc	$262,031	63.2
Embroideries	$6,112	100.0
Braids and bindings	$254,456	62.9
All other products	$767,942	87.0
Amount received for contract work	$779,721	78.1
Dyeing, finishing, and printing in silk mills:		
Skein dyeing—		
Silk—		
Colors, pounds	433,645	76.1
Black, pounds	161,204	92.8
Spun—		
Colors, pounds	30,000	96.7
Cotton—		
Colors, pounds	439,009	98.4
Black, pounds	24,226	86.6
Piece dyeing—		
All-silk, yards, single width	9,691,708	85.7
Silk and cotton, yards, single width	5,643,775	100.0

TABLE 17.—*Passaic county, N. J.—silk and silk goods: 1905*—Continued.

	1905	Per cent of total for state of New Jersey.
Dyeing, finishing, and printing in silk mills—Cont'd.		
Finishing		
All-silk, pieces (60 yards)	3,790,767	75.5
Silk and cotton, pieces (60 yards)	94,062	86.2
Printing		
Printed in pieces		
Silk and spun, yards, single width	293,480	100.0
Dyeing and printing in independent dyeing and finishing establishments:		
Skein dyeing		
Silk, pounds	7,039,679	98.9
Spun silk, pounds	315,200	99.8
Piece dyeing		
Silk piece goods, square yards	12,540,016	44.1
Printing		
Silk piece goods, square yards	4,262,834	100.0

CAPITAL.

Table 18 is a comparative statement in detail of capital, by states, for 1890, 1900, and 1905.

The value of land and buildings owned, as shown in Table 18, is $18,029,409, as compared with $12,250,905 in 1900, and $6,904,628 in 1890. The amounts reported for land and buildings do not include the value of rented property. The amount paid for hired property used by silk manufacturers at the last three census enumerations was: 1905, $702,550; 1900, $591,807; and 1890, $734,268.

The localization of the industry is shown by the capital reported for New Jersey, Pennsylvania, Connecticut, and New York. These states returned an aggregate of $97,384,284 in 1905, or 88.9 per cent of the total for the United States.

TABLE 18.—CAPITAL, BY STATES: 1890 TO 1905.

STATE.	Census.	Total.	Land.	Buildings.	Machinery, tools, and implements.	Cash and sundries.
United States	1905	$109,556,621	$3,336,596	$14,692,813	$20,347,016	$62,180,196
	1900	81,082,201	2,045,093	10,205,812	20,750,449	48,080,847
	1890	51,007,537	1,691,660	5,212,968	14,181,680	29,921,229
California	1905	229,674	10,000	33,574	30,600	146,500
	1900	308,847	3,600	29,726	44,161	231,360
	1890	112,283	.....	.....	30,409	81,874
Connecticut	1905	16,675,954	288,300	2,466,450	2,816,172	11,105,032
	1900	12,166,775	282,204	1,597,352	2,061,799	8,225,330
	1890	9,037,042	152,589	1,143,200	1,617,538	6,123,715
Illinois	1905	390,072	20,000	30,000	120,000	220,072
	1900	259,540	15,000	25,000	95,959	123,581
	1890	422,096	33,000	60,000	106,200	222,896
Maryland[1]	1890	50,400	6,000	1,500	12,400	30,500
Massachusetts	1905	5,523,041	247,000	740,636	827,086	3,708,319
	1900	5,649,758	216,341	756,454	707,345	3,969,618
	1890	3,353,290	77,300	287,500	501,908	2,396,588
New Jersey	1905	33,644,698	844,078	3,294,250	8,821,593	20,684,777
	1900	20,285,792	733,367	2,006,084	7,297,856	18,288,485
	1890	16,899,927	590,019	1,570,160	5,039,564	9,699,284
New York	1905	15,751,246	529,744	1,131,097	5,150,205	8,940,200
	1900	9,800,207	202,138	586,224	3,001,252	5,950,593
	1890	11,165,918	544,002	832,240	3,612,758	6,176,918
North Carolina[2]	1900	130,376	6,200	52,000	40,525	31,651
Ohio[3]	1890	37,830	10,000	5,000	1,750	21,080
Pennsylvania	1905	31,312,386	1,100,553	5,849,615	10,083,814	14,278,404
	1900	20,804,023	491,598	3,688,545	6,606,158	10,017,722
	1890	9,362,063	236,850	1,225,652	2,941,679	4,957,882
Rhode Island	1905	2,651,053	135,200	372,700	510,530	1,633,115
	1900	680,252	24,955	96,224	165,032	394,041
	1890	122,250	.....	.....	70,304	51,892
Virginia[2]	1900	594,359	12,600	174,440	210,200	197,119
All other states	[4] 1905	3,377,297	161,721	774,392	978,007	1,463,177
	[5] 1900	1,312,272	57,000	233,763	370,162	651,347
	[6] 1890	534,426	41,000	78,716	157,110	257,600

[1] Included in "all other states" in 1905 and 1900.
[2] Included in "all other states" in 1905 and 1890.
[3] Included in "all other states" in 1905. No establishments reported in 1900.
[4] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Virginia.
[5] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, and Utah.
[6] Includes states as follows: Maine, Michigan, Missouri, North Carolina, and Virginia.

WAGE-EARNERS AND OPERATIVES.

Table 19 presents the average number of wage-earners—men, women, and children—by states, from 1870 to 1905, inclusive, with the per cent that each class is of the total number.

TABLE 19.—WAGE-EARNERS, BY STATES: 1870 TO 1905.

STATE.	Census.	AVERAGE NUMBER.				PER CENT OF TOTAL.		
		Total.	Men 16 years and over.	Women 16 years and over.	Children under 16 years.	Men 16 years and over.	Women 16 years and over.	Children under 16 years.
United States	1905	79,601	27,037	45,198	7,366	34.0	56.8	9.2
	1900	65,416	24,206	34,797	6,413	37.0	53.2	9.8
	1890	49,382	17,602	28,914	2,866	35.6	58.6	5.8
	1880	31,337	9,375	16,396	5,566	29.9	52.3	17.8
	1870	6,649	1,734	3,529	1,386	26.1	53.1	20.8
California[1]	1905	136	20	108	8	14.7	79.4	5.9
	1900	117	24	91	2	20.5	77.8	1.7
	1890	203	49	152	2	24.1	74.9	1.0
	1880	151	20	106	25	13.2	70.2	16.6
Connecticut	1905	7,792	3,306	4,187	299	42.4	53.7	3.9
	1900	6,514	2,763	3,585	166	42.4	55.0	2.6
	1890	4,964	1,540	3,301	123	31.0	66.5	2.5
	1880	3,428	785	1,990	653	22.9	58.0	19.1
	1870	1,703	466	1,003	234	27.4	58.9	13.7
Illinois[1]	1905	524	50	436	38	9.5	83.2	7.3
	1900	412	81	310	21	19.7	75.2	5.1
	1890	756	157	589	10	20.8	77.9	1.3
	1880	259	67	135	57	25.9	52.1	22.0
Maryland[2]	1890	72	28	44	.....	38.9	61.1	.....
	1880	82	12	56	14	14.6	68.3	17.1
Massachusetts	1905	3,261	1,042	2,012	207	32.0	61.7	6.3
	1900	3,110	1,102	1,837	171	35.4	59.1	5.5
	1890	2,993	977	1,928	88	32.6	64.4	3.0
	1880	1,826	353	1,285	188	19.3	70.4	10.3
	1870	453	97	286	70	21.4	63.1	15.5
New Jersey	1905	25,481	11,361	12,947	1,173	44.6	50.8	4.6
	1900	24,157	11,279	11,679	1,199	46.7	48.3	5.0
New Jersey	1890	17,445	7,773	8,773	899	44.6	50.3	5.1
	1880	12,549	4,696	5,360	2,493	37.4	42.7	19.9
	1870	2,790	733	1,162	895	26.3	41.6	32.1
New York	1905	11,283	3,664	7,211	408	32.5	63.9	3.6
	1900	7,861	3,149	4,299	413	40.1	54.7	5.2
	1890	12,719	4,456	7,983	280	35.0	62.8	2.2
	1880	9,633	2,405	5,459	1,769	25.0	56.7	18.3
	1870	739	154	413	172	20.8	55.9	23.3
North Carolina[3]	1900	209	35	119	55	16.8	56.9	26.3
Ohio[4]	1890	36	8	28	.....	22.2	77.8	.....
	1880	135	21	73	41	15.5	54.1	30.4
Pennsylvania	1905	26,915	6,318	15,863	4,734	23.5	58.9	17.6
	1900	21,028	5,214	11,565	4,249	24.8	55.0	20.2
	1890	9,330	2,420	5,617	1,293	25.9	60.2	13.9
	1880	3,189	1,000	1,870	319	31.4	58.6	10.0
	1870	936	266	655	15	28.4	70.0	1.6
Rhode Island[5]	1905	1,291	436	699	156	33.8	54.1	12.1
	1900	455	124	326	5	27.3	71.6	1.1
	1890	186	49	107	30	26.4	57.5	16.1
Virginia[3]	1900	473	144	228	101	30.4	48.2	21.4
All other states	[6]1905	2,918	840	1,735	343	28.8	59.5	11.7
	[7]1900	1,080	291	758	31	26.9	70.2	2.9
	[8]1890	678	145	392	141	21.4	57.8	20.8
	[9]1880	85	16	62	7	18.8	73.0	8.2
	[10]1870	28	18	10	.....	64.3	35.7	.....

[1] No establishments reported in 1870.
[2] Included in "all other states" in 1905 and 1900. No establishments reported in 1870.
[3] Included in "all other states" in 1905 and 1890. No establishments reported in 1880 and 1870.
[4] Included in "all other states" in 1905. No establishments reported in 1900 and 1870.
[5] Included in "all other states" in 1880. No establishments reported in 1870.
[6] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Virginia.
[7] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, and Utah.
[8] Includes states as follows: Maine, Michigan, Missouri, North Carolina, and Virginia.
[9] Includes states as follows: Kansas, Maine, Missouri, New Hampshire, Rhode Island, and Vermont.
[10] Includes states as follows: New Hampshire and Vermont.

Table 19 shows that between the censuses of 1900 and 1905 the average number of wage-earners employed in the silk mills increased 21.7 per cent. During the five-year period the proportion of men employed decreased 3 per cent, and the proportion of children employed six-tenths of 1 per cent; on the other hand, there was an increase of 3.6 per cent in the proportion of women employed. It will be noted that the decreases in the per cent of children employed were in Pennsylvania, New Jersey, and New York, these states having considerably increased their weaving plants and loom equipments since the census of 1900.

Twenty per cent of the increase in the number of wage-earners in the silk mills since 1900 were men, 73.3 per cent were women, and 6.7 per cent were children under 16 years of age.

Table 25 indicates that the greatest number of wage-earners employed at any one time during the year was 90,717 and the least number was 68,369, the average number being 79,601. In confirmation of what has been said in this report concerning unfavorable general conditions in the silk industry in the calendar year 1904, analysis of wage-earners employed by months indicates the following increases in the average number employed in the closing three months of the year over the average number employed in January, February, and March: Men, 1,376; women, 2,023; and children, 538—a total increase of 3,937 wage-earners, or 5 per cent.

Table 20 presents the number of operatives—weavers, and spinners, winders, warpers, etc., including unskilled employees, by states, for 1905.

TABLE 20.—WAGE-EARNERS, CLASSIFIED BY OCCUPATION, BY STATES: 1905.

STATE.	AGGREGATE (AVERAGE NUMBER).			WEAVERS (AVERAGE NUMBER).															SPINNERS, WINDERS, WARPERS, ETC. (AVERAGE NUMBER).		
				Total.			Broad silks.			Ribbons.			Velvets and plushes.			All other.					
	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.	Men.	Women.	Children.
United States	27,037	45,198	7,366	15,042	16,555	492	9,619	13,264	393	4,398	1,828	47	554	183	1	1,371	1,280	51	11,095	28,643	6,874
California	20	108	8	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	20	106	8
Connecticut	3,306	4,187	209	1,061	886	1	488	537	1	100	210	.....	468	134	.....	5	5	.....	2,245	3,301	208
Illinois	50	436	38	4	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	6	.....	46	430	38
Massachusetts	1,042	2,012	207	440	321	.....	437	296	.....	.....	20	.....	.....	.....	.....	3	5	.....	602	1,691	207
New Jersey	11,361	12,947	1,173	7,743	4,078	15	5,470	4,083	14	1,780	744	.....	68	.....	.....	425	151	1	3,618	7,969	1,158
New York	3,604	7,211	408	2,641	2,407	59	701	1,588	52	1,283	206	2	6	45	1	561	568	4	1,023	4,804	349
Pennsylvania	6,318	15,803	4,734	3,634	7,189	409	2,052	6,054	318	1,218	607	45	12	4	.....	372	524	46	2,684	8,674	4,325
Rhode Island	436	699	156	124	151	.....	120	103	.....	3	29	.....	.....	.....	.....	1	19	.....	312	548	156
All other states[1]	840	1,735	343	295	615	8	281	603	8	14	12	.....	.....	.....	.....	.....	.....	.....	545	1,120	335

[1] Includes states as follows: Delaware, Maine, Maryland, Michigan, New Hampshire, North Carolina, Ohio, and Virginia.

SKEIN DYEING, PIECE DYEING, AND PRINTING.

The figures for dyeing, finishing, and printing, given in Table 25, represent silk mills only. The statistics of independent dyeing and finishing plants are presented in a separate report entitled "Dyeing and finishing textiles." The three following tables compare the statistics of dyeing and printing in silk mills and independent plants.

Table 21 presents, by states, the statistics of skein dyeing of both reeled and spun silk, and of cotton and woolen yarns in silk mills and in independent dyeing plants, for 1905.

Table 22 presents, by states, the statistics of piece dyeing of reeled and spun silk, silk and cotton, and silk and woolen goods in silk mills and in independent dyeing plants, for 1905.

Table 23 presents, by states, the statistics of silk printing in silk mills and in independent printing plants for 1905.

The growth and importance of these branches of the silk industry are best illustrated by the fact that the capacity of one skein dyeing plant is now sufficient to turn out 12,000 pounds daily; one piece-dyeing plant has a capacity of 200,000 yards daily; and one finishing plant, a capacity of 160,000 yards daily.

TABLE 21.—SKEIN DYEING IN SILK MILLS AND INDEPENDENT PLANTS, BY STATES: 1905.

STATE.	Amount charged for work done in independent plants.	Aggregate (pounds).	SILK (POUNDS).			OTHER YARNS (POUNDS).		
			Total.	Reeled.	Spun.	Total.	Cotton.	Woolen.
United States	$6,518,191	15,690,353	13,374,040	11,996,819	1,377,221	2,616,313	2,230,840	385,473
Silk mills	.....	4,874,410	3,237,897	2,616,461	621,436	1,636,513	1,552,840	83,673
Independent plants	6,518,191	11,115,943	10,136,143	9,380,358	755,785	[1]979,800	[1]678,000	[1]301,800
Connecticut:								
Silk mills	.....	1,008,189	1,357,580	911,422	446,158	550,609	550,609	.....
Independent plants	1,500	6,000	6,000	6,000	.....	.....	.....	.....
Massachusetts:								
Silk mills	.....	1,152,696	636,645	584,536	52,109	516,051	432,378	83,673
Independent plants	2,500	6,500	4,000	.....	4,000	2,500	.....	2,500
New Jersey:								
Silk mills	.....	1,248,062	774,622	743,491	31,131	474,040	474,040	.....
Independent plants	5,091,169	7,435,179	7,434,679	7,118,879	315,800	[1]500	[1]500	.....
New York:								
Silk mills	.....	155,004	130,844	53,850	76,994	24,160	24,160	.....
Independent plants	281,998	1,022,455	916,455	690,700	225,755	[1]106,000	[1]70,000	[1]36,000
Pennsylvania:								
Silk mills	.....	147,368	77,740	69,502	8,238	69,628	69,628	.....
Independent plants	1,072,190	2,569,725	1,698,925	1,488,695	210,230	[1]870,800	[1]607,500	[1]263,300
All other states:[2]								
Silk mills	.....	202,491	200,460	253,660	6,806	2,025	2,025	.....
Independent plants	68,825	76,084	76,084	76,084	.....	.....	.....	.....

[1] The quantities of cotton and woolen yarns shown for independent plants represent only the amount of such yarns dyed in plants which did silk dyeing.
[2] Includes states as follows: Silk mills—California, Maine, Michigan, and Rhode Island. Independent plants—Illinois and Virginia.

TABLE 22.—*Silk piece dyeing in silk mills and independent plants, by states: 1905.*

STATE.	Amount charged for work done in independent plants.	Total (yards).[1]	Reeled and spun silk (yards).[1]	Silk and cotton (yards).[1]	Silk and wool (yards).[1]
United States	$990,991	53,463,596	(2)	(2)	(2)
Silk mills	.....	20,602,266	13,402,164	7,158,037	42,065
Independent plants	990,991	32,861,330	(2)	(2)	(2)
New Jersey:					
Silk mills	.....	16,956,739	11,312,964	5,643,775	.....
Independent plants	903,504	28,429,136	(2)	(2)	(2)
New York:					
Silk mills	.....	1,078,740	809,940	268,800	.....
Independent plants	48,900	993,000	(2)	(2)	(2)
All other states:[3]					
Silk mills	.....	2,566,787	1,279,260	1,245,462	42,065
Independent plants	38,587	3,439,194	(2)	(2)	(2)

[1] The number of yards treated is reported by silk mills in single width yards and by independent plants in square yards.
[2] Not reported separately by independent plants.
[3] Includes states as follows: Silk mills—Connecticut. Independent plants—California, Pennsylvania, and Rhode Island.

TABLE 23.—*Silk printing in silk mills and independent plants, by states: 1905.*

STATE.	Amount charged for work done in independent plants.	Total (yards).[1]	Printed in warp (yards).[1]	PRINTED IN PIECE (YARDS).[1]		
				Silk.	Silk and spun.	Silk and cotton.
United States	$360,333	8,130,103	(2)	(2)	(2)	(2)
Silk mills	.....	3,406,585	118,640	2,955,568	293,480	38,897
Independent plants	360,333	4,723,518	(2)	(2)	(2)	(2)
New Jersey:						
Silk mills	.....	724,343	101,764	329,099	293,480	.....
Independent plants	335,699	4,262,834	(2)	(2)	(2)	(2)
All other states:[3]						
Silk mills	.....	2,682,242	16,876	2,626,469	.....	38,897
Independent plants	24,634	460,684	(2)	(2)	(2)	(2)

[1] The number of yards treated is reported by silk mills in single width yards and by independent plants in square yards.
[2] Not reported separately by independent plants.
[3] Includes states as follows: Silk mills—Connecticut. Independent plants—New York.

At the census of 1900 similar tables for piece dyeing and printing included only plain and fancy broad silks, piece-dyed weaves, velvets, plushes, tapestries, and upholstery silks. At the present census these tables embrace all the products of the industry, including ribbons, veiling, sewings, twists, etc.

RAW SILK SUPPLY OF THE WORLD.

Table 24 presents the total raw silk production of the world, showing in detail the production of the several sources of supply, for five-year periods, from 1870 to 1905, inclusive, the weight for each country being given in kilograms, which in the aggregate are reduced to pounds.

In April, 1903, the Commission of Statistics of the Association of Industry and Commerce of Silk in Italy made it known officially that estimates of the Italian crops of raw silk between the seasons 1889–90 to 1902–3 were found to have been erroneous and that the production, based on the national production of cocoons from 1889 to 1902, had really been larger than reported. A corrected tabulation was published in the Bolletino di Sericoltura, of Milan (April, 1903), contrasting the former official figures with the corrected official figures, which adds the following amounts to the previous generally accepted figures:

	Kilograms.	Pounds.
1900	1,165,500	2,569,461
1895	1,152,900	2,541,683
1890	153,000	337,304

These corrections are embodied in Table 24.

TABLE 24.—PRODUCTION OF RAW SILK, BY COUNTRIES, AT INTERVALS OF FIVE YEARS: 1870 TO 1905.

COUNTRY.	Unit of measure.	YEAR.							
		1905	1900	1895	1890	1885	1880[1]	1875[1]	1870[2]
Aggregate	Kilograms	19,050,350	17,932,500	15,184,900	11,473,000	9,926,000	10,577,000	9,616,900	7,406,400
	Pounds	41,998,402	39,533,990	33,476,631	25,293,376	21,882,860	23,318,054	21,201,418	16,328,149
Europe, total	Kilograms	5,917,000	5,442,500	5,913,900	3,983,000	3,520,000	3,608,000	3,456,800	3,817,000
Italy	Kilograms	4,900,000	4,528,500	4,661,900	3,033,000	2,810,000	.....	.....	3,180,000
France	Kilograms	625,000	560,000	896,000	618,000	483,000	.....	.....	637,000
Austria	Kilograms	315,000	276,000	266,000	267,000	142,000	.....	.....	.....
Spain	Kilograms	77,000	78,000	90,000	65,000	85,000	.....	.....	.....
The Levant, total	Kilograms	2,186,000	1,760,000	1,244,000	707,000	730,000	727,000	760,400	.....
Asia, total exported	Kilograms	10,947,350	10,730,000	8,027,000	6,783,000	5,676,000	6,242,000	5,399,700	3,589,400
Japan, Yokohama	Kilograms	5,679,518	3,371,000	3,076,000	2,130,000	1,346,000	.....	.....	423,000
China, Shanghai[3]	Kilograms	2,950,047	4,756,000	3,358,000	2,914,000	2,195,000	.....	.....	1,680,400
China, Canton	Kilograms	2,137,785	2,253,000	1,394,000	1,539,000	774,000	.....	.....	1,018,000
India, Calcutta	Kilograms	180,000	350,000	199,000	210,000	861,000	.....	.....	468,000

[1] Estimated from best information obtainable.
[2] Trustworthy figures for production prior to 1870 are not available.
[3] Exclusive of tussah silk.

In the past thirty years the raw silk supply of the world almost doubled. In the twenty years, 1885 to 1905, it increased 91.9 per cent. In the last-named period Italy increased her output of raw silk from 6,194,926 to 10,802,540 pounds, or 74.4 per cent; France increased her supply from 1,064,822 to 1,377,875 pounds, or 29.4 per cent; the exports from Canton and Shanghai, not including tussah silks, rose

from 7,647,757 to 11,216,634 pounds, or 46.7 per cent; while the most notable increases were from Japan, 2,967,392 to 12,521,065 pounds, or 322 per cent more in 1905 than in 1885, and from the Levant, 1,609,358 in 1885 to 4,819,256 pounds in 1905, or 199.5 per cent. China is the largest raw silk producing country in the world, but the above figures show the continued commercial indifference of her silk guild to the trade wants of her customers in raw silk outside of her own borders.

Standardization of the skein.—In the year 1902 the American silk trade united in favoring a standard American skein of reeled raw silk, which they urged upon the silk reelers of China, Japan, and Italy as best suited to the requirements of American silk mills. Previously great lack of uniformity existed in the size, weight, and length of skeins of silk exported to the United States from these countries, as also from many silk reeling establishments or filatures in the same country. Practically no two skeins of raw silk that were sent to the American market from different countries were alike in character, in length, or in traverse, and when worked in the mills it was found that the cost of some was more than double that of others.

The memorial of the American manufacturers was printed in French, Italian, Japanese, and Chinese, and was generally distributed to the silk reelers in those countries. It strongly urged uniformity in four particular features of the silk skein of commerce, as follows:

1. The size of the skein should be from 56 to 58 inches in circumference.
2. The weight of skein should be from 2½ to 3 ounces, the lighter skeins for fine sizes, the heavier for coarse sizes, but in no case to exceed 3 ounces.
3. There should be two cross lacings in each skein, which should not be twisted too hard.
4. The traverse should be uniform; threads should make 33 complete crossings across the skein and back in 50 revolutions of the skein. This feature was shown in an illustration that accompanied the memorial.

At the International Exposition at St. Louis, Mo., in 1904, the American members of the Jury of Award noted with great satisfaction that the recommendations of their memorial in 1902 had been generally followed by the exhibitors of raw silk from Japan and Italy, but no sign was apparent in the few exhibits from China that the Chinese were aware of the existence of a request that had been generally distributed among their silk reelers and dealers. The diminishing exports of Chinese silk are illustrated by the figures in Table 24, in contrast with the marked increases in raw silk supplies from other countries.

Imports of raw silk.—The following tabular statement shows the quantity, invoice value, and average value per pound of raw silk imported into the United States in each census year from 1860 to 1905. The average cost per pound indicated represents the reported foreign invoice value of every description of silk raw materials imported, including the cheapest grades, such as tussah and Doppioni silk, as well as reeled silk of the highest classification and cost:

Raw silk imports: 1860 to 1905.[1]

YEAR.	Pounds.	Value.	Average value per pound.
1905	17,812,133	$59,542,892	$3.34
1900	11,259,310	44,549,672	3.96
1890	5,943,360	23,285,090	3.92
1880	2,502,236	12,024,600	4.60
1870	583,589	3,017,958	5.17
1860	297,877	1,340,676	4.50

[1] Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

Since the census of 1900 there has been an important increase in the consumption of Italian raw silk in the American market, the percentage of increased receipts being greater than from any other country. Under ordinary crop conditions, Italy now supplies 25.7 per cent of the American consumption, as against 19.7 per cent in 1900. The United States alone took 42.3 per cent of Italy's raw silk product in 1905.

The per cent of each country's contribution to the world's supply in the silk seasons 1904–5 and 1899–1900, and the relative percentage that each country contributes to the consumption of raw silk in the United States, are indicated in the following tabular statement:

COUNTRY.	1905		1900	
	Per cent of contribution to world's supply.	Per cent of American consumption.	Per cent of contribution to world's supply.	Per cent of American consumption.
Total	100.0	100.0	100.0	100.0
China	26.7	17.6	39.1	34.3
Japan	26.8	40.6	18.8	42.3
Italy	25.7	25.7	25.3	19.7
France	3.3	4.5	3.1	3.2
Levant	11.5	5.6	9.8	0.5
All other countries	3.0		3.9	

THE SILK EXHIBIT AT THE ST. LOUIS EXPOSITION IN 1904.

At the International Exposition of art, industry, and science, held at St. Louis, Mo., during the year 1904, the silk industry of the United States was represented by 22 exhibits, showing excellent assortments in designs, coloring, and construction of woven silk fabrics, ribbons, brocades, neckwear, silks, and scarfs. Yarn-dyed black dress silks and satins of superior excellence were shown; also piece-dyed goods, lining silks, and cotton backs, velvets indicating great progress in the manufacture in the United States; warp-print tissues; peau de crepe in varied range of colorings; souvenir and art pictures woven on power looms; and silk labels, etc. Considering the limited number of exhibitors from the American silk mills and

the moderate selling price of the merchandise shown, the United States exhibit of silk fabrics was adjudged to be highly creditable and fairly representative. In all there were 467 silk exhibits from all parts of the world, which included every description of raw materials and silk tissues from the silk cocoons of Italy, Japan, and China to the remarkable silk damask wall decorations of Germany (representing the Charlottenburg Castle, near Berlin), the rich and handsome high class silk novelties of every description from Lyon, the velvet and silk ribbons of great beauty and excellent design from Saint Etienne, the soft-finished lustrous satins and decorative silk brocades from Macclesfield, England, and the world famous crepes from London.

There were exhibits from thirteen foreign countries in all, and seven countries besides our own were represented on the International Jury, which determined the silk awards, namely, France (4 jurors), Italy (1), Germany (1), Great Britain (1), Japan (2), China (1), and Siam (1). In addition to awards of merit conferred on exhibiting firms, awards were conferred on collaborators or employees of these firms, according to the merit of each employee, based on skill, ability, magnitude and value of work, and length of service.

GROWTH OF THE SILK INDUSTRY.

Illustrative of the growth of the silk industry since the census of 1900 by its establishment in new places where favorable conditions exist for its development, a list of such places, numbering 116 in all, and a general description of the articles made, is appended:

YEAR ESTABLISHED.	Place.	Class of goods.
	NEW ENGLAND STATES.	
	Maine:	
1904	South Penobscot	Knit goods.
	Vermont:	
1904	Bennington	Knit goods.
	Massachusetts:	
1900	Littleton	Elastic webs.
1900	Milford	Elastic fabrics.
1901	Plymouth	Tram and floss.
1902	Fitchburg	Broad and dress silks.
1902	Rockland	Silk webs.
1903	Fall River	Dress and lining silks.
1903	Haverhill	Embroidery and silk chenille.
1904	Highlandville	Mitts, gloves, elastic hosiery, underwear.
1904	Malden	Knit goods, underwear.
1904	New Bedford	Broad silks.
1905	Becket	Sewing silk.
1905	Hopkinton	Broad silks.
1905	Lowell	Ribbons.
1905	Medfield	Silk-covered bonnet wire.
1905	Cambridgeport	Tram, floss, and fringes.
	Rhode Island:	
1900	Woonsocket	Lining silks.
1901	Valley Falls	Broad silks.
1901	Shannock	Silk elastic goods.
1903	Centerdale	Tram and organzine.
1905	Central Falls	Lining silks.
	Connecticut:	
1901	Bethel	Broad, tie, and dress silks.
1901	Stamford	Crochet and spool silk.
1902	Norwalk	Ribbons.
1902	New Haven	Braids, spun silk, etc.
1903	Marlboro Mills	Lining silks.
1904	New Britain	Hosiery.
1904	South Norwalk	Laces and embroideries.
1905	Meriden	Braids.
	MIDDLE STATES.	
	New York:	
1900	Phoenix	Tram and organzine.
1900	Sidney	Gloves.
1901	Richmond	Ribbons.
	MIDDLE STATES—continued.	
	New York—Continued.	
1901	Schenectady	Silk-covered wire.
1902	Geneva	Woven labels.
1902	Hornellsville	Dress silks.
1902	Ogdensburg	Dress silks.
1902	Owego	Gloves and mitts.
1902	Philmont	Underwear.
1902	Valatie	Furniture gimps.
1903	Amsterdam	Gloves and mitts.
1903	Andover	Broad and lining silks.
1903	Binghamton	Dress and lining silks.
1903	Buffalo	Tram and organzine.
1903	Lyons	Gloves and mitts.
1904	Chadwicks	Broad goods.
1904	Cortland	Dress silks.
1904	Manlius	Gloves and mitts.
1904	North Tonawanda	Gloves and mitts.
1904	Saugerties	Embroideries and trimmings.
1904	Tottenville	Trimmings.
1905	Canisteo	Tram and organzine.
1905	Saratoga Springs	Gloves.
1905	Rome	Silk-covered wire.
	New Jersey:	
1900	Nutley	Trimmings.
1901	Hawthorne	Broad silks.
1902	Bayonne	Broad and thrown silks.
1902	Burlington	Broad, tie, and lining silks.
1902	Camden	Curtains, embroideries, etc.
1902	Jamesburg	Dress silks.
1902	New Brunswick	Underwear.
1903	Cedar Brook	Draperies.
1903	Little Falls	Dress silks.
1905	Oxford	Tram and organzine.
1905	Rockaway	Tram.
	Delaware:	
1905	Marshallton	Taffetas and veilings.
	Pennsylvania:	
1901	Berwick	Tram and organzine.
1901	Hollidaysburg	Tram and organzine.
1901	Slatington	Broad silks.
1901	Trevorton	Dress silks.
1902	Denver	Dress silks.
1902	Hamburg	Broad silks.
1902	Lansdowne	Artificial silk.
1902	Mauch Chunk	Tram and organzine.
1902	North Wales	Spun silk, sewing silk, etc.
1902	Olyphant	Tram and organzine.
1902	Palmerton	Tram and organzine.
1902	Tobyhanna	Tram and organzine.
1903	Dushore	Broad silks.
1903	Duryea	Tram and organzine.
1903	Erie	Dress silks.
1903	Jersey Shore	Dress silks.
1903	Littlestown	Tram and organzine.
1903	Mayfield	Tram and organzine.
1903	Mercer	Broad and dress silks.
1903	Shickshinny	Tram and organzine.
1904	Archbald	Broad silks.
1904	Burmont	Upholstery fabrics.
1904	Chambersburg	Broad silks.
1904	Lansford	Tram and organzine.
1904	Lebanon	Broad silks.
1904	Lewisburg	Hosiery.
1904	Nanticoke	Tram and organzine.
1904	Wind Gap	Ribbons.
1905	Bally	Ribbons.
1905	Bangor	Broad silks.
1905	Jessup	Tram and organzine.
1905	Kingston	Broad silks.
1905	Lenni	Plushes and velvets.
1905	Norristown	Artificial silk.
1905	Towanda	Tram and organzine.
	Maryland:	
1901	Cumberland	Organzine.
	Ohio:	
1901	Cleveland	Artificial silk.
1902	Marion	Broad, tie, and lining silks.
1902	Portsmouth	Silk braids.
	Indiana:	
1903	South Bend	Silk bullet-proof cloth.
	Michigan:	
1901	Middleville	Silk tapes and ribbons.
	Wisconsin:	
1904	Stevens Point	Silk underwear.
	SOUTHERN STATES.	
	West Virginia:	
1905	Martinsburg	Knit goods.
	North Carolina:	
1903	High Point	Thrown silk.
	Georgia:	
1905	Augusta	Tram and organzine.
	WESTERN STATES.	
	Missouri:	
1905	Kansas City	Elastic hosiery.
	Montana:	
1905	Helena	Knit goods.
	Utah:	
1903	Logan	Knit goods.
1903	Ogden	Knit goods.
	Washington:	
1904	Bellingham	Silk goods and handkerchiefs.

The greatest additions to the industry since the census of 1900 have been in Pennsylvania, where silk mills have been established in 35 new places or towns; in New York, where weaving mills for broad silks were established in Hornellsville, Binghamton, Ogdensburg, Andover, Chadwicks, Cortland, and at 18 other places for the extension of silk manufacturing in one form or another; in New Jersey, 11 new places; in Connecticut, 8; and in Rhode Island, 5.

One of the best tests of the satisfactory growth of an industry is the increase in its machinery equipment. Its permanence is helped likewise by the seeking out of new places where favorable conditions exist for its establishment and development.

DETAILED STATISTICS OF SILK MANUFACTURES.

The detailed statistics for the industry as reported in answer to every inquiry of the silk schedule at the census of 1905 are shown in Table 25.

TABLE 25.—SILK AND SILK GOODS—DETAILED SUMMARY, BY STATES: 1905.

	United States.	California.	Connecticut.	Illinois.	Massachusetts.	New Jersey.	New York.	Pennsylvania.	Rhode Island.	All other states.[1]
Number of establishments	624	4	43	3	18	239	123	168	8	18
Capital, total	$109,556,621	$229,674	$16,675,954	$390,672	$5,523,041	$33,644,098	$15,751,246	$31,312,386	$2,651,653	$3,377,207
Land	$3,336,506	$10,000	$288,300	$20,000	$247,000	$844,078	$520,744	$1,100,553	$135,200	$161,721
Buildings	$14,692,813	$33,574	$2,406,450	$30,000	$740,636	$3,204,250	$1,131,097	$5,849,615	$372,799	$774,302
Machinery, tools, and implements	$20,347,016	$39,600	$2,816,172	$120,000	$827,086	$8,821,593	$5,150,205	$10,083,814	$510,539	$978,007
Cash and sundries	$92,180,196	$146,500	$11,105,032	$220,672	$3,708,319	$20,084,777	$8,940,200	$14,278,404	$1,633,115	$1,463,177
Proprietors and firm members	525	2	38	1	10	227	105	133	4	5
Salaried officials, clerks, etc.:										
Total number	4,027	10	327	25	126	1,278	960	1,192	31	78
Total salaries	$4,742,270	$11,024	$470,213	$31,342	$142,176	$1,555,662	$1,103,792	$1,300,008	$41,254	$76,830
Officers of corporations:										
Number	360	2	26	2	16	101	81	116	4	12
Salaries	$1,109,957	$2,600	$97,860	$3,000	$38,560	$367,550	$301,432	$265,215	$17,060	$16,080
General superintendents, managers, clerks, etc.:										
Total number	3,667	8	301	23	110	1,177	879	1,076	27	66
Total salaries	$3,632,313	$9,324	$381,353	$28,342	$103,616	$1,188,112	$802,360	$1,034,853	$24,194	$60,159
Men:										
Number	3,129	7	264	19	85	1,061	714	900	19	60
Salaries	$3,358,668	$8,674	$361,561	$25,862	$91,332	$1,123,962	$714,097	$953,488	$21,080	$57,712
Women:										
Number	538	1	37	4	25	116	165	176	8	6
Salaries	$273,645	$650	$19,792	$2,480	$12,284	$64,150	$87,363	$81,365	$3,114	$2,447
Wage-earners, including piecework ers, and total wages:										
Greatest number employed at any one time during the year	90,717	161	8,771	612	3,515	29,284	13,081	30,551	1,399	3,343
Least number employed at any one time during the year	68,369	120	6,959	374	2,622	21,955	9,528	22,996	1,179	2,636
Average number	79,601	136	7,792	524	3,261	25,481	11,283	26,915	1,291	2,918
Total wages	$26,707,943	$44,050	$3,124,394	$135,579	$1,162,118	$9,892,804	$4,207,867	$6,972,852	$479,991	$638,288
Men 16 years and over:										
Average number	27,037	20	3,306	50	1,042	11,361	3,664	6,318	436	840
Wages	$12,787,322	$11,661	$1,681,933	$20,208	$491,173	$5,466,163	$1,991,512	$2,588,931	$225,080	$301,601
Women 16 years and over:										
Average number	45,108	108	4,187	436	2,012	12,947	7,211	15,863	699	1,735
Wages	$12,859,156	$31,029	$1,379,011	$98,254	$623,401	$4,228,307	$2,205,611	$3,738,298	$216,298	$338,947
Children under 16 years:										
Average number	7,396	8	299	38	207	1,173	408	4,734	156	343
Wages	$1,121,465	$1,360	$63,450	$8,057	$47,544	$198,334	$70,744	$645,623	$38,613	$47,740
Average number of wage-earners, including piecework ers, employed during each month:										
Men 16 years and over:										
January	25,974	17	3,110	53	1,046	10,945	3,604	6,040	374	776
February	26,596	18	3,138	53	1,064	11,047	3,714	6,357	406	805
March	27,205	20	3,137	53	1,064	11,539	3,734	6,404	394	860
April	27,285	20	3,154	53	1,062	11,598	3,754	6,374	420	850
May	27,165	24	3,237	48	1,039	11,504	3,639	6,357	470	847
June	26,381	21	3,284	43	999	11,078	3,368	6,263	480	845
July	26,200	18	3,314	48	1,026	10,982	3,389	6,107	449	808
August	26,723	22	3,350	50	1,027	11,133	3,625	6,186	451	873
September	27,012	22	3,406	52	1,035	11,235	3,698	6,289	459	816
October	27,800	22	3,543	51	1,045	11,592	3,782	6,429	463	873
November	27,923	18	3,587	51	1,050	11,729	3,796	6,433	437	822
December	28,180	18	3,397	45	1,048	11,950	3,805	6,577	435	845
Women 16 years and over:										
January	43,648	107	4,167	495	2,036	12,358	7,101	15,073	668	1,643
February	44,650	110	4,232	500	2,090	12,555	7,345	15,423	705	1,690
March	45,560	112	4,270	493	2,087	12,927	7,474	15,765	712	1,720
April	45,812	122	4,257	498	2,077	13,165	7,426	15,843	721	1,703
May	45,364	122	4,212	387	2,014	13,157	7,108	15,921	700	1,743
June	44,316	113	4,130	387	1,901	12,704	6,914	15,700	689	1,709
July	43,820	100	3,997	383	1,932	12,552	6,833	15,654	683	1,686
August	43,959	102	4,032	428	1,978	12,764	6,638	15,532	690	1,705
September	45,320	100	4,095	440	1,993	12,952	7,269	15,948	701	1,822
October	46,432	103	4,237	440	2,028	13,332	7,560	16,244	700	1,848
November	46,569	103	4,281	434	2,005	13,324	7,420	16,583	705	1,714
December	46,926	102	4,334	347	2,003	13,574	7,504	16,601	714	1,747
Children under 16 years:										
January	6,965	10	271	44	208	1,127	398	4,467	146	204
February	6,971	9	277	40	208	1,118	399	4,471	151	208
March	7,247	7	296	43	207	1,154	418	4,647	159	316
April	7,320	8	302	41	208	1,178	409	4,710	156	317
May	7,382	8	308	37	197	1,157	407	4,753	159	350
June	7,401	7	320	35	186	1,165	405	4,751	158	374
July	7,378	7	318	27	208	1,157	420	4,688	156	397
August	7,423	11	308	20	213	1,183	406	4,713	158	402
September	7,499	7	322	44	220	1,180	405	4,801	161	359
October	7,686	8	304	49	215	1,181	407	4,976	157	389
November	7,493	8	282	43	210	1,231	414	4,854	154	297
December	7,618	6	280	24	204	1,245	408	4,977	157	317

[1] Includes establishments distributed as follows: Delaware, 2; Maine, 1; Maryland, 3; Michigan, 2; New Hampshire, 2; North Carolina, 3; Ohio, 2; Virginia, 2.

TABLE 25.—SILK AND SILK GOODS—DETAILED SUMMARY, BY STATES: 1905—Continued.

	United States.	California.	Connecticut.	Illinois.	Massachusetts.	New Jersey.	New York.	Pennsylvania.	Rhode Island.	All other states.
Skilled operatives, average number:										
Weavers—										
Broad silk—										
Men	9,619		488		437	5,470	791	2,032	120	281
Women	13,264		537		296	4,083	1,588	6,054	103	603
Children	303		1			14	52	318		8
Ribbons—										
Men	4,398		100			1,780	1,283	1,218	3	14
Women	1,828		210		20	744	206	607	29	12
Children	47						2	45		
Velvets and plushes—										
Men	554		468			68	6	12		
Women	183		134				45	4		
Children	1						1			
All other—										
Men	1,371		5	4	3	425	561	372	1	
Women	1,280	2	5	6	5	151	568	524	19	
Children	51					1	4	46		
Spinners, winders, warpers, etc.[1]—										
Men	7,067	11	1,426	11	310	2,652	569	1,555	50	483
Women	21,245	102	1,899	70	1,133	6,668	2,439	7,513	292	1,120
Children	5,202	8	176	12	137	792	191	3,548	68	270
Miscellaneous expenses, total	$14,052,777	$7,093	$969,658	$35,444	$513,096	$6,045,201	$2,614,112	$3,472,624	$116,294	$279,255
Rent of works	$702,550	$1,470	$20,597	$5,900	$14,993	$285,427	$245,977	$108,926	$8,620	$1,640
Taxes	$337,784	$363	$58,635	$1,544	$36,258	$112,423	$27,711	$70,365	$10,392	$20,093
Rent of offices, interest, insurance, and all other sundry expenses not hitherto included	$6,152,857	$5,260	$531,766	$26,100	$230,481	$2,086,272	$1,472,738	$1,563,090	$34,638	$262,512
Contract work	$6,859,586		$349,660	$1,900	$231,364	$3,561,079	$867,686	$1,730,243	$62,644	$55,010
Materials used, total cost	$75,861,188	$217,068	$9,098,196	$486,015	$4,156,919	$22,359,447	$10,490,474	$24,267,122	$1,695,950	$3,199,997
Silk—										
Raw—										
Pounds	11,572,783	46,255	1,320,509	78,100	739,604	3,553,090	1,006,793	3,970,044	262,112	596,876
Cost	$45,318,416	$184,171	$5,067,381	$201,560	$2,944,279	$13,920,194	$3,934,433	$15,419,221	$1,179,447	$2,567,730
Spun—										
Pounds	1,951,201	523	716,607	50,800	135,976	154,201	249,896	454,074	52,145	136,979
Cost	$4,310,061	$1,361	$1,609,152	$138,400	$137,926	$341,298	$734,699	$876,485	$139,909	$331,431
Artificial—										
Pounds	466,151			20,139	21,172	8,066	289,282	127,192	300	
Cost	$1,623,473			$78,989	$74,511	$35,074	$1,039,783	$394,126	$990	
Yarns, other than silk—										
Cotton—										
Pounds	8,387,048	15,000	1,359,021	138,711	724,594	1,054,973	1,197,943	2,591,135	969,426	336,245
Cost	$2,586,954	$4,650	$439,025	$25,568	$264,580	$402,480	$401,841	$665,915	$290,214	$92,681
Mercerized cotton—										
Pounds	631,247	500	21,560	3,857	5,348	261,605	101,943	227,944	5,550	2,640
Cost	$471,035	$500	$7,337	$3,559	$4,470	$208,204	$74,770	$168,025	$2,225	$1,945
Woolen—										
Pounds	443,155	2,600	22,780	6,856	141,634	25,725	184,340	48,870	7,800	2,550
Cost	$400,867	$2,600	$27,290	$4,600	$97,756	$27,962	$191,816	$47,969	$6,040	$3,834
Mohair—										
Pounds	138,389		97,323	100	11,573	11,253	14,511	3,629		
Cost	$137,097		$97,029	$145	$14,566	$6,784	$15,264	$3,309		
Other—										
Pounds	130,930		112	2,707	3,156	3,638	71,486	49,824		7
Cost	$108,841		$115	$1,128	$1,804	$3,838	$30,959	$70,983		$14
Silk purchased in partially manufactured form—										
Organzine and tram—										
Pounds	3,236,744	726	28,844	434	44,464	1,343,081	603,623	1,202,805	1,200	11,567
Cost	$14,552,425	$4,950	$144,358	$1,665	$202,364	$5,832,154	$2,919,456	$5,390,466	$4,567	$52,415
Fringe and floss—										
Pounds	49,811			5,350		4,421	7,080	32,960		
Cost	$187,159			$21,810		$20,211	$28,475	$116,663		
Chemicals and dyestuffs	$666,992	$9,233	$268,675		$95,635	$191,553	$52,066	$26,363	$827	$22,640
Fuel	$862,220	$1,728	$121,266	$1,959	$42,942	$252,715	$108,362	$285,415	$12,788	$35,045
Rent of power and heat	$268,336	$430	$7,795	$500	$2,030	$151,679	$59,549	$31,816	$7,553	$6,984
Mill supplies	$908,585	$333	$17,640	$802	$16,586	$228,670	$82,377	$221,270	$20,752	$30,155
All other materials	$3,511,586	$7,067	$1,266,232	$4,030	$238,949	$661,381	$797,506	$451,380	$24,979	$60,062
Freight	$238,141	$15	$24,901	$1,300	$18,521	$55,250	$19,718	$97,716	$5,659	$15,061
Raw silk thrown under contract:										
Organzine, pounds	3,635,384		131,038			702,055	359,248	2,288,174	68,000	86,869
Tram, pounds	3,466,467		85,416			987,033	345,830	1,828,125	20,000	200,063
Products, total value	$133,288,072	$351,949	$15,623,693	$735,242	$7,012,062	$42,862,907	$20,181,212	$39,333,520	$2,555,986	$4,631,501
Organzine and tram made for sale—										
Pounds	2,025,645	2,666	44,241	27,500	65,482	171,187	99,866	1,396,424		218,279
Value	$9,190,650	$12,060	$365,617	$137,500	$293,465	$777,250	$420,718	$6,124,717		$1,059,383
Spun silk made for sale—										
Pounds	570,529	2,170	328,863		92,098		136,290	11,108		
Value	$1,660,647	$7,300	$1,046,068		$221,049		$349,597	$36,633		
Machine twist—										
Pounds	932,998	36,120	614,729	400	134,256		35,325	28,223		83,945
Value	$5,521,055	$218,337	$3,618,824	$2,000	$746,296		$191,628	$196,409		$547,561
Sewing, embroidery, and wash silks—										
Pounds	606,357	8,739	167,485	500	262,076		12,960	49,480		105,117
Value	$3,927,954	$69,912	$953,636	$2,500	$1,852,108		$77,752	$296,884		$675,162
Fringe and floss silks—										
Pounds	205,354	480	220	49,700	6,610	30,146	12,125	106,073		
Value	$697,062	$2,400	$1,122	$149,100	$34,906	$95,305	$70,056	$344,173		
Broad silk goods—										
Plain and fancies—										
All-silk—										
Yards, single width	68,393,042	450	1,842,978		1,049,292	32,971,793	4,672,699	25,404,097		2,451,733
Value	$40,741,480	$500	$1,442,430		$998,576	$19,031,558	$3,196,327	$14,910,036		$1,162,053
Silk mixed—										
Yards, single width	9,061,025		166,353		2,876,345	1,822,091	681,761	1,061,199	1,000,000	1,453,276
Value	$5,343,472		$132,005		$1,931,547	$1,404,546	$432,694	$662,865	$360,000	$419,815
Jacquard—										
All-silk—										
Yards, single width	8,143,091	450	9,582		100,000	5,480,654	1,057,489	894,916	600,000	
Value	$5,927,063	$500	$5,365		$45,000	$4,388,069	$734,045	$586,084	$168,000	
Silk mixed—										
Yards, single width	2,336,120		682			1,220,195	209,191	406,052	500,000	
Value	$1,229,648		$529			$749,466	$108,903	$235,750	$135,000	

[1] Does not include unskilled employees.

TABLE 25.—SILK AND SILK GOODS—DETAILED SUMMARY, BY STATES: 1905—Continued.

	United States.	California.	Connecticut.	Illinois.	Massachusetts.	New Jersey.	New York.	Pennsylvania.	Rhode Island.	All other states.
Products—Continued.										
Broad silk goods—Continued.										
Piece-dyed—										
All-silk—										
Yards, single width	21,334,584	.....	4,959,991	.....	109,000	3,874,771	4,272,422	7,325,103	43,979	698,318
Value	$9,276,445	.....	$2,208,952	.....	$66,000	$2,175,034	$1,906,468	$2,700,606	$43,979	$166,346
Silk mixed—										
Yards, single width	15,603,353	.....	582,580	.....	50,000	1,331,233	3,247	8,461,557	4,353,958	820,778
Value	$4,399,654	.....	$248,318	.....	$16,000	$439,935	$4,321	$1,718,129	$1,624,457	$348,404
Other broad goods—										
Velvets—										
Yards, single width	7,262,315	.....	7,154,387	.....	.....	.....	.....	107,928	.....	.....
Value	$3,161,206	.....	$3,096,449	.....	.....	.....	.....	$64,757	.....	.....
Plushes—										
Yards, single width	2,547,367	.....	1,894,107	.....	.....	432,260	200,000	21,000	.....	.....
Value	$1,340,815	.....	$858,565	.....	.....	$363,882	$187,500	$10,868	.....	.....
Tapestries—										
Yards, single width	1,193,326	.....	.....	.....	.....	659,806	.....	533,520	.....	.....
Value	$994,036	.....	.....	.....	.....	$454,774	.....	$539,262	.....	.....
Upholstery—										
Yards, single width	572,884	.....	86,736	.....	7,400	350,000	.....	128,748	.....	.....
Value	$565,946	.....	$126,353	.....	$2,950	$300,000	.....	$136,643	.....	.....
Ribbons and laces—										
Ribbons	$21,800,604	.....	$1,153,983	.....	$35,232	$10,036,331	$4,983,712	$5,573,709	.....	$107,547
Laces, nets, veils, veiling, etc	$745,489	.....	.....	.....	.....	$414,891	$201,400	.....	$30,198	.....
Embroideries	$412,362	.....	$750	.....	.....	$6,112	$105,500	.....	.....	.....
Fringes and gimps	$1,016,954	.....	$7,072	$85,668	$3,100	$827,000	$544,544	$349,570	.....	.....
Braids and bindings	$3,493,977	.....	$72,571	$143,659	$337,380	$404,456	$2,042,365	$424,277	$69,269	.....
Trimmings—										
Tailors'	$700	.....	.....	.....	$600	.....	$100	.....	.....	.....
Ladies' dress	$1,549,391	$17,600	.....	$20,115	$9,050	.....	$967,143	$536,083	.....	.....
Cloak	$53,640	.....	.....	.....	$8,640	.....	$15,000	$30,000	.....	.....
Milliners'	$1,363,735	.....	.....	.....	.....	.....	$703,742	$629,993	.....	.....
Military	$170,231	.....	.....	.....	.....	.....	$40,000	$130,231	.....	.....
All other products	$5,227,800	$24,000	$74,470	$194,700	$383,821	$855,408	$2,539,445	$1,092,372	$54,283	$9,301
Amount received for contract work	$3,716,056	.....	$230,614	.....	$26,342	$998,890	$268,252	$1,094,319	$61,800	$135,859
Machinery:										
Spindles, total number	2,453,588	3,846	196,024	11,880	107,787	527,409	251,367	1,203,617	22,644	128,414
Organzine—										
First time over, number	652,980	838	13,290	.....	9,454	125,754	55,998	414,046	3,400	30,200
Second time over, number	415,897	38	9,642	.....	10,156	76,370	32,260	267,301	1,436	18,694
Tram, number	128,531	1,158	5,240	.....	2,780	30,549	14,170	62,418	2,000	10,216
Cleaning or polishing, number	8,494	.....	3,486	.....	845	747	2,034	588	.....	794
Doubling, number	257,748	576	16,515	1,000	19,396	49,965	31,478	122,473	1,414	14,241
Quilling, number	102,115	.....	10,167	1,800	3,318	46,039	9,144	26,534	1,200	3,823
Reeling, number	66,525	60	4,290	420	3,502	14,140	5,006	33,989	464	3,754
Spinning and twisting, number	196,612	42	78,532	2,270	35,029	4,792	18,903	41,348	720	14,966
Winding, number	624,686	1,134	55,462	5,700	23,307	179,053	81,464	234,926	11,920	31,726
Looms—										
Power, total number	59,775	3	4,260	44	1,581	23,923	6,944	10,227	1,706	2,087
Plain—										
36 inches or over, reed space, number	26,338	1	2,194	.....	945	8,851	2,581	8,679	1,626	1,461
Under 36 inches, reed space, number	18,022	1	885	12	402	6,913	1,753	7,272	80	614
German (warps on top) ribbons, number	3,875	1	105	15	.....	1,710	1,073	971	.....	.....
High-speed ribbons, number	3,966	.....	303	2	144	1,631	632	942	.....	12
Jacquards—										
Ribbons, number	1,682	.....	352	15	.....	677	223	415	.....	.....
Broad silks, number	5,892	.....	421	.....	.....	4,141	382	948	.....	.....
Hand, total number	283	12	.....	60	29	12	45	109	.....	16
Plain—										
36 inches or over, reed space, number	54	1	.....	.....	1	11	35	6	.....	.....
Under 36 inches, reed space, number	141	10	.....	.....	28	1	8	94	.....	.....
German (warps on top) ribbons, number	64	1	.....	40	.....	.....	.....	7	.....	16
Jacquards—										
Ribbons, number	22	.....	.....	20	.....	.....	.....	2	.....	.....
Broad silks, number	2	.....	.....	.....	.....	.....	2	.....	.....	.....
Other machines—										
Power—										
Knitting—										
Warp, number	221	.....	.....	.....	.....	7	120	85	.....	.....
Knitting or crochet, number	136	.....	3	10	3	6	88	26	.....	.....
Roundhead, number	25	.....	.....	.....	1	.....	15	9	.....	.....
Swiss-ribbed, number	3	.....	.....	.....	3	.....	.....	.....	.....	.....
Milanese or traverse, number	40	.....	.....	.....	.....	1	39	0	.....	.....
Beamers, number	300	.....	39	.....	7	121	24	104	5	0
Braiders, number	25,500	.....	1,429	540	2,120	2,138	13,144	4,900	1,100	120
Chenille, number	268	.....	53	26	2	12	76	99	.....	.....
Curtain, number	80	.....	80	.....	.....	.....	.....	.....	.....	.....
Embroidery, shiffle or power, number	100	.....	4	.....	.....	.....	49	47	.....	.....
Gimp mills, number	166	.....	3	14	6	5	99	39	.....	.....
Lovers or lace, number	93	.....	28	.....	.....	12	53	.....	.....	.....
Sewing, number	1,005	.....	37	17	19	127	1,614	89	.....	2
Slide cord, number	104	.....	37	8	1	1	44	13	.....	.....
Spooling tables, number	851	20	385	25	105	9	106	147	.....	54
Twist, number	84	25	.....	4	6	2	28	19	.....	.....
Warping, number	4,171	1	306	13	90	1,667	488	1,394	114	98
Hand—										
Braiders, number	30	.....	.....	.....	25	.....	5	.....	.....	.....
Chenille, number	13	2	.....	.....	.....	4	4	3	.....	.....
Embroidery, hand stitched, number	17	.....	.....	.....	.....	1	4	11	.....	1
Sewing, number	40	.....	3	.....	1	18	4	10	4	.....
Slide cord, number	3	.....	.....	.....	.....	.....	.....	3	.....	.....
Spooling tables, number	79	.....	21	.....	6	.....	12	40	.....	.....
Twist, number	11	.....	1	.....	.....	3	7	.....	.....	.....
Warping, number	582	1	10	.....	5	204	136	123	.....	43
Other hand machines, number	208	.....	4	.....	.....	3	197	4	.....	.....

TABLE 25.—SILK AND SILK GOODS—DETAILED SUMMARY, BY STATES: 1905—Continued.

	United States.	California.	Connecticut.	Illinois.	Massachusetts.	New Jersey.	New York.	Pennsylvania.	Rhode Island.	All other states.
Dyeing, finishing, and printing:										
Skein dyeing—										
Silk—										
Colors, pounds	1,577,493	30,274	584,627	.....	249,322	569,755	45,750	11,958	.....	85,807
Black, pounds	1,038,968	14,630	326,795	.....	335,214	173,736	8,100	57,544	.....	122,949
Spun—										
Colors, pounds	562,052	373	404,587	.....	42,728	31,023	76,958	.....	6,383	.....
Black, pounds	59,384	50	41,571	.....	9,381	108	36	8,238	.....	.....
Cotton—										
Colors, pounds	645,142	.....	94,179	.....	81,195	446,055	23,713	.....	.....	.....
Black, pounds	907,698	.....	456,430	.....	351,183	27,985	447	69,628	2,025	.....
Wool, colors, pounds	83,673	.....	.....	.....	83,673	.....	.....	.....	.....	.....
Piece dyeing—										
All-silk, yards, single width	12,092,654	.....	.....	.....	.....	11,312,964	779,690	.....	.....	.....
Silk and spun, yards, single width	1,309,510	.....	1,279,260	.....	.....	.....	30,250	.....	.....	.....
Silk and cotton, yards, single width	7,158,037	.....	1,245,462	.....	.....	5,643,775	268,800	.....	.....	.....
Silk and wool, yards, single width	42,065	.....	42,065	.....	.....	.....	.....	.....	.....	.....
Finishing—										
All-silk, pieces (60 yards)	6,323,595	.....	800,793	.....	.....	5,023,982	322,575	170,292	.....	5,953
Silk and cotton, pieces (60 yards)	623,297	.....	240,687	.....	.....	109,154	265,153	6,667	1,636	.....
Silk and wool, pieces (60 yards)	1,236	.....	636	.....	.....	600	.....	.....	.....	.....
Printing—										
Printed in warps, yards, single width	118,640	.....	16,876	.....	.....	101,764	.....	.....	.....	.....
Printed in pieces—										
All-silk, yards, single width	2,955,568	.....	2,626,469	.....	.....	329,099	.....	.....	.....	.....
Silk and spun, yards, single width	293,480	.....	.....	.....	.....	293,480	.....	.....	.....	.....
Silk and cotton, yards, single width	38,897	.....	38,897	.....	.....	.....	.....	.....	.....	.....
Power:										
Number of establishments reporting	608	4	43	3	16	236	117	163	8	18
Total horsepower	78,888	66	8,662	175	4,471	18,999	7,900	31,050	1,745	5,820
Owned—										
Engines—										
Steam—										
Number	468	1	66	2	18	117	57	185	6	16
Horsepower	56,362	60	6,174	85	2,130	12,718	4,720	26,035	800	3,640
Gas and gasoline—										
Number	50	.....	1	.....	.....	16	17	16	.....	.....
Horsepower	937	.....	35	.....	.....	341	204	357	.....	.....
Water wheels—										
Number	85	.....	21	.....	23	11	7	4	5	14
Horsepower	6,965	.....	1,492	.....	2,053	425	423	672	490	1,410
Water motors—										
Number	2	.....	1	.....	.....	1	.....	.....	.....	.....
Horsepower	9	.....	2	.....	.....	7	.....	.....	.....	.....
Electric motors—										
Number	1,412	.....	46	1	9	120	91	870	2	273
Horsepower	7,128	.....	841	45	250	2,096	650	2,660	100	486
Other power, horsepower	355	.....	.....	.....	.....	55	.....	300	.....	.....
Rented—										
Electric motors—										
Number	745	3	4	2	1	67	96	15	532	25
Horsepower	2,393	6	50	45	10	799	606	303	330	244
Other kind, horsepower	4,739	.....	68	.....	28	2,558	1,297	723	25	40
Furnished to other establishments, horsepower	880	.....	17	.....	.....	283	169	356	.....	55

FLAX, HEMP, AND JUTE PRODUCTS

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FLAX, HEMP, AND JUTE PRODUCTS.

By Edward Stanwood, Expert Special Agent.

Hardly any general class of manufactures is more difficult of treatment, either as a whole or in detail, than that of flax, hemp, and jute. The materials are closely allied, in that they are all vegetable fibers, and in that two, and sometimes all three, are used in the same establishment, and not infrequently introduced into the same fabric. Yet the products are so diverse, ranging from gunny bags and ships' hawsers to fine toweling and sewing thread, that the propriety of embracing all these varied industries in a single class, which seems so evident when materials only are considered, practically disappears. Another difficulty which was encountered in the taking of the Twelfth Census has reappeared, and seems insuperable. It arises out of the fact, already referred to, that the class includes a great variety of industries and products. There are in all only 133 establishments reporting. A list of the products includes yarn and twine made from each one of the three fibers; linen thread; woven fabrics, partly or wholly of linen; rope and binder twine of manila or of sisal, or of the two mixed; gunny bagging, jute burlaps, carpets, rugs, and other minor products. Among so many different classes it is necessarily the fact that some of them are represented in the list of establishments by one or two only. It follows that if the statistics of the different classes of materials and products were published, they could be used to ascertain the quantities and values reported for some of the individual establishments. This fact was recognized by some of the leading manufacturers, and in deference to their wishes the details have not been published for the census of 1905.

The number of establishments reported in 1905 was 133, a decrease of 8 from 1900. This item is, however, the only one presented in Table 1 which shows a decrease, with the single exception of the number of children employed, and even their aggregate wages show an increase. The establishments were distributed among the several branches of the industry as follows:

INDUSTRY.	1905	1900
Cordage and twine	102	105
Jute and jute goods	16	18
Linen manufacture	15	18

Table 1 presents a comparative summary of the statistics for the industry as a whole for the censuses from 1890 to 1905.

Table 1.—*Flax, hemp, and jute products—comparative summary, with per cent of increase: 1890 to 1905.*

	CENSUS.			PER CENT OF INCREASE.	
	1905 [1]	1900	1890	1900 to 1905	1890 to 1900
Number of establishments	133	141	162	[2] 5.7	[2] 13.6
Capital	$54,423,531	$41,991,762	$27,731,649	29.6	51.4
Salaried officials, clerks, etc., number	992	641	[3] 458	54.8	40.0
Salaries	$1,404,732	$957,190	[3] $606,170	56.2	57.1
Wage-earners, average number	24,508	20,903	15,519	17.2	34.7
Total wages	$8,580,785	$6,331,741	$4,872,389	35.5	30.0
Men 16 years and over	12,343	9,996	7,367	23.5	35.7
Wages	$5,349,427	$3,824,555	$2,952,270	39.9	29.5
Women 16 years and over	10,072	8,648	6,923	16.5	24.9
Wages	$2,851,429	$2,174,152	$1,733,289	31.2	25.4
Children under 16 years	2,093	2,259	1,229	[2] 7.4	83.8
Wages	$370,929	$333,034	$186,830	14.1	78.3
Miscellaneous expenses	$3,083,107	$2,678,286	$1,431,932	37.5	87.0
Cost of materials used	$44,890,546	$32,197,885	$26,148,344	39.4	23.1
Value of products	$62,959,329	$47,601,607	$37,313,021	32.2	27.6

[1] Exclusive of the statistics of 4 establishments engaged primarily in the manufacture of other products. These establishments manufactured flax, hemp, and jute products to the value of $606,750.

[2] Decrease.

[3] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.

Table 1 shows that from 1900 to 1905 there was an increase of 29.6 per cent in capital; of 17.2 per cent in the average number of wage-earners; of 35.5 per cent in the wages they received; of 39.4 per cent in the cost of materials used; and of 32.2 per cent in the value of products. It should be said, however, that these percentages signify nothing more than that the industry as a whole has been expanding rapidly, for the aggregates consist of widely diverse materials. An increase in the amount of wages paid to labor at a larger ratio than the increase in the number employed might or might not indicate a rise in the rate of wages, for it might be a consequence of the employment of a much greater proportion of highly skilled workmen. For similar reasons the lower rate of increase of the value of the products, as compared with that of the materials used, does not necessarily imply a smaller profit on manufactures, but may be due to a larger proportional manufacture of classes of goods, the production of which is so great that a low rate of profit is satisfactory. The actual facts could only be ascertained by detailed consideration of statistics which it is impossible to obtain.

Table 2 is a summary of the industry, by states, for 1905.

TABLE 2.—FLAX, HEMP, AND JUTE PRODUCTS—

		United States.	Alabama.	Connecticut.	Kentucky.
1	Number of establishments	133	4	5	3
2	Capital, total	$54,423,531	$396,181	$280,258	$943,373
3	Land	$3,459,035	$15,000	$23,000	$38,000
4	Buildings	$8,052,426	$58,639	$59,300	$140,705
5	Machinery, tools, and implements	$13,920,759	$217,763	$109,800	$488,693
6	Cash and sundries	$28,991,311	$104,779	$88,158	$275,975
7	Proprietors and firm members	54	.....	3	.....
	Salaried officials, clerks, etc.:				
8	Total number	992	12	5	23
9	Total salaries	$1,404,732	$13,100	$4,886	$26,530
	Officers of corporations—				
10	Number	141	2	2	7
11	Salaries	$563,234	$3,900	$1,950	$13,860
	General superintendents, managers, clerks, etc.—				
12	Total number	851	10	3	16
13	Total salaries	$931,498	$9,200	$2,936	$12,670
	Men—				
14	Number	719	8	3	15
15	Salaries	$843,050	$8,000	$2,936	$12,040
	Women—				
16	Number	132	2	.....	1
17	Salaries	$88,448	$1,200	.....	$624
	Wage-earners, including pieceworkers, and total wages:				
18	Greatest number employed at any one time during the year	27,870	321	240	546
19	Least number employed at any one time during the year	21,773	265	190	425
20	Average number	24,508	293	202	452
21	Total wages	$8,580,785	$63,501	$56,395	$115,051
	Men 16 years and over—				
22	Average number	12,343	115	111	199
23	Wages	$5,349,427	$31,808	$35,980	$67,867
	Women 16 years and over—				
24	Average number	10,072	136	91	153
25	Wages	$2,851,429	$25,770	$20,415	$32,069
	Children under 16 years—				
26	Average number	2,093	42	.....	100
27	Wages	$379,929	$5,923	.....	$15,115
28	Miscellaneous expenses, total	$3,683,107	$30,308	$15,700	$43,957
29	Rent of works	$153,420	$900	$20	$180
30	Taxes	$311,709	$1,539	$1,748	$3,604
31	Rent of offices, interest, insurance, and all other sundry expenses not hitherto mended	$2,963,984	$27,869	$14,031	$40,173
32	Contract work	$253,994	.....	.....	.....
33	Materials used, aggregate cost	$44,890,546	$381,422	$258,191	$307,097
34	Principal materials, total cost	$41,672,312	$358,082	$251,350	$289,477
35	Purchased in raw state	$38,566,575	$338,082	$233,754	$241,933
36	Purchased in partially manufactured form	$3,105,737	$20,000	$17,596	$47,544
37	Fuel	$605,997	$10,964	$1,346	$9,614
38	Rent of power and heat	$20,147	.....	.....	.....
39	Mill supplies	$868,407	$1,834	$2,070	$8,006
40	All other materials	$1,530,039	$10,155	$1,051	.....
41	Freight	$193,644	$387	$1,765	.....
42	Products, total value	$62,939,329	$408,031	$360,797	$597,694
	Power:				
43	Number of establishments reporting	127	4	5	3
44	Total horsepower	73,518	625	910	1,448
	Owned—				
	Engines—				
	Steam—				
45	Number	205	3	1	6
46	Horsepower	52,369	500	15	1,198
	Gas and gasoline—				
47	Number	6	.....	.....	.....
48	Horsepower	98	.....	.....	.....
	Water wheels—				
49	Number	85	1	9	1
50	Horsepower	12,589	65	895	250
	Electric motors—				
51	Number	101	.....	.....	.....
52	Horsepower	7,534	.....	.....	.....
	Rented—				
	Electric motors—				
53	Number	17	.....	.....	.....
54	Horsepower	737	.....	.....	.....
55	Other kind, horsepower	191	.....	.....	.....
56	Furnished to other establishments, horsepower	150	.....	.....	.....

DETAILED SUMMARY, BY STATES: 1905.

Missouri.	New York.	North Carolina.	Ohio.	Pennsylvania.	Rhode Island.	All other states.[1]	
4	20	6	8	20	4	59	1
$2,014,396	$14,416,500	$885,938	$2,306,230	$4,797,606	$121,017	$28,261,132	2
$54,443	$636,409	$26,100	$214,871	$245,912	$2,500	$2,202,710	3
$156,557	$1,942,704	$105,530	$442,240	$620,361	$20,595	$5,405,705	4
$302,913	$4,112,246	$425,235	$610,046	$892,796	$33,251	$6,728,016	5
$1,500,483	$7,725,051	$328,983	$1,039,073	$3,038,537	$65,571	$13,924,701	6
.....	8	2	.....	16	4	21	7
78	275	20	70	80	4	425	8
$80,351	$412,104	$21,496	$103,730	$155,587	$4,080	$663,868	9
16	31	7	10	15	2	49	10
$34,550	$163,511	$9,865	$44,458	$78,841	$2,300	$200,999	11
62	244	13	60	65	2	376	12
$54,801	$248,593	$11,631	$59,272	$76,746	$1,780	$453,869	13
39	200	13	45	59	2	335	14
$32,571	$222,672	$11,631	$50,640	$73,868	$1,780	$426,909	15
23	44	.....	15	6	.....	41	16
$22,230	$25,021	.....	$8,626	$2,878	.....	$26,969	17
883	7,482	630	1,510	2,370	122	13,766	18
765	5,850	542	779	1,086	88	10,868	19
806	6,742	543	1,070	2,232	98	12,070	20
$280,004	$2,417,190	$100,731	$361,286	$666,163	$28,776	$4,491,088	21
273	3,104	206	863	979	45	6,448	22
$123,685	$1,391,926	$50,400	$301,294	$408,576	$16,788	$2,921,103	23
502	3,493	192	186	786	49	4,484	24
$140,838	$998,154	$32,605	$55,351	$185,199	$11,308	$1,340,720	25
31	145	145	21	467	4	1,138	26
$6,481	$27,110	$17,736	$4,641	$72,388	$680	$229,865	27
$277,720	$1,406,410	$43,913	$212,108	$185,920	$12,619	$1,454,353	28
$12,200	$121,823	$5,000	.....	$2,496	$2,400	$8,401	29
$9,125	$71,301	$2,880	$21,842	$6,724	$370	$102,507	30
$250,083	$969,286	$36,033	$190,266	$176,700	$8,040	$1,251,503	31
$6,312	$244,000	.....	.....	.....	$1,800	$1,882	32
$1,143,782	$10,607,517	$814,648	$2,517,023	$3,047,841	$120,705	$25,091,420	33
$1,049,078	$9,403,976	$753,357	$2,424,080	$3,422,942	$110,263	$23,009,737	34
$293,430	$9,070,285	$640,585	$2,349,229	$3,300,405	$26,520	$22,000,292	35
$755,648	$327,691	$112,772	$74,851	$122,447	$83,743	$1,543,445	36
$10,630	$181,601	$15,696	$37,787	$35,980	$1,608	$294,471	37
.....	$1,141	.....	.....	$2,175	$1,400	$15,431	38
$36,033	$185,812	$24,365	$6,149	$24,734	$274	$570,121	39
$12,250	$756,423	$14,060	$45,107	$132,452	$7,060	$550,821	40
$20,791	$78,264	$7,170	$4,740	$20,588	$100	$41,830	41
$1,788,510	$15,806,386	$1,035,648	$3,250,440	$5,138,054	$177,638	$34,225,222	42
4	19	6	8	18	4	56	43
2,017	16,418	1,230	3,313	4,425	275	42,857	44
8	52	8	17	18	4	88	45
1,975	15,355	837	3,205	4,081	115	24,068	46
.....	.....	.....	1	1	.....	4	47
.....	.....	.....	20	6	.....	72	48
.....	5	9	.....	5	5	50	49
.....	500	170	.....	150	140	10,529	50
4	15	6	2	8	.....	156	51
42	358	223	28	81	.....	6,802	52
.....	3	.....	.....	1	.....	13	53
.....	115	.....	.....	5	.....	617	54
.....	.....	.....	.....	102	20	19	55
.....	5	.....	.....	20	25	100	56

[1] Includes establishments distributed as follows: California, 2; Delaware, 1; Georgia, 2; Illinois, 3; Indiana, 2; Maine, 2; Massachusetts, 25; Mississippi, 1; New Hampshire, 1; New Jersey, 9; Oregon, 1; South Carolina, 2; Tennessee, 2; Virginia, 1; Wisconsin, 5.

The geographic distribution of the industry is substantially the same as at the census of 1900, and no general deduction from Table 2 is necessary.

CORDAGE AND TWINE.

By far the largest branch of the industry is that of the manufacture of cordage and twine, in which more than three-fourths of the total number of establishments for the whole industry, two-thirds of all the capital, and three-fifths of the persons employed are engaged. Table 3 presents a comparative summary for this branch of the industry for the censuses from 1880 to 1905.

An increase from 1900 to 1905 is shown in every item of Table 3 with the exception of the number of establishments reported and the number of children employed.

TABLE 3.—CORDAGE AND TWINE—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1880 TO 1905.

	CENSUS.				PER CENT OF INCREASE.		
	1905 [1]	1900	1890	1880	1900 to 1905	1890 to 1900	1880 to 1890
Number of establishments	102	105	150	165	[2] 2.9	[2] 30.0	[2] 9.1
Capital	$37,110,521	$29,275,470	$23,351,883	$7,140,475	26.8	25.4	227.0
Salaried officials, clerks, etc., number	731	436	[3] 414	(4)	67.7	5.3	.....
Salaries	$999,860	$666,936	[3] $560,639	(4)	49.9	18.9	.....
Wage-earners, average number	14,614	13,114	12,385	5,435	11.4	5.9	127.9
Total wages	$5,338,178	$4,113,112	$3,976,232	$1,558,676	29.8	3.4	155.1
Men 16 years and over	8,646	7,341	6,412	2,926	17.8	14.5	119.1
Wages	$3,779,835	$2,751,787	$2,547,985	(4)	37.4	8.0	.....
Women 16 years and over	4,999	4,797	5,010	1,480	4.2	[2] 4.3	238.5
Wages	$1,392,043	$1,212,823	$1,280,065	(4)	14.8	[2] 5.3	.....
Children under 16 years	969	976	963	1,029	[2] 0.7	1.3	[2] 6.4
Wages	$166,300	$148,502	$148,182	(4)	12.0	0.2	.....
Miscellaneous expenses	$2,508,600	$1,716,205	$1,020,697	(5)	46.2	68.1	.....
Cost of materials used	$36,005,747	$26,632,006	$24,051,666	$9,330,261	35.5	10.7	157.8
Value of products	$48,017,139	$37,849,051	$33,312,559	$12,492,171	26.9	13.6	166.7

[1] Exclusive of the statistics of 3 establishments engaged primarily in the manufacture of other products. These establishments manufactured cordage and twine to the value of $578,649.
[2] Decrease.
[3] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[4] Not reported separately.
[5] Not reported.

It will further be noted that these increases were greater from 1900 to 1905 in all of the essential elements of comparison than in the preceding decade, 1890 to 1900. Capital increased, in round numbers, 27 per cent, the number of wage-earners 11 per cent, the wages paid 30 per cent, the cost of materials 35 per cent, and the value of products 27 per cent. The figures for the two chief products, binder twine and rope, are presented in the following tabular statement for the censuses of 1900 and 1905. These totals have been compiled from the reports of the mills, supplemented in a few cases by Office estimates:

Quantity and value of binder twine and rope: 1905 and 1900.

CENSUS.	BINDER TWINE.		ROPE.	
	Pounds.	Value.	Pounds.	Value.
1905	191,796,047	$19,514,992	200,824,974	$19,668,169
1900	165,609,429	14,185,581	137,546,204	12,510,793

JUTE AND JUTE GOODS.

Table 4 presents a comparative summary for the manufacture of jute and jute goods for the censuses of 1905 and 1900.

TABLE 4.—*Jute and jute goods—comparative summary, with per cent of increase: 1905 and 1900.*

	1905 [1]	1900	Per cent of increase.
Number of establishments	16	18	[2] 11.1
Capital	$11,019,132	$7,027,293	56.8
Salaried officials, clerks, etc., number	152	88	72.7
Salaries	$330,041	$147,313	124.0
Wage-earners, average number	6,083	4,506	35.0
Total wages	$1,917,986	$1,181,790	62.3
Men 16 years and over	2,437	1,611	51.3
Wages	$948,457	$579,877	63.6
Women 16 years and over	3,083	2,064	49.4
Wages	$876,994	$480,732	82.4
Children under 16 years	563	831	[2] 32.3
Wages	$92,535	$121,181	[2] 23.6
Miscellaneous expenses	$771,106	$574,986	34.1
Cost of materials used	$5,054,130	$3,015,362	67.6
Value of products	$9,005,802	$5,383,797	68.4

[1] Exclusive of the statistics of 1 establishment engaged primarily in the manufacture of other products. This establishment manufactured jute and jute goods to the value of $28,101.
[2] Decrease.

The manufacture of jute goods is a comparatively new industry, and has increased greatly in the last five years. The items of capital, salaries, wages, materials, and value of products in Table 4 show an increase of more than 50 per cent in the five years since 1900.

LINEN GOODS.

Table 5 presents a comparative summary for linen goods from 1890 to 1905.

Considering all items of Table 5, the rate of increase from 1900 to 1905 in the manufacture of linen goods has been somewhat less than in the other two departments of the combined industry, but the result as a whole shows healthy progress. It will be seen that whereas the capital employed more than doubled in the ten years from 1890 to 1900, in the succeeding five years it increased but 10.6 per cent. The increase in the other principal items is larger, but is on the whole fairly moderate, as compared with similar items in the other departments of the industry. It is well known that the linen manufacture is an exotic in this country. Relatively little attention is given to the preparation of the flax fiber for manufacture, and that which is prepared is adapted only to the coarser processes. Imported material is employed almost exclusively in the spinning of yarns and the weaving of fabrics in the United States. There has never been a successful attempt in the country to produce fine goods at a profit.

TABLE 5.—*Linen goods—comparative summary, with per cent of increase: 1890 to 1905.*

	CENSUS.			PER CENT OF INCREASE.	
	1905	1900	1890 [1]	1900 to 1905	1890 to 1900
Number of establishments	15	18	5	[2] 16.7	260.0
Capital	$6,293,878	$5,688,999	$2,734,130	10.6	108.1
Salaried officials, clerks, etc., number	109	117	[3] 26	[2] 6.8	350.0
Salaries	$164,831	$142,941	[3] $25,530	15.3	459.9
Wage-earners, average number	3,811	3,283	1,940	16.1	69.2
Total wages	$1,324,621	$1,036,830	$527,572	27.8	96.5
Men 16 years and over	1,260	1,014	648	20.7	61.1
Wages	$621,135	$492,891	$255,409	26.0	93.0
Women 16 years and over	1,990	1,787	1,103	11.4	49.8
Wages	$582,392	$480,597	$256,187	21.2	87.6
Children under 16 years	561	452	99	24.1	356.6
Wages	$121,094	$63,351	$15,976	91.1	296.5
Miscellaneous expenses	$403,401	$387,095	$242,977	4.2	59.3
Cost of materials used	$3,740,669	$2,550,517	$1,594,769	46.7	59.9
Value of products	$5,856,388	$4,368,150	$2,880,341	34.1	51.7

[1] Includes 2 establishments classified as "thread, linen."
[2] Decrease.
[3] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.

DYEING AND FINISHING TEXTILES

DYEING AND FINISHING TEXTILES.

By Edward Stanwood, Expert Special Agent.

The bleaching, dyeing, mercerizing, or printing of raw fibers, yarns, and woven cloth are not, strictly speaking, processes of textile manufacture; but owing to the common practice in this country of combining one or more of those processes with spinning and weaving in the same establishment, it becomes necessary either to eliminate from the reports of those establishments an estimated part of the capital, wages, expenses, and value of products, in order to confine the inquiry to textile manufacture, or to treat the establishments which perform those processes only as engaged in the textile industry. The first named method is quite impracticable. Indeed, it has not been found feasible to ascertain even the quantity of yarn and fabrics operated upon in the wool industry. It follows that the census does not present full statistics of dyeing and finishing. The facts given in the present report are almost exclusively those concerning the independent establishments, but it is possible to present more or less complete statistics regarding the quantities of cotton and silk goods operated upon. The schedules of inquiry submitted to cotton manufacturers provided for a return of the cost of chemicals and dyestuffs, the quantities in detail of the goods treated, and the value added by the work done. The silk schedules required a statement of the quantity of goods treated and the cost of chemicals and dyestuffs. The wool schedules asked for the cost of such chemicals only. Yet the carpet industry uses none but dyed woolen yarn, and, with the exception of such articles as flannels and blankets, practically all the products of woolen and worsted mills are colored, either in the yarn or in the piece. The importance of the omission of the amount of dyeing in the establishments engaged in the wool manufacture may be seen in the fact drawn from one of the tables subsequently presented, that the cost of chemicals and dyestuffs consumed by them in 1905 was $9,177,681, which was more than one-half of the $16,095,300, the cost of such materials consumed by all the textile establishments exclusive of independent dyeing and finishing plants.

The quantities of raw cotton, yarn, and woven goods operated upon in both independent establishments and in cotton mills are shown in Table 1.

Table 1.—*Raw cotton, cotton yarn, and cotton piece goods operated upon in independent establishments and cotton mills: 1905.*

	Total.	In independent establishments.	In cotton mills.[1]
	Pounds.	*Pounds.*	*Pounds.*
Cotton stock, total	87,305,304	9,907,444	77,397,860
Bleached	13,212,161	386,512	12,825,649
Dyed	74,093,143	9,520,932	64,572,211
Cotton yarns, total	198,074,731	61,804,220	136,270,511
Bleached	39,554,181	11,708,132	27,846,049
Dyed	154,805,026	47,676,473	[2] 107,189,453
Mercerized	3,654,624	2,419,615	1,235,009
	Square yards.	*Square yards.*	*Square yards.*
Cotton piece goods, total	2,864,681,818	2,442,524,886	422,156,932
Bleached	1,151,932,531	988,081,883	163,850,648
Dyed	696,130,937	623,415,398	72,715,539
Mercerized	40,510,159	39,959,448	57[illegible], 11
Printed	976,108,191	791,068,157	185,040,034

[1] Includes "cotton small wares."
[2] Includes 1,552,840 pounds of cotton yarn dyed in silk mills.

The most important of all the processes above mentioned is that of printing piece goods, and more than four-fifths of all the cloth printed was operated upon in independent establishments. Over three-fourths of the cloth bleached and nearly the whole of the cloth mercerized was also treated in such establishments. With these exceptions the greater part of the work was performed in cotton mills, which greatly exceeded the independent establishments in the amount of cotton stock and yarn dyed and bleached. In the aggregate, 2,864,681,818 square yards of cloth were operated upon, of which 976,108,191 square yards were printed, and 696,130,937 square yards were dyed.

The statement of silk yarn and silk piece goods operated upon for the census of 1905, is as follows:

	Total.	In independent establishments.	In silk mills.
Silk yarn dyed, pounds	11,996,819	9,3[illegible]0,358	2,616,461
Spun silk dyed, pounds	1,3[illegible],221	[illegible]55,[illegible]85	621,436
Piece goods dyed, yards[1]	53,[illegible]3,596	32,861,350	20,692,266
Piece goods printed, yards[1]	8,130,103	4,723,518	3,406,585

[1] The number of yards treated is reported by silk mills in single width yards and by independent plants in square yards.

Practically two-thirds of the amount of work done under the heads of dyeing and printing silk goods was performed in independent establishments.

These are all the consolidated facts that are derivable from the census statistics. The rest of this report deals with the statistics of independent establishments only. Table 2 is a summary which presents the main facts relating to the industry for the census of 1905, as compared with previous census enumerations.

TABLE 2.—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1860 TO 1905.

	CENSUS.						PER CENT OF INCREASE.				
	1905	1900	1890	1880	1870	1860	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870
Number of establishments	360	298	248	191	42	29	20.8	20.2	29.8	354.8	44.8
Capital	$88,708,576	$60,643,104	$38,450,800	$26,223,981	$13,367,553	$3,517,250	46.3	57.7	46.6	96.2	280.1
Salaried officials, clerks, etc., number	2,196	1,318	[1]666	(2)	(2)	(2)	66.6	97.9	.....	.....	.....
Salaries	$3,407,381	$2,267,128	[1]$805,291	(2)	(2)	(2)	50.3	181.5	.....	.....	.....
Wage-earners, average number	35,565	29,776	19,691	16,698	8,894	4,005	19.4	51.9	17.4	87.7	122.1
Total wages	$15,469,205	$12,726,316	$8,911,720	$6,474,364	$3,438,089	$1,088,296	21.6	42.8	37.6	88.3	215.9
Men 16 years and over	28,483	24,419	16,510	12,788	6,092	3,433	16.6	47.9	29.1	109.9	77.5
Wages	$13,543,724	$11,361,194	$8,147,844	(2)	(2)	(2)	19.2	39.4	.....	.....	.....
Women 16 years and over	5,658	4,253	2,298	2,038	1,393	572	33.0	85.1	12.8	46.3	143.5
Wages	$1,640,093	$1,166,972	$620,390	(2)	(2)	(2)	40.5	88.1	.....	.....	.....
Children under 16 years	1,424	1,104	793	1,872	1,409	(2)	29.0	39.2	[3]57.6	32.9	.....
Wages	$285,388	$198,150	$143,486	(2)	(2)	(2)	44.0	38.1	.....	.....	.....
Miscellaneous expenses	$5,978,277	$4,137,947	$3,131,081	(4)	(4)	(4)	44.5	32.2	.....	.....	.....
Cost of materials used	$19,621,253	$17,958,137	$12,385,220	$13,664,295	[5]$46,373,358	$3,884,815	9.3	45.0	[3]9.4	[3]70.5	1,093.7
Value of products	$50,849,545	$44,963,331	$28,900,560	$32,297,420	[5]$54,446,044	$7,971,064	13.1	55.6	[3]10.5	[3]40.7	583.0

[1] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[2] Not reported separately.
[3] Decrease.
[4] Not reported.
[5] At the census of 1870 the value of material operated upon was included in materials and products. At all subsequent censuses this value was eliminated and only the added value given by the dyeing and finishing processes was reported as value of products.

Table 3 is a comparative summary, by states, of the dyeing and finishing industry for the years 1890, 1900, and 1905.

The number of establishments has increased from 298 in 1900 to 360 in 1905. Of the net increase of 62 establishments, 58 are in Connecticut, Massachusetts, New York, Pennsylvania, and Rhode Island. A decrease of 2 in New Jersey makes a net increase of 56 in these 6 states where the cotton and wool industries are most concentrated.

In the item of capital this concentration is even more marked. The total increase was $28,065,472—from $60,643,104 in 1900 to $88,708,576 in 1905, or 46.3 per cent. The increase in the 6 states along the coast from Massachusetts to Pennsylvania is shown in the following tabular statement:

Capital in selected states: 1905 and 1900.

STATE.	1905	1900	Increase.
Total for 6 states	$82,928,442	$56,814,325	$26,114,117
Massachusetts	30,875,445	15,206,200	15,669,245
Rhode Island	16,969,936	12,853,123	4,116,813
Connecticut	4,562,055	3,243,744	1,318,311
New York	7,529,611	6,230,657	1,298,954
New Jersey	13,068,657	11,600,695	1,467,962
Pennsylvania	9,922,738	7,679,906	2,242,832

Ninety-three per cent of the total increase in capital was in the 6 states enumerated. Inasmuch as in 1900 they reported 93.7 per cent of the total capital, they have practically maintained to the full their ascendency in this industry.

The number of wage-earners increased from 29,776 to 35,565, or 19.4 per cent, and the wages received by them increased from $12,726,316 to $15,469,205, or 21.6 per cent, a little higher rate than that of the number of employees. But as in similar cases, it would be unsafe to draw definite conclusions from this fact as to the general course of wages in the interval. The dyeing and finishing industry is peculiarly a man's trade. Almost exactly four-fifths of the persons employed were men, but the proportion both of women and children employed has increased slightly in the last few years. In New Jersey, where the number of hands was largest, more than seven-eighths of them were men and only 1.6 per cent were children. On the other hand, in Pennsylvania 8.7 per cent of those employed were under 16 years of age.

The cost of materials used in 1905, compared with 1900, shows an increase of but 9.3 per cent—the lowest rate of any of the principal items in Table 2. A tabular statement is presented below showing the cost of chemicals and dyestuffs used in all textile establishments (exclusive of shoddy and felt hat mills) and independent dyeing and finishing works in 1890, 1900, and 1905.

Cost of chemicals and dyestuffs used in all textile establishments: 1890 to 1905.

	1905	1900	1890
Total	$26,682,619	$25,392,573	$19,686,663
Independent dyeing and finishing establishments	10,587,319	10,667,621	8,407,693
Other textile establishments	16,095,300	14,724,952	11,278,970
Cotton manufactures[1]	4,573,375	5,718,107	4,266,773
Wool manufactures[2]	9,177,681	7,983,684	5,889,612
Hosiery and knit goods	1,677,252	1,023,161	564,053
Silk manufactures	666,992	(3)	558,532

[1] Includes cotton goods and cotton small wares.
[2] Includes worsted goods; woolen goods; carpets and rugs, other than rag; felt goods; and wool hats.
[3] Not reported separately in 1900.

Rather more than one-half, in value, of all the materials reported consumed in 1905 by independent establishments consisted of chemicals and dyestuffs. Inasmuch as the value of such articles shows a positive decline since 1900, although the work done by these establishments, being of the same character and presumably divided as to the amount of each particular process in fairly similar proportions, has largely increased, it seems a reasonable inference that the average price of those materials decreased but that the quantities used increased.

The total value of products increased from $44,963,331 in 1900 to $50,849,545 in 1905, or 13.1 per cent. This item, as has been remarked, differs from the corresponding item in other industries in that it does not represent the gross value of the finished product, but only the added value given by the processes to which the material has been subjected. It is therefore permissible in this case to draw attention to the wide difference between the rate of expansion of capital, 46.3 per cent, and the rate of increase of the amount which the proprietors received for the operations performed on the goods, 13.1 per cent.

TABLE 3.—COMPARATIVE SUMMARY,

	STATE.	Census.	Number of establishments.	CAPITAL. Total.	Land.	Buildings.	Machinery, tools, and implements.	Cash and sundries.	SALARIED OFFICIALS, CLERKS, ETC. Number.	Salaries.
1	United States	1905	360	$88,708,576	$7,587,005	$16,698,086	$24,013,987	$40,409,498	2,196	$3,407,381
2		1900	298	60,643,104	5,304,149	12,251,886	17,750,574	25,335,695	1,318	2,267,128
3		1890	248	38,450,800	2,579,114	7,596,641	9,703,284	18,571,761	666	805,291
4	Connecticut	1905	10	4,562,055	725,109	900,225	1,879,830	1,056,831	88	161,812
5		1900	5	3,243,744	482,100	1,004,388	929,262	827,994	39	100,884
6		1890	5	775,352	58,700	331,184	231,212	154,256	12	14,250
7	Illinois	1905	8	246,916	9,432	50,410	127,195	59,879	28	31,605
8		1900	4	113,694	7,500	42,000	50,800	13,394	7	6,709
9		1890	3	26,500	3,500	6,000	11,000	6,000	5	2,532
10	Kentucky [1]	1900	3	161,239	7,800	28,922	55,455	69,062	7	9,090
11	Massachusetts	1905	46	30,875,445	1,819,000	3,711,238	4,301,225	21,043,982	403	759,283
12		1900	37	15,206,200	1,161,503	1,960,972	2,499,388	9,584,337	239	547,862
13		1890	33	11,996,154	673,931	2,010,687	2,502,895	6,808,641	82	99,320
14	New Hampshire [2]	1905	4	1,250,949	86,606	295,000	490,000	379,283	48	53,001
15		1900	5	883,704	61,000	153,000	173,500	496,204	21	23,900
16	New Jersey	1905	57	13,068,657	948,201	2,683,367	5,489,961	3,947,128	552	846,532
17		1900	59	11,600,695	651,481	2,100,396	4,624,059	4,224,759	353	614,910
18		1890	41	5,197,403	333,936	879,577	1,782,696	2,201,194	129	179,425
19	New York	1905	55	7,529,611	508,980	1,363,803	2,192,048	3,464,780	204	257,846
20		1900	42	6,230,657	339,909	1,335,748	2,097,541	2,457,459	107	134,345
21		1890	49	4,063,095	366,300	721,700	1,137,566	2,737,529	114	137,473
22	North Carolina [3]	1905	4	828,766	113,448	156,645	316,820	241,853	27	28,150
23		1900	5	293,831	4,700	33,860	184,022	71,309	8	6,650
24	Pennsylvania	1905	123	9,922,738	869,836	2,024,948	2,605,156	4,422,798	324	445,052
25		1900	105	7,679,906	733,612	1,200,133	2,368,629	3,287,532	216	260,277
26		1890	83	6,296,340	598,647	1,354,200	1,839,121	2,504,372	190	207,257
27	Rhode Island	1905	37	16,969,936	2,183,079	4,680,587	5,176,985	4,929,285	403	672,315
28		1900	24	12,853,123	1,572,306	3,765,314	3,862,803	3,652,700	256	449,996
29		1890	22	5,739,692	432,600	1,832,398	1,498,323	1,976,371	101	130,059
30	All other states	[4] 1905	16	3,453,503	323,194	831,863	1,434,767	863,679	119	151,185
31		[5] 1900	9	2,376,311	283,038	537,213	905,115	650,945	65	112,514
32		[6] 1890	12	3,456,264	111,500	460,895	700,471	2,183,398	33	34,975

[1] Included in "all other states" in 1905. No establishments reported in 1890.
[2] Included in "all other states" in 1890.
[3] No establishments reported in 1890.
[4] Includes establishments distributed as follows: Alabama, 1; California, 1; Delaware, 1; Indiana, 2; Iowa, 1; Kentucky, 2; Maine, 1; Maryland, 2; Ohio, 1; South Carolina, 2; Virginia, 1; West Virginia, 1.

BY STATES: 1890 TO 1905.

Wage-earners and wages.					Miscellaneous expenses.	Cost of materials used.							Value of products.	
Total.		Average number.												
Average number.	Wages.	Men 16 years and over.	Women 16 years and over.	Children under 16 years.		Total.	Chemicals and dye-stuffs.	Starch.	Soap.	Fuel.	Rent of power and heat.	All other materials, including mill supplies and freight.		
35,565	$15,469,205	28,483	5,658	1,424	$5,978,277	$10,621,253	$10,587,319	$1,139,013	$869,844	$3,268,511	$72,339	$3,684,227	$50,849,545	1
20,776	12,726,316	24,419	4,253	1,104	4,137,947	17,958,137	10,667,621	874,643	563,809	2,165,091	53,730	3,633,243	44,963,331	2
19,601	8,911,720	16,510	2,208	793	3,131,081	12,385,220	8,407,693	660,577	279,272	1,647,848	23,138	1,366,692	28,900,560	3
1,406	639,507	1,127	241	38	166,381	927,096	445,914	108,381	14,301	152,530	10,552	195,418	2,215,314	4
1,300	578,756	1,015	238	47	216,075	907,377	561,619	36,715	17,129	113,780	7,955	170,179	2,269,967	5
477	237,102	390	85	2	77,336	300,360	114,126	17,815	2,049	58,711	.....	107,639	715,388	6
123	44,575	81	42	.....	21,893	30,000	12,921	2,938	384	6,380	640	6,737	161,309	7
84	27,878	69	10	5	5,913	32,523	18,966	560	445	7,546	.....	5,006	86,960	8
16	7,802	13	3	.....	1,426	6,846	4,270	.....	504	1,072	.....	1,000	26,741	9
116	45,225	83	25	8	9,702	84,023	71,518	4,162	160	6,300	180	1,703	179,123	10
7,508	3,202,417	5,835	1,390	283	1,637,429	4,179,076	2,060,699	168,396	142,845	747,046	500	1,059,590	11,048,512	11
4,678	2,081,015	3,846	735	97	866,829	3,110,910	2,031,072	160,016	9,503	393,711	5,512	511,693	8,868,290	12
4,270	1,809,787	3,527	539	204	869,669	2,801,364	1,959,550	125,288	25,599	404,778	6,413	288,736	6,496,215	13
859	352,473	672	137	50	86,755	512,544	197,201	31,447	8,254	114,452	6,555	154,635	1,108,886	14
1,028	451,960	789	239	.....	111,478	636,469	309,296	23,646	25,634	74,451	50	203,992	1,328,319	15
7,597	3,405,830	6,664	814	119	1,213,308	5,052,184	3,110,185	186,789	423,560	592,287	7,873	731,490	11,979,947	16
7,074	3,003,491	6,120	786	168	809,580	4,513,768	2,755,553	165,728	224,298	411,178	9,497	947,514	10,488,963	17
3,735	1,878,137	3,335	346	54	752,461	2,711,121	2,068,192	109,466	83,775	239,329	2,500	207,859	6,183,397	18
3,586	1,577,976	2,724	803	59	378,390	1,339,430	518,515	66,690	63,109	287,640	15,710	387,757	4,361,088	19
3,117	1,424,578	2,395	636	86	210,395	1,402,373	689,825	63,124	46,131	202,074	8,564	392,655	3,625,882	20
2,725	1,344,250	2,174	415	136	367,935	1,454,119	889,577	73,836	44,321	216,618	4,775	224,992	3,630,051	21
301	83,034	236	64	1	28,346	85,548	26,936	21,317	.....	20,524	.....	16,771	250,805	22
184	45,340	142	42	.....	13,366	95,210	13,000	14,834	220	10,767	.....	56,389	175,759	23
4,585	2,075,994	3,728	456	401	757,494	2,701,027	1,791,646	39,292	128,016	424,961	11,802	305,310	6,786,263	24
4,716	2,005,752	4,013	346	357	556,083	3,174,507	2,068,174	94,373	172,970	342,671	8,772	487,547	7,038,012	25
3,355	1,596,565	2,964	212	179	419,456	2,395,482	1,808,041	107,269	80,793	284,546	6,250	108,583	5,240,761	26
7,562	3,181,597	5,742	1,465	355	1,213,079	3,639,268	1,872,209	346,557	73,801	758,330	5,350	582,961	9,981,457	27
5,942	2,474,042	4,644	1,039	259	1,138,065	3,087,781	1,653,059	205,321	62,048	513,837	20	653,496	8,484,878	28
3,010	1,462,966	2,964	570	145	393,540	1,819,351	1,004,475	129,050	32,205	351,521	1,200	240,900	4,743,561	29
2,038	785,802	1,674	246	118	474,302	1,155,080	551,093	167,197	15,514	164,361	13,357	243,558	2,955,274	30
1,537	528,270	1,303	157	77	200,461	913,196	495,539	106,164	5,868	88,776	13,180	203,669	2,417,187	31
1,404	574,991	1,203	128	73	249,249	896,577	508,462	97,853	10,026	91,273	2,000	186,963	1,858,426	32

[5] Includes establishments distributed as follows: Alabama, 1; Delaware, 2; Indiana, 1; Maine, 1; Maryland, 2; Ohio, 1; West Virginia, 1.
[6] Includes establishments distributed as follows: Delaware, 1; Iowa, 1; Maine, 1; Maryland, 2; Minnesota, 1; Missouri, 1; New Hampshire, 2; Ohio, 2; West Virginia, 1.

Table 4 shows in detail the quantity of various kinds of goods operated upon and the added value, as reported in 1890, 1900, and 1905.

TABLE 4.—KIND, QUANTITY, AND ADDED VALUE OF GOODS OPERATED UPON: 1890 TO 1905.

KIND AND PROCESS.	1905		1900		1890	
	Pounds.	Added value.	Pounds.	Added value.	Pounds.	Added value.
Aggregate value		$50,849,545		$44,963,331		$28,900,560
Total	116,124,307	10,769,788	118,097,838	8,097,439	85,575,424	6,001,754
Cotton stock, bleached	386,512	9,805	300,650	4,823		
Cotton stock, dyed	9,520,932	376,278	12,466,700	572,661	4,676,344	264,827
Wool stock, dyed	2,510,007	130,088	2,408,511	83,071	1,160,666	48,828
Cotton yarn, bleached	11,708,132	296,312	12,780,518	252,635		
Cotton yarn, dyed	47,676,473	2,131,676	54,103,555	2,226,912	48,762,759	2,036,127
Cotton yarn, mercerized	2,419,615	181,989	868,851	159,616		
Woolen yarn, dyed	21,851,852	688,192	20,755,984	557,001	17,999,651	751,801
Worsted yarn, dyed	9,914,641	470,177	8,474,562	491,291	9,342,157	423,974
Silk yarn, dyed	9,380,358	6,335,029	5,609,444	3,615,644	3,322,017	2,346,387
Spun silk yarn, dyed	755,785	150,242	329,063	133,785	311,830	119,810
	Square yards.		*Square yards.*		*Square yards.*	
Total	2,497,197,356	33,694,375	2,511,485,729	34,599,542	1,569,422,631	22,514,000
Cotton piece goods, bleached	988,081,883	7,588,642	964,902,367	6,691,423	454,357,758	3,369,940
Cotton piece goods, dyed	623,415,398	9,097,585	559,480,339	7,585,204	446,496,822	5,671,488
Cotton piece goods, mercerized	39,959,448	975,031	7,973,506	400,118		
Cotton piece goods, printed	791,068,157	10,440,066	940,450,338	15,997,087	579,667,368	10,355,032
Woolen piece goods, dyed	3,640,530	176,889	11,243,394	451,864	20,779,034	652,998
Worsted piece goods, dyed	13,447,092	772,119	9,413,337	476,951		
Silk piece goods, dyed	32,861,330	950,991	14,340,796	481,463	7,405,399	394,777
Silk piece goods, printed	4,723,518	300,333	3,681,652	335,154		
Mixed goods	(1)	3,292,719	(1)	2,180,278	60,716,250	2,069,765
All other work done	(1)	6,385,382	(1)	2,266,350	(1)	384,805

[1] Quantity not reported.

As has been explained, these statistics are to be taken in connection with those previously given for other textile mills, but they are still defective, in that the great amount of dyeing in mills engaged in the wool industry is not reported at all.

Table 5 presents a detailed summary, by states, of the dyeing and finishing industry as conducted in independent plants as reported at the census of 1905.

TABLE 5.—DYEING AND FINISHING TEXTILES—DETAILED SUMMARY, BY STATES: 1905.

	United States.	Connecticut.	Illinois.	Massachusetts.	New Hampshire.	New Jersey.	New York.	North Carolina.	Pennsylvania.	Rhode Island.	All other states.[1]
Number of establishments	360	10	8	46	4	57	55	4	123	37	16
Capital, total	$88,708,576	$4,562,055	$246,916	$30,875,445	$1,250,949	$13,068,657	$7,529,611	$828,766	$9,922,738	$16,969,936	$3,453,503
Land	$7,587,005	$725,169	$9,432	$1,819,000	$86,666	$948,201	$508,980	$113,448	$869,836	$2,183,079	$223,194
Buildings	$16,698,086	$900,225	$50,410	$3,711,238	$295,000	$2,683,367	$1,363,803	$156,645	$2,024,948	$4,680,587	$831,863
Machinery, tools, and implements	$24,013,987	$1,879,830	$127,195	$4,301,225	$490,000	$5,489,961	$2,192,048	$316,820	$2,605,156	$5,176,985	$1,434,767
Cash and sundries	$40,409,498	$1,056,831	$59,879	$21,043,982	$379,283	$3,947,128	$3,464,780	$241,853	$4,422,798	$4,929,285	$863,679
Proprietors and firm members	310	2	2	24	1	31	60	2	161	19	8
Salaried officials, clerks, etc.:											
Total number	2,196	88	28	403	48	552	204	27	324	403	119
Total salaries	$3,407,381	$161,812	$31,605	$759,283	$53,601	$846,532	$257,846	$28,150	$445,052	$672,315	$151,185
Officers of corporations—											
Number	240	20	7	43	1	70	13	6	27	36	17
Salaries	$1,031,193	$62,611	$12,000	$235,787	$6,666	$312,115	$32,420	$9,575	$106,050	$173,183	$80,786
General superintendents, managers, clerks, etc.—											
Total number	1,956	68	21	360	47	482	191	21	297	367	102
Total salaries	$2,376,188	$99,201	$19,605	$523,496	$46,935	$534,417	$225,426	$18,575	$339,002	$499,132	$70,399
Men—											
Number	1,735	59	14	328	30	441	175	18	264	323	83
Salaries	$2,273,932	$95,136	$15,265	$509,094	$41,549	$515,421	$217,782	$16,710	$323,208	$477,009	$62,758
Women—											
Number	221	9	7	32	17	41	16	3	33	44	19
Salaries	$102,256	$4,065	$4,340	$14,402	$5,386	$18,996	$7,644	$1,865	$15,794	$22,123	$7,641
Wage-earners, including piece-workers, and total wages:											
Greatest number employed at any one time during the year	39,964	1,573	156	8,347	992	8,866	4,002	314	5,291	8,304	2,119
Least number employed at any one time during the year	30,796	1,259	98	6,335	780	6,221	3,223	248	3,794	6,926	1,912
Average number	35,565	1,406	123	7,508	850	7,597	3,586	301	4,585	7,562	2,038
Total wages	$15,469,205	$639,597	$44,575	$3,262,417	$352,473	$3,465,830	$1,577,976	$83,034	$2,075,904	$3,181,597	$785,802
Men 16 years and over—											
Average number	28,483	1,127	81	5,835	672	6,664	2,724	236	3,728	5,742	1,674
Wages	$13,543,724	$566,962	$32,503	$2,753,581	$302,507	$3,230,145	$1,348,995	$69,344	$1,879,338	$2,649,512	$710,837
Women 16 years and over—											
Average number	5,658	241	42	1,390	137	814	803	64	456	1,465	246
Wages	$1,640,093	$65,909	$12,072	$440,568	$39,966	$212,563	$219,593	$13,509	$122,497	$451,605	$61,811
Children under 16 years—											
Average number	1,424	38		283	50	119	59	1	401	355	118
Wages	$285,388	$6,726		$68,268	$10,000	$23,122	$9,388	$811	$74,069	$80,480	$13,154

[1] Includes establishments distributed as follows: Alabama, 1; California, 1; Delaware, 1; Indiana, 2; Iowa, 1; Kentucky, 2; Maine, 1; Maryland, 2; Ohio, 1; South Carolina, 2; Virginia, 1; West Virginia, 1.

TABLE 5.—DYEING AND FINISHING TEXTILES—DETAILED SUMMARY, BY STATES: 1905—Continued.

	United States.	Connecticut.	Illinois.	Massachusetts.	New Hampshire.	New Jersey.	New York.	North Carolina.	Pennsylvania.	Rhode Island.	All other states.
Average number of wage-earners, including piecework, employed during each month:											
Men 16 years and over—											
January	28,963	1,195	86	6,074	667	6,514	2,776	236	3,715	5,979	1,721
February	29,634	1,158	87	5,998	624	6,746	2,772	236	3,771	5,952	1,690
March	29,294	1,151	86	6,093	646	6,839	2,771	235	3,805	5,936	1,732
April	28,738	1,112	74	5,973	636	6,804	2,749	235	3,616	5,865	1,674
May	28,181	1,080	74	5,782	685	6,642	2,683	235	3,582	5,759	1,659
June	27,476	1,089	74	5,727	682	6,111	2,615	235	3,694	5,615	1,634
July	27,169	1,077	70	5,592	673	6,044	2,548	206	3,690	5,635	1,634
August	27,150	1,061	84	5,364	691	6,340	2,688	242	3,563	5,518	1,629
September	27,833	1,095	86	5,679	686	6,659	2,737	242	3,594	5,406	1,649
October	28,960	1,141	85	5,897	702	7,040	2,780	243	3,829	5,578	1,665
November	29,272	1,167	86	5,754	744	7,163	2,782	243	3,850	5,808	1,675
December	29,726	1,198	80	6,087	628	7,096	2,787	244	4,027	5,853	1,726
Women 16 years and over—											
January	5,818	245	45	1,396	120	835	845	65	473	1,547	247
February	5,903	251	45	1,451	121	844	855	65	480	1,539	243
March	5,895	250	45	1,453	120	875	842	66	468	1,524	252
April	5,783	246	45	1,426	120	861	819	66	459	1,496	245
May	5,596	229	45	1,409	139	819	760	66	433	1,457	239
June	5,422	237	45	1,362	141	744	744	66	433	1,413	240
July	5,256	221	39	1,302	144	727	702	44	445	1,406	226
August	5,238	222	39	1,242	138	780	722	66	430	1,374	225
September	5,407	227	39	1,377	154	767	789	66	428	1,369	251
October	5,788	239	39	1,422	165	860	832	66	486	1,424	255
November	5,848	258	39	1,375	165	868	855	66	453	1,507	262
December	5,882	267	39	1,465	117	791	871	66	475	1,524	267
Children under 16 years—											
January	1,461	43	.....	282	50	110	67	1	404	384	120
February	1,445	44	.....	274	50	111	64	1	421	363	117
March	1,446	46	.....	278	50	110	57	1	421	367	116
April	1,399	42	.....	271	50	121	53	1	394	353	114
May	1,360	36	.....	275	50	122	52	1	361	343	120
June	1,393	36	.....	280	50	124	56	1	400	333	113
July	1,418	29	.....	291	50	124	59	1	413	335	116
August	1,405	29	.....	287	50	128	61	1	382	350	117
September	1,410	32	.....	283	50	119	62	1	392	349	122
October	1,439	35	.....	287	50	125	61	1	403	353	124
November	1,448	42	.....	286	50	117	61	1	402	366	123
December	1,464	42	.....	302	50	117	55	1	419	364	114
Miscellaneous expenses, total	$5,078,277	$106,381	$21,893	$1,637,429	$86,755	$1,213,308	$378,390	$28,346	$757,494	$1,213,979	$474,302
Rent of works	$410,513	$100	$7,690	$18,819	$600	$195,802	$52,049	$750	$59,603	$73,900	$300
Taxes	$402,590	$28,401	$369	$148,302	$14,550	$30,230	$44,315	$2,677	$32,702	$69,442	$22,402
Rent of offices, interest, insurance, and all other sundry expenses not hitherto included	$5,072,480	$137,880	$10,570	$1,443,386	$71,605	$969,746	$255,223	$24,019	$662,201	$1,065,459	$431,500
Contract work	$92,885	.....	$3,204	$26,022	.....	$8,530	$25,603	.....	$2,988	$5,178	$20,100
Materials used, total cost	$19,621,253	$927,096	$30,000	$4,179,676	$512,544	$5,052,184	$1,339,430	$85,548	$2,701,027	$3,639,268	$1,155,080
Chemicals and dyestuffs, cost	$10,587,319	$445,914	$12,021	$2,066,699	$197,201	$3,110,185	$518,515	$26,936	$1,791,046	$1,872,209	$551,093
Starch—											
Pounds	43,587,513	3,912,020	168,905	7,107,308	1,238,055	5,835,894	3,216,825	1,038,059	1,420,602	13,717,288	5,022,807
Cost	$1,130,013	$108,381	$2,938	$198,396	$31,447	$186,789	$66,699	$21,317	$39,202	$346,557	$107,197
Silk soap—											
Pounds	11,336,770	.....	6,300	1,536,683	.....	7,036,421	427,500	.....	1,235,334	72,005	122,536
Cost	$568,075	.....	$349	$92,201	.....	$384,038	$21,608	.....	$60,453	$3,600	$5,826
Other soap—											
Pounds	8,407,745	372,926	1,400	2,106,025	391,884	926,373	904,904	.....	1,539,883	1,045,608	218,682
Cost	$301,769	$14,301	$35	$50,644	$8,254	$39,522	$41,501	.....	$67,563	$70,261	$9,688
Fuel	$3,268,511	$152,530	$6,380	$747,046	$114,452	$592,287	$287,040	$20,524	$424,061	$758,330	$164,361
Rent of power and heat	$72,339	$10,552	$640	$500	$6,555	$7,873	$15,710	.....	$11,802	$5,350	$13,357
Mill supplies	$662,475	$8,875	$2,401	$302,317	$11,351	$84,983	$10,904	$13,065	$72,227	$128,127	$18,205
All other materials	$2,492,252	$144,154	$2,313	$624,931	$143,084	$401,722	$342,145	$948	$204,278	$409,259	$219,418
Freight	$529,500	$42,380	$2,023	$132,342	$200	$244,785	$25,648	$1,858	$28,805	$45,575	$5,875
Products, total value	$50,849,545	$2,215,314	$161,300	$11,048,512	$1,108,886	$11,079,047	$4,361,688	$250,805	$6,786,263	$9,981,457	$2,055,274
Wool, dyed—											
Pounds	2,510,007	.....	.....	90,000	.....	310,408	169,696	.....	1,771,044	120,100	38,859
Value	$130,088	.....	.....	$6,300	.....	$20,044	$6,300	.....	$85,264	$[illegible],168	$1,943
Yarn, dyed—											
Woolen—											
Pounds	21,851,852	.....	5,000	2,500	.....	301,000	718,250	.....	20,814,802	5,800	4,500
Value	$988,192	.....	$500	$500	.....	$15,050	$28,730	.....	$942,500	$522	$300
Worsted—											
Pounds	9,914,641	.....	.....	1,255,000	.....	900,000	36,000	.....	7,600,741	22,500	4,400
Value	$470,177	.....	.....	$94,125	.....	$45,300	$3,600	.....	$323,357	$2,475	$1,320
Piece goods, dyed—											
Woolen—											
Square yards	3,040,530	.....	.....	.....	.....	1,205,530	125,000	.....	2,200,000	.....	20,000
Value	$179,880	.....	.....	.....	.....	$67,339	$3,750	.....	$104,400	.....	$1,400
Worsted—											
Square yards	13,447,092	.....	.....	1,200,000	.....	.....	.....	.....	9,240,400	6,000	3,000,692
Value	$772,119	.....	.....	$54,000	.....	.....	.....	.....	$500,344	$600	$217,175
Cotton stock—											
Bleached—											
Pounds	386,512	.....	7,500	.....	.....	25,807	100,205	.....	53,000	200,000	.....
Value	$9,805	.....	$225	.....	.....	$2,064	$3,256	.....	$1,000	$3,200	.....
Dyed—											
Pounds	9,520,932	.....	33,000	3,022,261	(1)	482,078	812,200	(1)	3,027,800	1,001,500	[2]541,007
Value	$376,278	.....	$1,050	$142,024	(1)	$27,313	$20,383	(1)	$101,808	$68,047	[2]$14,453
Cotton yarn—											
Bleached—											
Pounds	11,708,132	2,807	.....	3,220,879	(1)	12,000	187,439	.....	4,205,352	3,854,055	[2]156,000
Value	$206,312	$50	.....	$77,215	(1)	$600	$10,384	.....	$106,707	$96,610	[2]$4,080
Dyed—											
Pounds	47,676,473	420,455	100,980	5,846,721	.....	500	1,076,184	.....	29,080,791	8,806,398	1,357,474
Value	$2,131,676	$32,152	$8,409	$363,340	.....	$25	$45,982	.....	$1,008,805	$507,046	$45,827
Mercerized—											
Pounds	2,419,615	46,870	70,000	45,718	.....	.....	142,527	(1)	906,437	1,200,727	[2]7,336
Value	$181,089	$3,281	$8,400	$3,855	.....	.....	$10,523	(1)	$88,040	$67,000	[2]$890

[1] Included in "all other states."

[2] Includes products for New Hampshire and North Carolina.

TABLE 5.—DYEING AND FINISHING TEXTILES—DETAILED SUMMARY, BY STATES: 1905—*Continued.*

	United States.	Connecticut.	Illinois.	Massachusetts.	New Hampshire.	New Jersey.	New York.	North Carolina.	Pennsylvania.	Rhode Island.	All other states.
Products—Continued.											
Cotton piece goods—											
Bleached—											
Square yards	988,081,883	2,522,200	7,808,172	209,845,513	(1)	123,788,500	66,293,842	(1)	7,961,304	407,556,433	[2]162,305,919
Value	$7,588,642	$18,664	$29,781	$1,737,885	(1)	$961,989	$433,961	(1)	$150,448	$3,035,013	[2]$1,220,901
Dyed—											
Square yards	623,415,398	71,051,466	900,072	211,519,248	(1)	94,220,747	32,177,708	.....	15,658,305	124,391,737	[2]73,496,115
Value	$9,097,585	$1,032,825	$5,250	$2,221,540	(1)	$1,421,174	$300,792	.....	$246,871	$2,443,716	[2]$1,425,417
Mercerized—											
Square yards	39,959,448	10,112,500	.....	1,880,193	(1)	1,955,985	438,856	.....	2,966	22,247,150	[2]3,321,798
Value	$975,031	$324,287	.....	$62,017	(1)	$48,089	$11,485	.....	$53	$337,709	[2]$191,331
Printed—											
Square yards	791,068,157	36,208,345	.....	334,837,960	(1)	114,555,775	79,793,075	.....	17,894,459	156,257,377	[2]51,521,166
Value	$10,440,066	$648,995	.....	$3,748,607	(1)	$1,449,536	$1,129,715	.....	$452,948	$2,183,479	[2]$826,786
Silk, dyed—											
Pounds	9,380,358	6,000	2,800	.....	.....	7,118,879	690,700	.....	1,488,695	.....	73,284
Value	$6,335,029	$1,500	$1,120	.....	.....	$5,032,438	$220,600	.....	$1,011,666	.....	$67,705
Spun silk, dyed—											
Pounds	755,785	.....	.....	4,000	.....	315,800	225,755	.....	210,230	.....	.....
Value	$150,242	.....	.....	$2,000	.....	$58,705	$52,198	.....	$37,338	.....	.....
Silk piece goods—											
Dyed—											
Square yards	32,861,330	.....	.....	.....	.....	28,429,125	993,000	.....	2,956,282	182,912	300,000
Value	$990,991	.....	.....	.....	.....	$903,504	$48,900	.....	$24,655	$5,932	$8,000
Printed—											
Square yards	4,723,518	.....	.....	.....	.....	4,262,834	460,684	.....	.....	.....	.....
Value	$390,333	.....	.....	.....	.....	$335,699	$24,634	.....	.....	.....	.....
Mixed goods	$3,292,719	.....	$600	$700,737	(1)	$1,413,400	$236,190	.....	$68,177	$836,095	[2]$37,520
All other work done	$6,385,382	$153,554	$105,374	$1,834,367	.....	$177,677	$1,770,236	(1)	$1,771,672	$323,185	[2]$249,317
Machinery:											
Printing machines—											
Total number	431	22	.....	136	14	73	61	.....	30	64	31
On cotton, number	416	21	.....	136	14	62	58	.....	30	64	31
On silk, number	15	1	.....	.....	.....	11	3	.....	.....	.....	.....
Power:											
Number of establishments reporting	328	9	7	46	3	46	47	4	114	36	16
Total horsepower	95,505	5,617	532	20,304	3,745	14,426	7,212	705	10,288	23,894	8,782
Owned—											
Engines—											
Steam—											
Number	1,533	55	8	367	2	321	206	5	308	208	53
Horsepower	70,385	1,981	512	17,736	700	12,384	6,436	705	9,174	15,781	4,976
Gas and gasoline—											
Number	10	.....	.....	1	.....	.....	5	.....	1	2	1
Horsepower	711	.....	.....	12	.....	.....	49	.....	30	470	150
Water wheels—											
Number	71	13	.....	15	3	5	5	.....	.....	16	14
Horsepower	10,125	2,515	.....	1,330	950	385	400	.....	.....	2,285	2,260
Water motors—											
Number	7	.....	.....	.....	.....	7	.....	.....	.....	.....	.....
Horsepower	5	.....	.....	.....	.....	5	.....	.....	.....	.....	.....
Electric motors—											
Number	446	36	.....	63	13	71	6	.....	40	177	40
Horsepower	10,637	734	.....	1,062	830	1,591	84	.....	576	5,189	571
Other power, horsepower	170	.....	.....	.....	.....	.....	.....	.....	170	.....	.....
Rented—											
Electric motors—											
Number	42	.....	2	.....	8	4	9	.....	2	16	1
Horsepower	1,087	.....	10	.....	730	27	97	.....	45	153	25
Other kind, horsepower	2,385	387	10	164	535	34	146	.....	293	16	800
Furnished to other establishments, horsepower	328	.....	.....	113	.....	.....	70	.....	95	50	.....

[1] Included in "all other states."

[2] Includes products for New Hampshire and North Carolina.

BUTTONS

BUTTONS.

The statistics of this report include the returns for establishments engaged chiefly in the manufacture of buttons or button blanks. The census of 1905 covered the calendar year 1904, while the census of 1900 covered the fiscal year ending May 31, 1900.

Table 1 is a comparative summary, giving the statistics of the industry from 1850 to 1905, with the per cent of increase at each census.

There was a decided growth in the industry for each intercensal period since 1860, except the decade from 1880 to 1890. During this decade the capital invested increased, although every other item shown decreased. Between 1850 and 1860 there was a decrease in the number of establishments. Considered from the point of view of the ratio of increase in the value of products, the growth was most marked for the decade from 1870 to 1880.

At the census of 1905 the capital invested had increased $3,571,332, or 84.8 per cent, over 1900; the cost of materials used, $1,341,200, or 47.8 per cent; and the value of the product, $3,437,859, or 44.7 per cent. The average number of wage-earners increased 1,882, or 21.7 per cent, and the wages, $853,958, or 30.2 per cent. The number of men employed increased 1,102, or 27 per cent, and their wages, $616,462, or 35.2 per cent; while the number of women increased 893, or 21.6 per cent, and their wages, $258,518, or 25.9 per cent. The employment of children is on the decline, the number reported being 468 in 1900 and only 355 for 1905, a decrease of 113, or 24.1 per cent. From 1900 to 1905 there was an increase of $618,900, or 157.1 per cent, in miscellaneous expenses.

The amount of $11,133,769, reported as the value of the products of the button industry for 1905, represents only the value of those products manufactured in button factories. Many manufacturers produce buttons as a partial or secondary product. The figures reported for such products were tabulated and show $1,034,843 as the value. Doubtless buttons were manufactured as a partial product in many other plants in which it was impossible to separate the value of this item from that of the other articles manufactured. For the census of 1900 the reports showed that buttons, valued at $42,790, were manufactured in other than button factories.

TABLE 1. COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1850 TO 1905.

	CENSUS.							PER CENT OF INCREASE.					
	1905[1]	1900[2]	1890	1880	1870	1860	1850	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	275	238	100	124	64	43	59	15.6	124.0	[3]14.5	93.8	48.8	[3]27.1
Capital	$7,783,000	$4,212,508	$3,089,265	$2,013,350	$1,013,700	$558,550	$393,000	84.8	36.4	53.4	98.6	81.5	42.1
Salaried officials, clerks, etc., number	768	339	[4]205	(5)	(5)	(5)	(5)	126.5	65.4	.....	.....	.....	.....
Salaries	$711,473	$206,358	[4]$262,787	(5)	(5)	(5)	(5)	140.1	12.8	.....	.....	.....	.....
Wage-earners, average number	10,567	8,685	3,831	5,825	1,912	1,161	1,088	21.7	126.7	[3]34.2	204.7	64.7	6.7
Total wages	$3,680,196	$2,826,238	$1,411,089	$1,045,130	$580,380	$260,206	$225,120	30.2	100.3	[3]14.2	183.5	123.0	15.6
Men 16 years and over	5,188	4,086	1,544	2,128	617	487	467	27.0	164.6	[3]27.4	244.9	26.7	4.3
Wages	$2,369,595	$1,753,133	$805,782	(5)	(5)	(5)	(5)	35.2	117.6	.....	.....	.....	.....
Women 16 years and over	5,024	4,131	2,176	3,052	949	674	621	21.6	89.8	[3]28.7	221.6	40.8	8.5
Wages	$1,256,375	$997,857	$588,901	(5)	(5)	(5)	(5)	25.9	69.4	.....	.....	.....	.....
Children under 16 years	355	468	111	645	346	(5)	(5)	[3]24.1	321.6	[3]82.8	86.4	.....	.....
Wages	$54,226	$75,248	$16,406	(5)	(5)	(5)	(5)	[3]27.9	358.7	.....	.....	.....	.....
Miscellaneous expenses	$1,012,762	$393,862	$256,846	(6)	(6)	(6)	(6)	157.1	53.3	.....	.....	.....	.....
Cost of materials used	$4,144,446	$2,803,246	$1,551,603	$1,702,801	$751,183	$358,385	$324,837	47.8	80.7	[3]13.5	138.7	109.6	10.3
Value of products	$11,133,769	$7,695,910	$4,216,795	$4,449,542	$1,778,893	$949,408	$664,359	44.7	82.5	[3]5.2	150.1	87.4	[3]1.6

[1] Exclusive of the statistics of 13 establishments engaged primarily in the manufacture of other products. These establishments manufactured buttons to the value of $1,034,843.
[2] Exclusive of the statistics of 2 establishments engaged primarily in the manufacture of other products. These establishments manufactured buttons to the value of $42,790.
[3] Decrease.
[4] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[5] Not reported separately.
[6] Not reported.

The industry by states. Table 2 shows, by states, the number of establishments actively engaged in the manufacture of buttons and button blanks, for each census from 1890 to 1905.

TABLE 2.—*Number of active establishments, with increase, by states: 1890 to 1905.*

STATE.	NUMBER OF ESTABLISHMENTS.			INCREASE.	
	1905	1900	1890	1900 to 1905	1890 to 1900
United States	275	238	106	37	132
Arkansas	3	1	.....	2	1
California	2	5	.....	[1] 3	5
Connecticut	11	11	14	.....	[1] 3
District of Columbia	.....	.....	1	.....	[1] 1
Illinois	22	14	4	8	10
Indiana	4	.....	.....	4	.....
Iowa	51	53	.....	[1] 2	53
Kentucky	1	1	1	.....	.....
Maine	1	.....	.....	1	.....
Maryland	1	2	1	[1] 1	1
Massachusetts	12	13	16	[1] 1	[1] 3
Michigan	1	2	.....	[1] 1	2
Minnesota	1	2	.....	[1] 1	2
Mississippi	1	.....	.....	1	.....
Missouri	10	11	.....	[1] 1	11
Nebraska	1	2	.....	[1] 1	2
New Hampshire	1	1	.....	.....	1
New Jersey	46	34	17	12	17
New York	61	49	34	12	15
Ohio	4	4	.....	.....	4
Pennsylvania	21	21	14	.....	7
Rhode Island	.....	3	4	[1] 3	[1] 1
Tennessee	1	.....	.....	1	.....
Utah	1	.....	.....	1	.....
Wisconsin	18	9	.....	9	9

[1] Decrease.

One or more plants were installed in each of the following 5 states for which no establishments were reported in 1900: Indiana, 4; Maine, 1; Mississippi, 1; Tennessee, 1; and Utah, 1. These establishments were of small importance to the industry so far as value of products is concerned, for although they produced several classes of buttons—wooden, pearl, and celluloid—and pearl blanks, etc., the value of the product was only $131,979, which is but a small percentage of the total for the United States.

Table 3 is a comparative summary of the general statistics of the industry, by states, as reported at the censuses of 1900 and 1905.

While the industry shows great development, the value of products decreased in Ohio and Pennsylvania. In value of production New York was first at the census of 1905, with $3,849,317, or an increase of 62.3 per cent; New Jersey, second, with $1,592,261, or an increase of 55.3 per cent; Iowa, third, with $1,500,945, or an increase of 73.2 per cent; and Connecticut, fourth, with $1,446,219, or an increase of 33 per cent.

TABLE 3.—COMPARATIVE SUMMARY, BY STATES: 1905 AND 1900.

STATE.	Census.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS AND WAGES.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Wages.			
United States	1905	275	$7,783,900	768	$711,473	10,567	$3,680,196	$1,012,762	$4,144,446	$11,133,769
	1900	238	4,212,568	339	296,358	8,685	2,826,238	393,862	2,803,246	7,695,910
California [1]	1900	5	6,487	1	1,200	6	988	1,277	2,795	8,870
Connecticut	1905	11	1,308,408	69	95,001	1,044	410,326	171,894	598,733	1,446,219
	1900	11	532,178	24	30,812	800	305,687	117,643	430,187	1,087,235
Illinois	1905	22	164,478	20	10,510	280	102,295	23,526	71,347	251,371
	1900	14	53,493	14	7,629	272	101,039	11,329	66,213	242,444
Indiana [2]	1905	4	68,801	4	3,460	140	40,031	4,351	14,331	70,268
Iowa	1905	51	1,173,866	116	74,685	1,936	653,520	92,530	533,917	1,500,945
	1900	53	324,315	42	26,306	1,402	458,086	37,252	196,842	866,538
Massachusetts	1905	12	740,114	30	54,319	816	317,988	58,606	225,655	803,636
	1900	13	626,439	19	31,164	772	276,202	27,505	237,835	681,081
Missouri	1905	10	138,568	16	5,671	200	59,114	10,028	37,120	153,294
	1900	11	39,495	4	1,236	83	23,881	10,788	26,679	85,449
New Jersey	1905	46	841,635	82	93,382	1,369	550,013	105,175	634,477	1,592,261
	1900	34	509,681	53	50,299	1,169	410,056	37,879	398,616	1,025,544
New York	1905	61	2,033,649	333	284,030	3,237	1,067,677	400,844	1,488,421	3,849,317
	1900	49	1,195,343	105	83,195	2,647	812,978	110,717	943,432	2,371,196
Ohio	1905	4	59,608	6	3,239	73	17,474	4,298	24,021	54,216
	1900	4	49,645	7	4,786	72	18,268	5,701	20,946	58,873
Pennsylvania	1905	21	718,757	58	53,998	1,009	304,929	91,037	360,106	899,824
	1900	21	557,488	42	39,152	1,140	321,473	17,683	403,106	999,355
Rhode Island [3]	1900	3	29,116	4	2,464	28	8,501	4,393	9,040	33,589
Wisconsin	1905	18	116,240	11	5,420	189	59,300	10,535	58,674	165,629
	1900	9	34,499	4	1,425	106	32,108	1,830	18,751	63,125
All other states	[4] 1905	15	419,776	23	27,758	274	97,529	39,938	97,644	346,789
	[5] 1900	11	254,389	20	16,690	188	56,971	9,865	48,804	172,611

[1] Included in "all other states" in 1905.
[2] No establishments reported in 1900.
[3] No establishments reported in 1905.
[4] Includes establishments distributed as follows: Arkansas, 3; California, 2; Kentucky, 1; Maine, 1; Maryland, 1; Michigan, 1; Minnesota, 1; Mississippi, 1; Nebraska, 1; New Hampshire, 1; Tennessee, 1; Utah, 1.
[5] Includes establishments distributed as follows: Arkansas, 1; Kentucky, 1; Maryland, 2; Michigan, 2; Minnesota, 2; Nebraska, 2; New Hampshire, 1.

Capital.—Table 4 shows the distribution of capital at the censuses of 1890, 1900, and 1905, and the per cent each item is of total.

TABLE 4.—*Capital, with per cent each item is of total: 1890 to 1905.*

	1905		1900		1890	
	Amount.	Per cent of total.	Amount.	Per cent of total.	Amount.	Per cent of total.
Total	$7,783,900	100.0	$4,212,568	100.0	$3,089,265	100.0
Land	308,896	4.0	145,260	3.4	98,664	3.2
Buildings	838,314	10.8	433,268	10.3	208,185	6.7
Machinery, tools, and implements	2,128,823	27.3	1,310,442	31.1	956,094	31.0
Cash and sundries	4,507,870	57.9	2,323,598	55.2	1,826,322	59.1

There was a large increase for each kind of capital from 1900 to 1905, that invested in land leading with 112.6 per cent. The percentage of increase for total capital was 84.8. There was but little difference in the proportions of the kinds at the three census years.

Materials used.—Table 5 is a summary of the cost of materials used in 1900 and for 1905, showing the per cent of increase for each item, and the per cent which each item forms of the total.

TABLE 5.—*Cost of materials used, with per cent of total and per cent of increase: 1905 and 1900.*

KIND.	1905		1900		Per cent of increase.
	Amount.	Per cent of total.	Amount.	Per cent of total.	
Total	$4,144,446	100.0	$2,803,240	100.0	47.8
Purchased in raw state	1,551,423	37.4	1,232,938	44.0	25.8
Purchased in partially manufactured form	2,396,346	57.8	1,437,982	51.3	66.6
Fuel	94,978	2.3	46,665	1.6	103.5
Rent of power and heat	40,688	1.0	33,375	1.2	21.9
Freight	61,011	1.5	52,280	1.9	16.7

The above figures show that there was some difference in the distribution of the total cost of materials for 1905 and 1900, materials purchased in a raw state constituting a smaller proportion and those purchased in a partially manufactured form, a larger proportion of the total for 1905 than for 1900. The other items form a very small proportion of the total cost, and consequently are of little relative statistical value.

The percentages of increase for the quinquennial period show clearly a disproportionate increase in the cost of the different materials used, the variation being from 16.7 per cent for freight to 103.5 per cent for fuel. The difference between the rates of increase for materials purchased in the raw state and those purchased in the partially manufactured form is particularly noteworthy, being 40.8 per cent in favor of the latter.

Miscellaneous expenses.—Table 6 gives in detail the miscellaneous expenses for 1905.

TABLE 6.—*Miscellaneous expenses, with per cent each item is of total: 1905.*

	1905	Per cent of total.
Total	$1,012,762	100.0
Rent of works	124,103	12.3
Taxes	25,784	2.5
Rent of offices, interest, insurance, and all other sundry expenses	832,237	82.2
Contract work	30,638	3.0

The largest item of expense was $832,237, which includes the cost of repairs to machinery, rent of offices, interest, insurance, and advertising. The greatest part of this total was paid for advertising.

Products.—Table 7 gives the kind, quantity, and value of the products manufactured at the census of 1905.

TABLE 7.—*Products, by kind, quantity, and value, with per cent of total value: 1905.*

KIND.	Quantity (gross).	Value.	Per cent of total value.
Aggregate		$11,133,769	100.0
Buttons, total	[1] 29,859,202	[1] 9,040,029	81.2
Pearl, total	13,143,553	4,870,274	[2] 53.9
Fresh water	11,405,723	3,359,167	[3] 69.0
Ocean	1,737,830	1,511,107	[3] 31.0
Metal	6,815,962	1,312,741	[2] 14.5
Vegetable ivory	2,470,409	1,305,766	[2] 14.4
Cloth	2,990,750	766,091	[2] 8.5
Bone	956,412	124,454	[2] 1.4
All other	3,482,206	660,703	[2] 7.3
Button blanks, made for sale	6,991,738	916,003	8.2
All other products		1,177,737	10.6

[1] Exclusive of 5,694,430 gross of buttons, valued at $1,034,843, made by establishments engaged primarily in the manufacture of other products. These products were distributed as follows: Metal buttons, 5,291,200 gross, valued at $905,469; fresh water pearl, 2,336 gross, valued at $851; ocean pearl, 51,300 gross, valued at $52,385; vegetable ivory, 28,000 gross, valued at $8,400; cloth, 93,913 gross, valued at $15,420; all other buttons, 224,690 gross, valued at $52,318.

[2] Per cent of total for buttons.

[3] Per cent of total for pearl buttons.

Including the partial products of other industries, the total number of buttons reported at the census of 1900 was 21,359,518 gross, valued at $6,510,163. For 1905 the number reported was 35,553,731 gross, valued at $10,074,872, an increase in number of 14,194,213 gross, or 66.5 per cent, and in value of $3,564,709, or 54.8 per cent. Comparisons of quantity and value of kinds of buttons can not be made with the census of 1900, owing to the difficulty at that census of an accurate segregation of the statistics for fresh water and ocean pearl buttons. The classification of products was also changed at the census of 1905.

At the census of 1905 the value of buttons formed 81.2 per cent of the total value of all products of the industry, button blanks 8.2 per cent, and "all other products" 10.6 per cent. The button blanks reported were all fresh water pearl, except 186,667 gross of horn, valued at $28,000. Of the various classes of buttons, pearl is the principal kind. At the census of 1905 this class constituted 53.9 per

cent of the total value of all buttons. As between fresh water and ocean pearl the former greatly predominates, reporting 69 per cent in value of the total pearl against 31 per cent for ocean pearl.

Table 8 is a comparative summary of the general statistics, by states, for establishments reporting fresh water pearl buttons and blanks at the censuses of 1900 and 1905.

TABLE 8.—COMPARATIVE SUMMARY—FRESH WATER PEARL BUTTONS AND BUTTON BLANKS, BY STATES: 1905 AND 1900.

STATE.	Census.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS AND WAGES.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Wages.			
United States	1905	150	$3,234,379	385	$276,491	5,085	$1,621,669	$319,593	$1,911,187	[1]$4,926,458
	1900	122	1,109,572	117	85,646	3,574	1,147,252	89,414	940,838	2,766,053
Illinois	1905	13	148,313	16	8,530	259	95,486	14,280	54,353	209,500
	1900	10	37,643	11	6,172	237	85,071	2,616	42,332	181,704
Indiana [2]	1905	3	67,901	4	3,460	139	39,459	4,035	14,042	69,068
Iowa	1905	51	1,173,866	116	74,685	1,936	653,520	92,530	533,917	1,500,945
	1900	50	314,685	38	24,756	1,335	438,168	36,853	185,257	822,478
Massachusetts [3]	1900	3	270,597	10	19,200	388	141,200	12,783	72,188	304,400
Missouri	1905	8	126,968	16	5,671	180	55,314	7,588	34,135	136,994
	1900	8	26,995	1	300	64	17,821	962	12,525	34,529
New Jersey	1905	11	273,215	22	29,584	330	140,311	36,491	199,114	480,765
	1900	11	77,550	9	9,500	193	75,679	4,323	129,569	310,954
New York	1905	27	904,447	163	122,300	1,461	406,837	96,952	818,679	1,844,432
	1900	15	155,834	28	16,613	906	254,027	19,355	366,040	771,482
Ohio	1905	3	59,008	5	2,539	66	16,224	4,002	23,796	50,216
	1900	3	48,120	6	4,086	66	17,138	5,487	19,962	56,008
Pennsylvania	1905	8	303,830	25	19,826	397	117,568	47,020	135,019	333,732
	1900	6	110,299	4	2,424	223	73,247	3,875	87,697	193,823
Wisconsin	1905	17	113,340	11	5,420	187	58,700	10,510	58,064	164,229
	1900	9	34,499	4	1,425	96	32,108	1,830	18,751	63,125
All other states	[4]1905	9	63,491	7	4,476	130	38,250	6,185	40,068	136,577
	[5]1900	7	33,350	6	1,170	66	12,793	1,330	6,517	27,550

[1] Includes $556,217 worth of ocean pearl buttons.
[2] No establishments reported in 1900.
[3] Included in "all other states" in 1905.
[4] Includes establishments distributed as follows: Arkansas, 3; Massachusetts, 2; Minnesota, 1; Mississippi, 1; Nebraska, 1; Tennessee, 1.
[5] Includes establishments distributed as follows: Arkansas, 1; California, 2; Minnesota, 2; Nebraska, 2.

The table includes the figures for establishments reporting both completed buttons and button blanks, for it was found impracticable to segregate the statistics for the manufacture of the completed fresh water pearl buttons from those for the manufacture of fresh water pearl blanks, as in many instances both buttons and blanks were made in the same factory. The statistics also include many establishments in New Jersey, New York, Ohio, and Pennsylvania that made buttons from both fresh water and ocean pearl. The value of all other products is also included.

No fresh water pearl buttons were reported separately for the census of 1890, but at the census of 1900 the manufacture of these buttons constituted the second most important branch of the button industry, and at the present census the making of buttons from fresh water pearl ranks first.

Of the 275 button factories reported at the census of 1905, 150, or 54.5 per cent, made fresh water pearl buttons or button blanks to a greater or less extent, the value of the output amounting to $4,926,458, or 44.2 per cent of the entire product of button factories. The capital invested in these establishments constituted 41.6 per cent of that invested in the button industry. They gave employment to 48.1 per cent of all wage-earners and paid 44 per cent of all wages.

In 1900 Iowa was the leading state in this branch of the button industry, its product constituting 29.7 per cent of the entire output of fresh water pearl button factories, and New York second, with 27.9 per cent. For 1905, however, New York was first, with 37.4 per cent, and Iowa second, with 30.5 per cent.

The majority of the pearl buttons were made in New York, Iowa, New Jersey, and Pennsylvania, while the blanks were made principally in Iowa, the output in that state during the census year amounting to $594,946, or 64.9 per cent of the total. Blanks were also made from fresh water pearl in Arkansas, Illinois, Indiana, Missouri, New York, Tennessee, and Wisconsin.

In 1900 the value of the fresh water pearl blanks

was $656,036, while at the census of 1905 it was $888,003, or 35.4 per cent greater. The value of fresh water pearl buttons only, as shown in Table 7, was $3,359,167, or 37.2 per cent of the value of the output of buttons of all kinds for the United States. The value of the buttons made from ocean pearl was $1,511,107, or 16.7 per cent of the total.

Table 9 is a summary for establishments manufacturing buttons made of vegetable ivory.

TABLE 9.—*Summary—vegetable ivory buttons, by states: 1905.*

STATE.	Number of establishments.	Capital.	WAGE-EARNERS AND WAGES.		Miscellaneous expenses.	Cost of materials used.	Value of products.
			Average number.	Wages.			
United States	9	$745,644	1,001	$334,647	$190,010	$274,434	$1,008,482
New Jersey	3	103,809	203	64,611	19,608	66,404	184,235
New York	6	641,835	798	270,036	170,402	208,030	824,247

In addition, establishments manufacturing many kinds of buttons and classified under "buttons" reported $297,284 as the value of the vegetable ivory buttons made by them, thus swelling the total production to $1,305,766.

Imports.—The imports of vegetable ivory are shown in Table 10.

TABLE 10.—*Imports of vegetable ivory: 1905 and 1900.*[1]

	1905	1900
Pounds	19,688,913	16,073,505
Value	$410,883	$243,548

[1] Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

Table 11 shows the kind and value of buttons and button forms imported and entered for consumption, for 1891, 1895, 1900, and 1905.

TABLE 11.—*Value of imports of buttons and button forms: 1905, 1900, 1895, and 1891.*[1]

KIND.	1905	1900	1895	1891
Total	$896,451	$600,982	$1,084,836	$2,176,046
Agate buttons	60,341	103,745	195,737	322,003
Bone buttons	675	12,450	(2)	(2)
Collar and cuff buttons and studs	100,552	156,576	(2)	(2)
Glass buttons	59,865	27,937	66,403	.....
Horn and vegetable ivory buttons	66,977	71,452	[3]267,456	[3]175,343
Metal buttons, not specially provided for	233,664	58,189	79,749	.....
Nickel bar buttons	378	1,044	(2)	(2)
Pearl or shell buttons	172,101	36,262	375,886	100,001
Shoe buttons of paper, board, etc.	33	425	12,914	6,811
Silk buttons	43,294	805	1,097	17,859
Trouser buttons:				
Steel	855	182	(2)	(2)
Other metal	1,286	530	(2)	(2)
Other buttons, not specially provided for	73,318	18,426	(2)	(2)
Button forms, lastings, mohair cloth, silk, or other manufactures of cloth, made or cut in such manner as to be fit for buttons exclusively	65,112	112,959	85,534	599,848
Not specially provided for, not including brass, gilt, or silk buttons	(2)	(2)	(2)	954,181

[1] Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."
[2] Not reported separately.
[3] Includes value of bone buttons.

The value of the buttons and button forms imported was $2,176,046 in 1891. Between 1891 and 1895 the value of such imports decreased to $1,084,836, the decrease being $1,091,210, or 50.1 per cent. During the next five years there was a decrease of $483,854, or 44.6 per cent, and between 1900 and 1905, an increase of $295,459, or 49.2 per cent. The value of metal buttons, not specially provided for, which constituted the principal class of imports in 1905, increased $175,475, or 301.6 per cent, in 1905 as compared with 1900, while the increase for pearl or shell buttons for the same period was $135,839, or 374.6 per cent. Button forms, lastings, etc., decreased $47,847, or 42.4 per cent.

Table 12 shows the detailed statistics of the button industry, by states, for 1905. The totals for Illinois and Missouri, and Massachussetts and Wisconsin are combined to avoid disclosing certain details.

TABLE 12.—BUTTONS—DETAILED SUMMARY, BY STATES: 1905.

	United States.	Connecticut.	Illinois and Missouri.	Indiana.	Iowa.	Massachusetts and Wisconsin.	New Jersey.	New York.	Ohio.	Pennsylvania.	All other states.[1]
Number of establishments	275	11	32	4	51	30	46	61	4	21	15
Capital, total	$7,783,900	$1,308,408	$303,046	$68,801	$1,173,866	$856,354	$841,635	$2,033,649	$59,608	$718,757	$419,776
Land	$308,896	$80,968	$9,957	.....	$23,675	$119,120	$42,250	$6,699	.....	$22,627	$3,600
Buildings	$838,311	$239,607	$20,147	.....	$79,378	$148,474	$87,300	$43,514	.....	$134,791	$85,100
Machinery, tools, and implements	$2,128,823	$274,649	$96,691	$32,477	$315,391	$232,285	$239,721	$587,950	$10,664	$196,988	$142,007
Cash and sundries	$4,507,870	$713,184	$176,251	$36,324	$755,422	$356,475	$472,364	$1,395,486	$48,944	$364,351	$189,069
Proprietors and firm members	302	5	45	2	69	36	45	68	3	20	9
Salaried officials, clerks, etc.:											
Total number	768	69	36	4	116	41	82	333	6	58	23
Total salaries	$711,473	$95,001	$16,181	$3,460	$74,685	$59,739	$93,382	$284,030	$3,239	$53,998	$27,758
Officers of corporations—											
Number	102	14	8	.....	5	14	18	24	.....	14	5
Salaries	$209,101	$41,120	$4,298	.....	$6,156	$30,820	$36,307	$62,448	.....	$16,802	$11,150
General superintendents, managers, clerks, etc.—											
Total number	666	55	28	4	111	27	64	309	6	44	18
Total salaries	$502,372	$53,881	$11,883	$3,460	$68,529	$28,919	$57,075	$221,582	$3,239	$37,196	$16,608
Men—											
Number	499	47	22	4	90	19	52	213	4	35	13
Salaries	$427,333	$49,610	$10,411	$3,460	$58,977	$24,999	$51,595	$178,061	$2,450	$34,198	$13,572
Women—											
Number	167	8	6	.....	21	8	12	96	2	9	5
Salaries	$75,039	$4,271	$1,472	.....	$9,552	$3,920	$5,480	$43,521	$789	$2,998	$3,036
Wage-earners, including piece-workers, and total wages:											
Greatest number employed at any one time during the year	13,834	1,217	775	189	2,809	1,251	1,820	3,923	96	1,328	426
Least number employed at any one time during the year	8,415	872	394	101	1,598	851	1,051	2,450	52	758	288
Average number	10,567	1,044	480	140	1,936	1,005	1,369	3,237	73	1,009	274
Total wages	$3,680,196	$410,326	$161,409	$40,031	$653,520	$377,288	$550,013	$1,067,677	$17,474	$304,929	$97,529
Men 16 years and over—											
Average number	5,188	416	342	56	1,277	451	779	1,314	21	357	175
Wages	$2,369,595	$225,934	$133,983	$20,521	$499,616	$224,064	$399,911	$619,313	$8,291	$161,895	$76,067
Women 16 years and over—											
Average number	5,024	615	129	84	629	475	541	1,833	47	582	89
Wages	$1,256,375	$182,573	$25,851	$19,510	$148,008	$145,627	$141,762	$433,048	$8,533	$132,320	$19,143
Children under 16 years—											
Average number	355	13	9	.....	30	79	49	90	5	70	10
Wages	$54,226	$1,819	$1,575	.....	$5,896	$7,597	$8,340	$15,316	$650	$10,714	$2,319
Average number of wage-earners, including piece-workers, employed during each month:											
Men 16 years and over—											
January	5,722	430	364	56	1,592	523	838	1,350	21	416	132
February	5,699	382	307	59	1,545	540	860	1,376	21	431	118
March	5,724	428	354	54	1,505	530	856	1,374	21	428	174
April	5,210	467	337	52	1,198	472	811	1,247	21	415	190
May	4,879	405	307	59	1,146	420	746	1,230	21	338	207
June	4,622	304	262	58	1,037	403	707	1,199	22	330	200
July	4,401	443	279	38	867	380	713	1,136	21	318	206
August	4,654	381	355	51	1,004	392	692	1,257	23	315	184
September	4,859	376	338	49	1,120	402	742	1,321	21	314	176
October	5,310	425	371	56	1,320	424	779	1,420	20	321	174
November	5,430	390	361	66	1,415	453	785	1,444	20	325	171
December	5,746	461	409	74	1,575	473	819	1,414	20	333	168
Women 16 years and over—											
January	5,107	604	99	70	651	504	495	1,872	43	690	79
February	5,360	624	101	75	656	500	523	2,010	54	740	77
March	5,451	634	117	82	641	499	513	2,122	54	710	79
April	5,212	659	139	87	634	493	492	1,927	56	641	84
May	4,937	583	157	81	625	472	486	1,754	63	630	86
June	4,734	602	144	95	626	454	488	1,626	48	565	86
July	4,472	628	138	88	528	422	540	1,470	44	514	100
August	4,630	560	161	77	540	429	565	1,684	48	470	96
September	4,857	564	154	84	620	452	590	1,779	43	476	95
October	5,259	651	129	95	687	482	596	1,980	41	506	92
November	5,076	593	107	82	678	493	604	1,869	36	523	91
December	5,193	678	102	92	662	500	600	1,903	34	519	103
Children under 16 years—											
January	330	12	8	.....	27	81	49	74	6	65	8
February	351	13	8	.....	31	78	53	84	6	69	9
March	349	14	8	.....	27	76	53	78	7	77	9
April	354	15	10	.....	29	77	49	83	6	75	10
May	341	12	12	.....	27	77	43	80	6	74	10
June	358	12	11	.....	30	77	44	98	4	72	10
July	352	15	11	.....	31	82	44	88	4	68	9
August	363	11	10	.....	31	78	47	105	5	64	12
September	341	11	10	.....	31	58	50	104	4	61	12
October	381	14	7	.....	32	88	49	107	4	69	11
November	370	11	7	.....	32	88	53	97	4	68	10
December	370	16	6	.....	32	88	54	82	4	78	10
Miscellaneous expenses, total	$1,012,762	$171,894	$33,554	$4,351	$92,530	$69,141	$105,175	$400,844	$4,298	$91,037	$39,938
Rent of works	$124,103	$2,380	$5,071	$1,092	$4,774	$3,051	$20,564	$72,295	$2,720	$7,833	$4,323
Taxes	$25,784	$6,339	$1,114	$126	$2,468	$8,556	$3,208	$1,073	$113	$1,585	$302
Rent of offices, interest, insurance, and all other sundry expenses not hitherto included	$832,237	$163,175	$22,369	$3,133	$81,338	$57,534	$76,453	$309,838	$1,465	$81,619	$35,313
Contract work	$30,638	.....	$5,000	.....	$3,950	.....	$4,950	$16,738	.....	.....	.....
Materials used, aggregate cost	$4,144,446	$598,733	$108,467	$14,331	$533,917	$284,329	$634,477	$1,488,421	$24,021	$360,106	$97,644
Principal materials, total cost	$3,456,832	$391,300	$95,359	$8,586	$455,418	$229,120	$525,625	$1,320,662	$21,535	$327,289	$81,938
Purchased in raw state	$1,551,423	$45,955	$61,898	$8,393	$312,066	$32,856	$373,259	$558,204	$21,360	$110,963	$26,469
Purchased in partially manufactured form	$1,905,409	$345,345	$33,461	$193	$143,352	$196,264	$152,366	$762,458	$175	$216,326	$55,469
Fuel	$94,978	$11,366	$5,011	$1,454	$29,115	$10,046	$10,051	$13,574	$100	$8,663	$5,598
Rent of power and heat	$40,688	$1,600	$1,020	$924	$180	$4,320	$7,932	$19,322	$1,080	$2,900	$1,410
Mill supplies	$46,456	$9,620	$1,627	$126	$4,694	$3,003	$2,562	$19,244	$10	$5,056	$514
All other materials	$444,481	$176,060	$1,603	$3,241	$29,628	$30,763	$83,759	$101,042	$1,296	$9,480	$7,609
Freight	$61,011	$8,787	$3,847	.....	$14,882	$7,077	$4,548	$14,577	.....	$6,718	$575

[1] Includes establishments distributed as follows: Arkansas, 3; California, 2; Kentucky, 1; Maine, 1; Maryland, 1; Michigan, 1; Minnesota, 1; Mississippi, 1; Nebraska, 1; New Hampshire, 1; Tennessee, 1; Utah, 1.

TABLE 12.—BUTTONS—DETAILED SUMMARY, BY STATES: 1905—Continued.

	United States.	Connecticut.	Illinois and Missouri.	Indiana.	Iowa.	Massachusetts and Wisconsin.	New Jersey.	New York.	Ohio.	Pennsylvania.	All other states.
Products, aggregate value	$11,133,769	$1,446,219	$404,665	$70,208	$1,500,945	$969,265	$1,592,261	$3,849,317	$54,216	$899,824	$346,789
Buttons											
Total gross	29,859,292	6,286,916	1,158,395	331,052	3,044,469	3,214,232	2,698,193	8,998,814	105,146	3,242,574	778,901
Total value	$9,040,029	$962,648	$249,167	$67,195	$893,074	$790,442	$1,371,210	$3,679,682	$47,413	$794,718	$184,480
Metal											
Gross	6,845,962	4,921,200	900	.....	.....	17,571	1,110,333	563,203	.....	.....	202,755
Value	$1,312,741	$590,956	$4,014	.....	.....	$6,150	$329,977	$337,583	.....	.....	$44,061
Pearl											
Total gross	13,143,553	.....	922,387	329,252	3,044,469	437,228	847,065	6,308,221	97,703	1,075,698	81,440
Total value	$4,870,274	.....	$294,596	$65,995	$893,074	$145,853	$775,246	$2,218,153	$44,913	$500,316	$22,128
Fresh water											
Gross	11,405,723	.....	904,372	329,252	3,044,469	435,228	310,916	5,414,903	53,486	836,657	76,440
Value	$3,359,167	.....	$194,890	$65,995	$893,074	$144,453	$159,588	$1,556,893	$16,028	$309,868	$18,378
Ocean											
Gross	1,737,830	.....	18,015	.....	.....	2,000	536,149	893,318	44,307	239,041	5,000
Value	$1,511,107	.....	$9,706	.....	.....	$1,400	$615,658	$661,260	$28,885	$190,448	$3,750
Vegetable ivory											
Gross	2,470,409	325,000	95	.....	.....	318,000	412,849	1,414,366	.....	.....	.....
Value	$1,305,766	$82,587	$165	.....	.....	$194,831	$184,235	$843,948	.....	.....	.....
Bone											
Gross	956,412	.....	.....	.....	.....	.....	.....	.....	.....	956,412	.....
Value	$124,454	.....	.....	.....	.....	.....	.....	.....	.....	$124,454	.....
Cloth											
Gross	2,990,750	414,927	37,580	.....	.....	1,857,248	197,446	330,296	7,353	120,000	25,000
Value	$766,091	$136,820	$11,892	.....	.....	$375,989	$53,752	$113,498	$2,500	$60,000	$11,640
All other											
Gross	3,482,206	625,690	197,433	2,400	.....	584,185	130,500	382,728	.....	1,090,464	468,806
Value	$660,703	$152,285	$28,500	$1,200	.....	$67,619	$28,000	$166,500	.....	$109,948	$106,651
Button blanks, made for sale											
Gross	6,991,738	.....	962,376	(1)	4,575,814	334,379	.....	(1)	.....	.....	[2]1,119,169
Value	$916,093	.....	$134,700	(1)	$594,046	$42,804	.....	(1)	.....	.....	[2]$143,553
All other products	$1,177,737	$483,571	$20,798	$398	$12,925	$136,019	$221,051	$118,206	$6,803	$105,106	$72,860
Power:											
Number of establishments reporting	236	10	21	3	51	24	38	54	4	20	11
Total horsepower	7,093	919	389	66	1,471	843	729	1,576	29	796	275
Owned											
Engines											
Steam											
Number	91	8	9	.....	35	6	8	11	.....	10	4
Horsepower	4,374	395	250	.....	1,284	417	388	860	.....	595	185
Gas and gasoline											
Number	75	.....	9	2	25	15	11	6	2	2	3
Horsepower	721	.....	75	28	164	47	96	176	7	100	28
Water wheels											
Number	9	6	.....	.....	.....	1	1	1	.....	.....	.....
Horsepower	517	400	.....	.....	.....	70	35	12	.....	.....	.....
Electric motors											
Number	9	7	.....	.....	1	.....	.....	1	.....	.....	.....
Horsepower	111	88	.....	.....	18	.....	.....	5	.....	.....	.....
Other power, horsepower	8	.....	.....	.....	.....	.....	8	.....	.....	.....	.....
Rented											
Electric motors											
Number	44	1	5	7	1	6	2	17	2	1	2
Horsepower	568	20	64	38	5	280	14	105	22	10	10
Other kind, horsepower	704	16	.....	.....	.....	20	188	418	.....	91	52
Furnished to other establishments, horsepower	57	.....	.....	.....	.....	.....	32	2	.....	23	.....

[1] Included in "all other states."

[2] Includes products for Indiana and New York.

NEEDLES, PINS, AND HOOKS AND EYES

NEEDLES, PINS, AND HOOKS AND EYES.

This report presents the statistics for 46 establishments that made a specialty of manufacturing one or more varieties of needles, pins, or hooks and eyes during the calendar year 1904. The statistics for the industry as reported at each census from 1860 to 1905, inclusive, are summarized in Table 1.

TABLE 1.—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1860 TO 1905.

	CENSUS.						PER CENT OF INCREASE.				
	1905[1]	1900	1890	1880	1870	1860	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870
Number of establishments	46	52	55	45	48	25	[2]11.5	[2]5.5	22.2	[2]6.3	92.0
Capital	$5,331,939	$4,617,552	$2,260,707	$1,564,738	$801,050	$453,200	15.5	103.4	45.1	95.3	76.8
Salaried officials, clerks, etc., number	200	135	[3]96	(4)	(4)	(4)	48.1	40.6	.....	.....	.....
Salaries	$252,818	$147,207	[3]$120,891	(4)	(4)	(4)	71.7	21.8	.....	.....	.....
Wage-earners, average number	3,065	2,653	1,827	1,305	841	508	49.5	45.2	40.0	55.2	65.6
Total wages	$1,505,923	$1,067,364	$755,555	$480,535	$358,609	$143,832	40.5	41.3	57.2	34.0	149.4
Men 16 years and over	1,862	1,362	1,017	743	445	268	36.7	33.9	36.9	67.0	66.0
Wages	$1,031,141	$712,796	$527,289	(4)	(4)	(4)	44.7	35.2	.....	.....	.....
Women 16 years and over	1,860	1,148	787	443	293	240	62.0	45.9	77.7	51.2	22.1
Wages	$522,379	$329,427	$223,191	(4)	(4)	(4)	58.6	47.6	.....	.....	.....
Children under 16 years	243	143	23	119	103	.....	69.9	521.7	[2]80.7	15.5	.....
Wages	$42,403	$25,141	$5,075	(4)	(4)	(4)	68.7	395.4	.....	.....	.....
Miscellaneous expenses	$587,471	$247,229	$104,682	(5)	(5)	(5)	137.6	136.2	.....	.....	.....
Cost of materials used	$1,583,644	$1,227,997	$776,057	$805,999	$446,062	$357,936	29.0	58.2	[2]3.7	80.7	24.6
Value of products	$4,750,589	[6]$3,237,982	$2,109,469	$1,748,101	$1,225,436	$725,086	46.7	53.5	20.7	42.7	69.0

[1] Exclusive of the statistics of 17 establishments engaged primarily in the manufacture of other products. These establishments manufactured needles, pins, and hooks and eyes to the value of $642,506.
[2] Decrease.
[3] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[4] Not reported separately.
[5] Not reported.
[6] Exclusive of needles, pins, and hooks and eyes, valued at $536,742, made by establishments engaged primarily in the manufacture of other products.

Although the number of establishments has decreased since 1890, the industry as a whole has constantly increased since 1860. The capital, number of wage-earners, amount paid annually in wages, and the value of products have all more than doubled since 1890. The actual increase in the value of products was greater during the period since 1900 than during the entire decade ending with that year. Between 1900 and 1905 the average number of wage-earners increased 1,312 as compared with 826 for the decade ending in 1900, while the value of products increased $1,512,607 as compared with $1,128,513. The decrease in the number of establishments is due probably to consolidation or the discontinuance of some of the smaller plants. The period between the census of 1900 and that of 1905 in reality covers only four and one-half years, as the figures for 1900 relate to the census year ending May 31, 1900, while the figures for 1905 relate to the calendar year ending December 31, 1904.

The products represented in Table 1 by the gross value, $4,750,589, consist of knitting machine and sewing machine needles, common toilet pins, hairpins, safety pins, hooks and eyes, and other miscellaneous products.

The manufacture of pins was first reported as an industry at the census of 1850, and that of needles and hooks and eyes at the census of 1860. It is probable, however, that these articles were manufactured to some extent prior to the time at which their production first appeared in the Census reports as distinct industries. At the census of 1860 these articles were reported in four separate classes—pins, needles, sewing machine needles, and hooks and eyes; but from 1870 to 1900 they were consolidated into the two classes—needles and pins and hooks and eyes. At the present census it was found advisable to combine these two classes into one, because some establishments manufacture common pins or hairpins as well as hooks and eyes, which makes a separation practically impossible.

Products.—Table 2 is a detailed statement, for the United States, of the quantity and value of the different varieties of needles and pins manufactured as reported at the censuses of 1900 and 1905. As it was found impracticable to show the quantity of hooks and

eyes separately, the value thereof is included in the value of "all other products."

TABLE 2.—*Products, by kind, quantity, and value: 1905 and 1900.*

	1905	1900
Aggregate value	$4,750,589	$3,237,982
Needles—		
Total gross	1,420,176	1,120,532
Total value	$1,140,924	$1,027,949
Knitting machine—		
Latch—		
Gross	310,846	276,141
Value	$422,655	$414,504
Spring—		
Gross	332,788	307,266
Value	$118,223	$114,660
Sewing machine—		
Common household dry thread—		
Gross	420,249	324,476
Value	$475,913	$399,252
Wax thread—		
Gross	356,293	212,649
Value	$124,133	$99,533
Pins—		
Total gross	136,887,782	50,167,817
Total value	$2,067,637	$898,054
Common or toilet—		
Gross	132,632,232	47,338,429
Value	$1,129,006	$465,605
Hair—		
Gross	1,704,900	1,189,104
Value	$109,245	$78,155
Safety—		
Gross	2,550,650	1,640,284
Value	$829,386	$354,294
All other products, including hooks and eyes	$1,542,028	$1,311,979

During the year covered by the census of 1905, as shown in Table 2, there were made in the United States 1,420,176 gross of needles and 136,887,782 gross of pins. These figures, however, do not represent the total output of these articles, as a considerable quantity was manufactured in establishments engaged in industries in which the making of needles and pins was merely incidental. As far as could be ascertained, this class of establishments at the census of 1905 produced 345,897 gross of needles, valued at $377,487, and pins, valued at $565,019. The value of pins reported from other industries represents largely horn hairpins. The figures of the secondary products, combined with those shown in Table 2, make the output of these articles 1,766,073 gross of needles, valued at $1,518,411, and pins, valued at $2,632,656—a total value of $4,151,067 for both classes of products. In 1900 the total value of needles and pins, including secondary products from other industries, was $2,462,745.

Owing to the danger of disclosing the operations of individual establishments it was impracticable to publish the details for each of the various products of this industry manufactured in the several states, but by reference to Table 5 the rank of the states in the industry as a whole can be determined. The proportion of the total value of products, formed by the output of each state, is as follows: Connecticut, 64.4 per cent; New Hampshire, 4.4 per cent; New York, 5.9 per cent; Pennsylvania, 10.5 per cent; and California, Illinois, Massachusetts, Michigan, Missouri, New Jersey, Vermont, and Wisconsin, with 13 establishments in all, 14.8 per cent.

Considering for the present only the establishments under the industry classification in 1905, it appears that the manufacture of sewing machine needles was confined to Connecticut and Massachusetts, and by far the largest number of common pins was made in Connecticut, in which state also was manufactured a large portion of the hooks and eyes and hairpins. The largest production of knitting machine needles was reported by New Hampshire. The 6 establishments in that state were engaged exclusively in their manufacture. Hooks and eyes was the chief product in Pennsylvania. Although the only establishment manufacturing safety pins exclusively was located in New Jersey, this kind of pin was also made in Connecticut and New York.

The distribution of the 17 establishments which for 1905 reported needles and pins and hooks and eyes as a secondary product was as follows: Connecticut, 3 (common and safety pins, and hooks and eyes); New Hampshire, 1 (knitting machine needles); New Jersey, 1 (sewing machine needles); New York, 1 (sewing machine needles); and Massachusetts, 11 (horn hairpins).

Table 3 shows the distribution, by states, of the active plants engaged in this industry in 1860 and 1905.

TABLE 3.—*Number of establishments, by states: 1905 and 1860.*[1]

STATE.	1905	1860
United States	46	25
California	1	.....
Connecticut	13	8
Illinois	1	.....
Massachusetts	3	8
Michigan	2	.....
Missouri	1	.....
New Hampshire	6	.....
New Jersey	2	1
New York	8	7
Pennsylvania	6	1
Vermont	2	.....
Wisconsin	1	.....

[1] Does not include establishments producing needles, pins, or hooks and eyes as secondary products.

From Table 3 it is seen that with respect to the number of establishments Connecticut and Massachusetts were the two foremost states in this industry in 1860, each having 8 establishments. While Connecticut remained of first importance up to 1905, Massachusetts fell from first to fifth place during the same period. It is of interest, also, to note that some of the plants active in Connecticut at the census of 1905 had their original establishment in operation in 1860.

Of the 46 plants engaged in this industry at the census of 1905, 36 were engaged chiefly in the manufacture of one kind of product. Of this latter number, 21 made knitting machine needles; 6, hooks and eyes; 4, sewing machine needles; 3, common pins; 1, safety pins; and 1, hairpins. Of the remaining 10, 2 manufactured common pins and hairpins; 1, hairpins and hooks and eyes; 1, common and safety pins and hooks and eyes; 2, common and safety pins; 1, knitting machine and sewing machine needles; and 3, specialties, such as embroidery and bag needles.

In 1860, 12 plants manufactured sewing machine needles; 7 made pins; 5, hooks and eyes; and 1, needles, other than sewing machine needles.

Imports.—Table 4 presents the value of needles, pins, and hooks and eyes imported in each year from 1900 to 1905, inclusive.

TABLE 4.—VALUE OF NEEDLES, PINS, AND HOOKS AND EYES IMPORTED: 1900 TO 1905.[1]

	1905	1904	1903	1902	1901	1900
Total value	$695,984	$762,086	$687,417	$623,998	$582,470	$571,892
Needles, total	551,125	615,959	549,976	473,669	435,344	418,004
Needles for knitting or sewing machines, including latch needles	102,276	110,329	66,760	27,208	14,484	13,201
Crochet, tape, and knitting needles, and all others not specially provided for	42,788	49,904	40,775	37,626	38,188	37,532
Hand sewing and darning needles	406,061	455,726	442,441	408,835	382,672	367,271
Pins	138,431	138,724	128,220	134,003	132,102	130,264
Hooks and eyes	6,428	7,403	9,212	16,236	15,033	23,624

[1] Bureau of Statistics, Department of Commerce and Labor, "Commerce and Navigation of the United States."

The importation of the common hand sewing and darning needle in 1905, as shown in Table 4, was very large, although smaller than in any year since 1901. The yearly importations of the common hand sewing and darning needles, and crochet, tape, and knitting needles practically represent the value of such needles used each year in the United States, as none of these varieties, so far as the census returns indicate, are made in this country. Since 1900 there has been a decided increase in the importation of knitting and sewing machine needles, which indicates that the demand for these varieties of needles is far more in excess of the domestic output than at the census of 1900. In that year the importations of these varieties of needles were valued at $13,201 and the domestic output at $1,027,949, while for 1905 the value of the importations had increased to $102,276 and that of the home product to $1,140,924.

The value of imported pins has, with the exception of 1903, shown a steady but small increase each year. The increase from 1900 to 1905, however, did not keep pace with the increase of the home production. On the other hand, the value of hooks and eyes imported has declined sharply and steadily. Although the value of the domestic production of hooks and eyes is not shown separately for 1905, the increase over 1900 was very large.

The domestic production of needles, pins, and hooks and eyes is practically all consumed in the United States; no exportation of these articles appears in the statistics of exports.

It was not considered necessary in this report to introduce any historical data relating to the manufacture of needles and pins, or to give any description of the present and past methods and processes of manufacturing these articles, as this branch of the subject was discussed in the Twelfth Census, Report on Manufactures, Part IV, page 427. The history of the manufacture of hooks and eyes is allied so closely and is so similar to that of needles and pins that it was considered unnecessary to introduce it in this report.

The detailed statistics for 1905, except those of the quantity and value of the several kinds of products, are presented, by states, in Table 5.

TABLE 5.—NEEDLES, PINS, AND HOOKS AND EYES—DETAILED SUMMARY, BY STATES: 1905.

	United States.	Connecticut.	New Hampshire.	New York.	Pennsylvania.	All other states.[1]
Number of establishments	46	13	6	8	6	13
Capital, total	$5,331,039	$2,834,893	$227,767	$266,400	$1,328,787	$674,093
Land	$75,847	$34,700	$14,500	$600	$250	$25,707
Buildings	$390,088	$251,186	$35,409	$7,800	$1,200	$94,403
Machinery, tools, and implements	$1,180,186	$563,004	$66,183	$109,300	$221,422	$216,377
Cash and sundries	$3,685,818	$1,985,103	$111,675	$148,700	$1,105,915	$334,416
Proprietors and firm members	31	7	1	8	6	9
Salaried officials, clerks, etc.:						
Total number	200	130	11	13	14	32
Total salaries	$252,818	$157,881	$12,119	$19,476	$30,122	$33,220
Officers of corporations						
Number	35	19	4	3	2	7
Salaries	$100,558	$53,400	$6,058	$10,000	$18,500	$12,600
General superintendents, managers, clerks, etc.						
Total number	165	111	7	10	12	25
Total salaries	$152,260	$104,481	$6,061	$9,476	$11,622	$20,620
Men						
Number	116	80	4	7	7	18
Salaries	$128,210	$88,940	$5,168	$7,860	$9,022	$17,220
Women						
Number	49	31	3	3	5	7
Salaries	$24,050	$15,541	$893	$1,616	$2,600	$3,400
Wage-earners, including pieceworkers, and total wages:						
Greatest number employed at any one time during the year	5,646	2,446	404	1,673	297	826
Least number employed at any one time during the year	3,732	2,210	302	251	287	682
Average number	3,965	2,326	353	260	288	738
Total wages	$1,595,923	$1,055,140	$127,020	$81,086	$63,491	$268,577
Men 16 years and over						
Average number	1,802	1,233	189	75	40	325
Wages	$1,031,141	$718,481	$82,104	$45,876	$23,370	$161,310
Women 16 years and over						
Average number	1,860	965	159	185	188	363
Wages	$522,379	$311,492	$43,546	$35,810	$33,338	$98,193
Children under 16 years						
Average number	243	128	5	.....	60	50
Wages	$42,403	$25,176	$1,370	.....	$6,783	$9,074

[1] Includes establishments distributed as follows: California, 1; Illinois, 1; Massachusetts, 3; Michigan, 2; Missouri, 1; New Jersey, 2; Vermont, 2; Wisconsin, 1.

TABLE 5.—NEEDLES, PINS, AND HOOKS AND EYES—DETAILED SUMMARY, BY STATES: 1905—Continued.

	United States.	Connecticut.	New Hampshire.	New York.	Pennsylvania.	All other states.
Average number of wage-earners, including pieceworkers, employed during each month:						
Men 16 years and over—						
January	1,833	1,180	195	75	44	339
February	1,867	1,223	201	75	41	327
March	1,884	1,237	199	76	41	331
April	1,848	1,213	200	76	38	321
May	1,832	1,209	195	76	38	314
June	1,821	1,207	187	76	37	314
July	1,810	1,196	189	74	37	314
August	1,870	1,259	169	74	40	328
September	1,903	1,279	178	75	40	331
October	1,895	1,271	181	75	40	328
November	1,892	1,265	185	74	42	326
December	1,889	1,257	189	74	42	327
Women 16 years and over—						
January	1,827	940	166	185	188	358
February	1,872	967	169	185	188	363
March	1,887	973	175	185	188	366
April	1,876	970	163	185	188	370
May	1,860	964	161	185	188	362
June	1,855	951	155	185	188	376
July	1,852	963	148	185	188	368
August	1,823	954	139	185	188	357
September	1,871	970	156	185	188	372
October	1,870	978	159	185	188	360
November	1,868	984	159	185	188	352
December	1,849	966	158	185	188	352
Children under 16 years—						
January	250	130	7	.....	59	54
February	246	131	5	.....	59	51
March	241	128	4	.....	59	50
April	238	125	5	.....	59	49
May	241	123	5	.....	61	52
June	236	121	5	.....	59	51
July	251	133	5	.....	60	53
August	251	133	4	.....	61	53
September	248	132	5	.....	62	49
October	240	126	5	.....	60	49
November	237	126	5	.....	61	45
December	237	128	5	.....	60	44
Miscellaneous expenses, total	$587,471	$420,085	$8,190	$39,678	$71,742	$47,776
Rent of works	$123,655	$106,589	$640	$4,780	$9,430	$2,216
Taxes	$19,133	$12,026	$982	$893	$20	$5,212
Rent of offices, interest, insurance, and all other sundry expenses not hitherto included	$444,683	$301,470	$6,568	$34,005	$62,292	$40,348
Materials used, total cost	$1,583,644	$1,182,375	$24,536	$108,985	$73,757	$193,991
Purchased in partially manufactured form	$1,183,643	$896,345	$16,235	$94,286	$35,513	$141,264
Fuel	$36,141	$28,059	$974	$512	$246	$6,350
Rent of power and heat	$8,495	$1,650	$1,234	$2,696	$1,145	$1,770
Mill supplies	$19,718	$9,562	$1,337	$1,236	$116	$7,467
All other materials	$332,181	$245,468	$3,580	$10,222	$26,697	$36,214
Freight	$3,466	$1,291	$1,176	$33	$40	$926
Products, total value	$4,750,589	$3,062,193	$208,208	$278,896	$497,885	$703,407
Power:						
Number of establishments reporting	45	12	6	8	6	13
Total horsepower	2,840	2,029	274	89	38	380
Owned—						
Engines—						
Steam—						
Number	28	13	4	3	1	7
Horsepower	1,816	1,366	95	22	6	327
Gas and gasoline—						
Number	4	.....	.....	.....	1	3
Horsepower	14	.....	.....	.....	4	10
Water wheels—						
Number	10	6	4	.....	.....	.....
Horsepower	340	228	112	.....	.....	.....
Electric motors—						
Number	17	16	1	.....	.....	.....
Horsepower	400	375	25	.....	.....	.....
Rented—						
Electric motors—						
Number	15	.....	4	5	1	5
Horsepower	129	.....	42	52	2	33
Other kind, horsepower	141	60	.....	15	56	10
Furnished to other establishments, horsepower	450	450	.....	.....	.....	.....

OILCLOTH AND LINOLEUM

OILCLOTH AND LINOLEUM.

The manufacture of oilcloth in this country began probably about 1807; but it does not appear in the Census statistics as a separate industry until 1850. Prior to the census of 1905 the industry was variously classified under oilcloth; oil and enameled cloth; oil floor cloth; oilcloth, floor; and oilcloth, enameled. At this census the classifications are oilcloth and linoleum, floor; and oilcloth, enameled.

For this report the two classifications used at the census of 1905 have been combined as "oilcloth and linoleum," but the specified products of each are presented separately in Table 4.

Table 1 is a comparative summary of the statistics for the combined industry from 1850 to 1905, with per cent of increase.

TABLE 1. COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1850 TO 1905.

	CENSUS.							PER CENT OF INCREASE.					
	1905	1900	1890	1880	1870	1860	1850	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	27	27	28	29	34	49	56	.....	[1]3.6	[1]3.4	[1]14.7	[1]30.6	[1]12.5
Capital	$13,803,232	$8,879,102	$4,477,256	$3,744,550	$2,237,000	$1,606,700	$640,700	55.5	98.3	19.6	67.4	39.2	150.8
Salaried officials, clerks, etc., number	217	153	[2]88	([3])	([3])	([3])	([3])	41.8	73.9	.....	.....	.....	.....
Salaries	$361,230	$294,523	[2]$121,005	([3])	([3])	([3])	([3])	22.6	141.6	.....	.....	.....	.....
Wage-earners, average number	3,883	3,230	1,892	1,093	1,411	1,538	650	20.2	73.5	[1]6.6	41.2	[1]8.3	136.6
Total wages	$1,943,757	$1,628,113	$928,525	$840,802	$687,288	$517,206	$178,854	19.4	75.3	9.3	23.7	32.9	189.2
Men 16 years and over	3,734	3,138	1,812	1,005	1,343	1,515	648	19.0	73.2	[1]4.9	41.8	[1]11.4	133.8
Wages	$1,905,105	$1,600,899	([3])	([3])	([3])	([3])	([3])	19.0	.....	.....	.....	.....	.....
Women 16 years and over	59	49	8	7	17	23	2	20.4	512.5	14.3	[1]58.8	[1]26.1	1,050.0
Wages	$19,456	$14,800	([3])	([3])	([3])	([3])	([3])	31.5	.....	.....	.....	.....	.....
Children under 16 years	90	43	42	81	51	([3])	([3])	109.3	2.4	[1]48.1	58.8	.....	.....
Wages	$19,196	$12,414	([3])	([3])	([3])	([3])	([3])	54.6	.....	.....	.....	.....	.....
Miscellaneous expenses	$1,369,545	$521,957	$262,093	([4])	([4])	([4])	([4])	162.4	98.7	.....	.....	.....	.....
Cost of materials used	$10,050,009	$7,549,672	$3,363,813	$3,982,908	$2,548,708	$2,375,975	$829,706	33.1	124.4	[1]15.5	56.3	7.3	186.4
Value of products	$14,792,246	$11,402,620	$5,481,087	$5,814,587	$4,211,579	$3,602,216	$1,256,994	29.7	108.0	[1]5.7	38.1	16.9	186.6

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[3] Not reported separately.
[4] Not reported.

During the period of fifty-five years covered by Table 1 the number of establishments decreased from 56 for 1850 to 27 for 1905. This decrease was much more rapid in the decades from 1850 to 1880 than in the subsequent years.

In spite of this decrease the capital invested increased constantly. The greatest actual increase, $4,924,130, occurred from 1900 to 1905, while the greatest percentage of increase was in the decade 1850 to 1860. The next greatest increase, not only in actual amount, but also in per cent, was in the decade 1890 to 1900, when capital increased $4,401,846, or 98.3 per cent.

The number of wage-earners also increased greatly during the period; but this increase has not been constant, since the number decreased between 1860 and 1870 and again between 1880 and 1890. Men 16 years and over are chiefly concerned in these figures, for the industry for 1905 employed 3,734 men and only 59 women and 90 children. The wages of employees increased from $178,854 for 1850 to $1,943,757 for 1905, and each census shows a larger total than the preceding.

For both cost of materials used and value of products the greatest per cent of increase was in the decade 1850 to 1860, while the greatest absolute increase was in the decade 1890 to 1900. From 1900 to 1905 the cost of materials increased 33.1 per cent and the value of products, 29.7 per cent.

As shown in Table 2, Maine, Massachusetts, New Jersey, New York, and Pennsylvania were credited with establishments at every census from 1850 to 1905. In 1850 New York, with 19 establishments, ranked first, and Pennsylvania, with 17, second; while for 1905 New Jersey, with 10 establishments, ranked first, and New York, with half that number, second.

TABLE 2.—*Number of establishments, by states: 1850 to 1905.*

STATE.	1905	1900	1890	1880	1870	1860	1850
United States	27	27	28	29	34	49	56
Connecticut							1
Illinois	2						
Kentucky						1	2
Maine	1	3	3	4	6	8	6
Maryland							1
Massachusetts	3	2	3	3	2	5	1
Michigan	1	1					
Missouri							1
New Hampshire					1	1	2
New Jersey	10	8	12	10	9	14	4
New York	5	8	9	10	12	12	19
Ohio	3	2				2	2
Pennsylvania	2	3	1	2	4	6	17

Table 3 presents a summary of the statistics for Massachusetts and New Jersey. Other states having establishments engaged in this industry are grouped in the class "all other states," in order to avoid disclosing individual operations.

TABLE 3.—*Summary, by states: 1905.*

	United States.	Massachusetts.	New Jersey.	All other states.[1]
Number of establishments	27	3	10	14
Capital	$13,803,232	$287,897	$5,151,496	$8,363,839
Salaried officials, clerks, etc., number	217	11	83	123
Salaries	$361,230	$21,958	$112,291	$226,981
Wage-earners, average number	3,883	128	1,464	2,291
Total wages	$1,943,757	$60,520	$701,078	$1,182,159
Men 16 years and over	3,734	122	1,378	2,234
Wages	$1,905,105	$58,031	$682,883	$1,164,191
Women 16 years and over	59	4	1	54
Wages	$19,456	$2,001	$285	$17,170
Children under 16 years	90	2	85	3
Wages	$19,196	$488	$17,910	$798
Miscellaneous expenses	$1,369,545	$28,737	$558,888	$781,920
Cost of materials used	$10,050,009	$808,985	$3,666,411	$5,484,613
Value of products	$14,792,246	$1,089,859	$5,444,396	$8,257,991

[1] Includes establishments distributed as follows: Illinois, 2; Maine, 1; Michigan, 1; New York, 5; Ohio, 3; Pennsylvania, 2.

Table 3 shows that the leading state is New Jersey. Of the total for every item shown in Table 3, with the comparatively unimportant exceptions of salaries, number of women wage-earners, and their wages, New Jersey contributed at least one-third.

Products.—Table 4 gives the kind, quantity, and value of the various products of the industry, together with the per cent each is of the total value of products, 1905.

TABLE 4.—*Products, by kind, quantity, and value, with per cent of total value: 1905.*

KIND.	Quantity (square yards).	VALUE.	
		Amount.	Per cent of total.
Aggregate	91,677,155	$14,792,246	100.0
Oilcloth, total	74,785,693	9,201,548	62.2
Floor	21,387,430	3,554,794	24.0
Carriage	69,185	10,895	0.1
Enameled	11,574,986	1,542,467	10.4
Table	38,026,083	3,540,181	24.0
Upholstery	937,616	254,851	1.7
Other	2,790,393	298,360	2.0
Linoleum, including cork carpet	14,765,284	4,223,992	28.5
Inlaid linoleum	2,126,178	1,104,808	7.5
All other products	(1)	261,898	1.8

[1] Not reported.

The oilcloths, as indicated in Table 4, are far more important, both in quantity and value, than the linoleums. The value of linoleum, including cork carpet, however, exceeds the value of any one of the various kinds of oilcloth. Of the oilcloths, those used for floor coverings are of the greatest value, although they exceed but slightly the table coverings. The quantity of table coverings was greater than that of floor coverings by over sixteen and one-half million square yards.

Imports and exports.—Table 5 gives the imports and exports of oilcloth and linoleum from 1898 to 1905.

TABLE 5.—*Imports and exports of oilcloth and linoleum: 1898 to 1905.*[1]

YEAR.	IMPORTS.		Exports (value).
	Square yards.	Value.	
1905	3,508,855	$1,220,372	$269,929
1904	3,381,534	1,201,070	231,297
1903	3,358,655	1,105,894	221,417
1902	1,824,579	681,464	189,291
1901	1,306,222	532,255	172,635
1900	832,405	407,008	141,917
1899	416,658	216,210	132,532
1898	(2)	(2)	118,641

[1] Bureau of Statistics, Department of Commerce and Labor, Statistical Abstract of the United States, 1905.
[2] Not reported separately prior to 1899.

The most striking feature presented in Table 5 is the enormous increase in the amount of oilcloth and linoleum imported. In 1899 the imports amounted to only 416,658 square yards, valued at $216,210, but in 1905 they had increased to 3,508,855 square yards, valued at $1,220,372. Although each succeeding year has witnessed an increase, the greatest one occurred between 1902 and 1903. In that year the amount imported increased 1,534,076 square yards and its value $424,430.

The value of exports of oilcloth and linoleum has also increased steadily from year to year, although the rate of increase has not been nearly as great as in the case of the imports. In 1898 products of this industry to the value of $118,641 were exported and in 1905 the corresponding figure was $269,929, an increase of $151,288, or 127.5 per cent. The greatest increase in exports in any one year occurred in 1902–3, which was also the year when imports increased most.

By adding the value of oilcloth and linoleum imported to that manufactured, and subtracting the value exported, it will be seen that the amount available for consumption in the United States for 1905 was valued at $15,742,689.

HISTORICAL AND DESCRIPTIVE.

The art of making oilcloth originated with Nathan Taylor at Knightsbridge, near London, England, in 1754. The pattern at first was stenciled and afterwards, beginning in 1780, was printed from blocks.[1] When the manufacture was first undertaken in America is uncertain. Bishop states that in 1807 "a manufac-

[1] Knight's American Mechanical Dictionary, page 888.

tory of a new article of patent floor cloth or summer carpet was in operation in Philadelphia." The cloth is described as "strongly woven, for the purpose of the best floor, on a seven-yard loom, without seam, of any peculiar size or shape. The carpets were furnished plain or in colors, with borders to match, at from $1.25 to $2 per square yard, according to the number of colors; and when partly worn could be recoated, painted, or ornamented, and with appropriate borders. By the same process old woolen or worsted carpets could be coated on one side at half price; and baize or coverings for trunks and baggage made waterproof. The manufacture appears to have been that at present known as floor oilcloth."

This seems to be the first attempt in the United States to manufacture oiled cloth for floor covering. A Mr. Macauley, of Philadelphia, is mentioned as being, in 1821, "the proprietor of a manufactory of woolen carpet, patent floor cloth, and oilcloth, which last were now made in different parts of the Union." In a list of patents issued during the year 1825 appears the name of Isaac Macauley, of Philadelphia, who was granted a patent on an improvement in making oilcloth. "Mr. Macauley had carried on the manufacture for several years in Philadelphia, and was probably the first in this country."[1] Bishop, in referring to the manufacture of enameled cloth by the Taunton Oil Cloth Co., of Taunton, Mass., in 1860, alludes to this oil or enameled cloth as a "novel article."

Regarding linoleum, the Carpet and Upholstery Trade Review says:[2]

The linoleum industry is closely associated with the cork trade; the materials used being cork scraps and cuttings mixed with linseed oil. The process was invented by Frederick Walton in England, in 1860, and the product was first brought out under the name of "kamptulicon," but when improved received the name of "linoleum."

The Textile Mercury says there are some fifty establishments in all for its manufacture in Europe, of which thirty are in the United Kingdom, employing 2,500 hands and having a combined capital of over £1,000,000; ten in Germany, a few in France and Russia, and one in Italy. This last is at Narni, in Umbria, where a Lombard company with large capital buys up cork cuttings, and the soft cork which is taken from the younger trees which grow in the groves by the seashore. They make a linoleum which is about half cork, and consume about 150 tons of cork annually.

Floor oilcloth.—The following is taken from the "History and Manufacture of Floor Coverings:"[3]

In the manufacture of floor oilcloth the first step is the preparation of the foundation, which is composed of jute burlap.

It is necessary to size the foundation, and in making narrow oilcloths the sizing is done by drawing the burlap through troughs filled with liquid glue, rye flour, tapioca, or varnish, the best among these different sizings being a matter of opinion among manufacturers. The burlap is drawn through the troughs by means of rollers, which press the surplus sizing out of the cloth as it passes between them.

The sized surface is then rubbed thoroughly with pieces of pumice stone, this operation being performed either by hand or by simple mechanical arrangement, in which the "rubbers" are moved over the surface by steampower.

When the cloth has been rubbed smooth and even it is then covered with a mixture composed of ocher, linseed oil, and benzine. In order to make this coating even and uniform in thickness the cloth is passed under an arrangement of metal blades which scrape off superfluous paint. The coating, when dry, is rubbed smooth with pumice stone, and this process of coating and rubbing is performed several times, the number depending on the quality of the goods desired.

The printing of the pattern on the cloth, which is the next step in the process, was formerly done by hand entirely, but most manufacturers now use machinery for this purpose. In printing by machinery the cloth passes over a flat table and under the printing blocks, which have a rising and falling motion. In the old manner of printing by hand the blocks were 18 inches square, and only this amount of surface was printed at one time with each block, but in the present method the blocks extend entirely across the cloth. The printing blocks are made of wood, and each color used in the pattern requires a separate block. The pattern is carved on the block in relief, the portions left uncut being those which form the design. * * *

The colors employed are spread on the blocks by an arrangement of troughs and rollers. A roller revolving in a trough filled with coloring material passes across the face of a printing block, which then descends upon the cloth, makes its particular impression and rises again, each block printing its own separate color in this way until the pattern is complete.

When the printing is completed the cloth is taken to the drying room, where artificial heat is employed to facilitate the drying. When sufficiently dry and hard the cloth is placed flat upon a platform, varnished, trimmed, and rolled up ready for the market.

The blocks used for printing are made of the best white pine, thoroughly seasoned. They are about 1¾ inches thick and are faced with hard wood, usually maple, which is glued on. The face is generally creased by sawing fine parallel lines in one direction or both before the carving, as this facilitates the tracing of the design and the cutting away of the superfluous wood. In order to get certain effects in the printing, some parts of the design may be cut or punched in metal, these portions being then fastened to the faces of the blocks as required.

The pattern to be used is drawn and painted in full on paper, every color and part of the design being produced exactly as it is ultimately to appear. This design is then reproduced on the surface of the printing blocks, the number of these depending, as has been explained, upon the number of colors in the pattern. The part of the design apportioned to each particular block is transferred to it by a tracing process, and the figure is then cut in relief, as indicated by the tracing.

Besides the carved blocks, manufacturers use what are called pin-blocks. These are made in three pieces to prevent warping, the pieces being securely cemented together. The middle one is of pine and the outer ones are of maple, the grain of these running at right angles to that of the inner piece. The printing surface is sawed across at close intervals in two directions at right angles to each other, and a surface is thus produced composed of pins or pegs, the narrow interstices being regular and uniform. In preparing the block for its design all the pins not necessary for producing the figure desired are cut away.

The process of manufacturing sheet oilcloth differs somewhat from that which has been described, but the difference is simply

[1] J. L. Bishop, History of American Manufactures, Vol. II, pages 120, 270, and 304.
[2] Vol. 34, Number 7.
[3] New York Review Publishing Co., pages 79 ff.

in the manipulation of the cloth, the composition of the goods and general principles of manufacture being the same.

Linoleum.—The two main ingredients in the manufacture of linoleum are cork and linseed oil, to which are added smaller quantities of kauri gum, resin, and pigments of various kinds. In the manufacture of bottle corks about one-half of the cork is wasted, and this waste is the chief source of the cork for linoleum. The cork waste, after being freed from dust and other admixed substances by means of a sieve with a rapid reciprocating motion, is crushed. This sounds very simple, but, as a matter of fact, the machinery required for the actual operation has to be of special character on account of the elasticity of cork and the almost incredible rapidity with which it blunts the hardest steel knife edge. The breaker reduces the cork to pieces of about the size of a pea, in which state it is passed on to the grinding mill, which is like an ordinary flour mill, but with stones of lava, sandstone, or some other rough material. Cork dust, being excessively light, quickly disseminates itself through the air of the mill; hence the utmost precautions have to be taken to prevent the explosive mixture of air and cork dust being set on fire. Even when the greatest care has been observed small explosions are sometimes caused by sparks from the machinery.

The next stage in the manufacture is the preparation of what is technically known as "cement," the chief ingredient of which is oxidized linseed oil. As everyone knows, oils are divisible into two classes, dry and nondrying oils, the drying being brought about in the case of the first-named by the absorption of oxygen from the air, and the consequent transformation of the oil into a solid resinous mass. For linoleum manufacture the linseed oil used must be of good quality, and great care must be taken in its treatment. The oil is first boiled, much as in the manufacture of paints and varnishes. The process of drying is facilitated by the addition of a small quantity of oxide of lead. The boiled oil, after being allowed to deposit any sediment in it in a settling tank, is pumped to the top of a high building and allowed to flow thence over a number of pieces of light cotton fabric known as "scrim," which hang vertically from iron bars. The air of the building being heated to a temperature of about 100° F., the layer of oil which adheres to the surface of the scrim becomes oxidized—that is, it solidifies in the course of twenty-four hours.

This operation is repeated daily for six to eight weeks, until a sufficient number of solidified layers of oil are deposited on the cloth, the mass of oxidized oil having then a thickness of half an inch, and being termed "a skin." These skins are then cut down and ground between rollers.

To prepare the linoleum "cement" itself, the ground oil is mixed with resin and kauri gum until the whole mass is homogeneous. The cement and cork dust are then mixed together thoroughly, and if the linoleum is to be plain, the coloring matter necessary is added at this stage. The mixture is then rolled upon a backing of jute burlap, which passes between two cylinders to insure evenness and uniformity of thickness in the coating.

The printing of the pattern is the next step in the process, and there is no very material difference between the method of printing linoleum and that adopted for floor oilcloths.

The latest and most important improvement in linoleum manufacture is the production of mosaic or inlaid goods, in which the colors do not appear on the surface only, but go through to the very back of the cloth.

Several patents have been granted in this country and abroad for methods of obtaining this result. In one process the linoleum cement, having been made to a certain thickness, is cut into separate pieces by dies, and these pieces, shaped and colored to make the pattern desired, are then placed upon a burlap backing. Pressure is then applied to the mass until the canvas and coating are thoroughly united. After drying, the backing is treated with a preparation of resin and other ingredients to make it waterproof, and the goods are then ready for the market.

In another process the linoleum mixture is in the form of a powder, which is dropped upon the jute backing so as to represent the designs and colors essential for the pattern, and the powdered mass is then subjected to heavy pressure from a heated plate until it is completely fused and firmly attached to the backing.

A detailed summary, by states, of the statistics for the combined industry for 1905, is given in Table 6.

TABLE 6.—OILCLOTH AND LINOLEUM—DETAILED SUMMARY, BY STATES: 1905.

	United States.	Massachusetts.	New Jersey.	All other states.[1]
Number of establishments	27	3	10	14
Capital, total	$13,803,232	$287,897	$5,151,496	$8,363,839
Land	$671,304	$1,250	$247,795	$422,259
Buildings	$3,313,415	$1,250	$1,463,918	$1,848,247
Machinery, tools, and implements	$3,218,458	$41,268	$1,220,223	$1,947,967
Cash and sundries	$6,600,055	$244,129	$2,210,560	$4,145,366
Proprietors and firm members	12	.....	4	8
Salaried officials, clerks, etc.:				
Total number	217	11	83	123
Total salaries	$361,230	$21,958	$112,291	$226,981
Officers of corporations				
Number	43	3	23	17
Salaries	$136,410	$13,200	$53,470	$69,740
General superintendents, managers, clerks, etc.				
Total number	174	8	60	106
Total salaries	$224,820	$8,758	$58,821	$157,241
Men—				
Number	161	5	56	100
Salaries	$219,140	$7,500	$57,109	$154,531
Women—				
Number	13	3	4	6
Salaries	$5,680	$1,258	$1,712	$2,710
Wage-earners, including piece-workers, and total wages:				
Greatest number employed at any one time during the year	4,406	143	1,640	2,623
Least number employed at any one time during the year	3,527	111	1,326	2,090
Average number	3,883	128	1,464	2,291
Total wages	$1,943,757	$60,520	$701,078	$1,182,159
Men 16 years and over—				
Average number	3,734	122	1,378	2,234
Wages	$1,905,105	$58,031	$682,883	$1,164,191
Women 16 years and over—				
Average number	59	4	1	54
Wages	$19,456	$2,001	$285	$17,170
Children under 16 years—				
Average number	90	2	85	3
Wages	$19,196	$488	$17,010	$798
Average number of wage-earners, including piece-workers, employed during each month:				
Men 16 years and over—				
January	3,703	116	1,285	2,302
February	3,756	114	1,295	2,347
March	3,757	120	1,332	2,305
April	3,780	118	1,340	2,322
May	3,700	121	1,379	2,209
June	3,752	120	1,398	2,234
July	3,742	121	1,412	2,209
August	3,798	121	1,470	2,207
September	3,762	122	1,454	2,186
October	3,741	123	1,442	2,176
November	3,643	132	1,346	2,165
December	3,495	136	1,383	2,146
Women 16 years and over—				
January	61	3	1	57
February	59	3	1	55
March	58	3	1	54
April	59	3	1	55
May	57	3	1	53
June	59	3	1	55
July	62	5	1	56
August	61	5	1	55
September	59	4	1	54
October	56	4	1	51
November	56	6	1	49
December	61	6	1	54
Children under 16 years—				
January	93	2	88	3
February	92	2	87	3
March	91	2	86	3
April	93	2	88	3
May	93	2	88	3
June	91	2	86	3

	United States.	Massachusetts.	New Jersey.	All other states.
Average number of wage-earners, including piece-workers, employed during each month—Continued.				
Children under 16 years—Con.				
July	90	2	85	3
August	94	2	89	3
September	93	2	88	3
October	93	2	88	3
November	81	2	76	3
December	76	2	71	3
Miscellaneous expenses, total	$1,369,545	$28,737	$558,888	$781,920
Rent of works	$8,530	$3,751	$3,100	$1,679
Taxes	$40,839	$2,480	$19,733	$18,626
Rent of offices, interest, insurance, and all other sundry expenses not hitherto included	$1,316,153	$22,506	$536,055	$757,592
Contract work	$4,023	.....	.....	$4,023
Materials used, aggregate cost	$10,050,009	$808,985	$3,066,411	$5,484,613
Principal materials, total cost	$8,928,391	$804,394	$3,382,416	$4,741,581
Purchased in raw state	$433,290	.....	$345,070	$88,220
Purchased in partially manufactured form	$8,495,101	$804,394	$3,037,346	$4,653,361
Fuel	$347,593	$7,620	$142,952	$197,021
Rent of power and heat	$2,550	$900	.....	$1,650
Mill supplies	$22,704	$509	$9,862	$12,273
All other materials	$710,214	$82,770	$131,181	$502,257
Freight	$32,557	$2,726	.....	$29,831
Products, total value	$14,792,246	$1,089,859	$5,444,306	$8,257,901
Oilcloth—				
Floor—				
Square yards	21,387,430	.....	8,387,910	12,999,520
Value	$3,554,704	.....	$1,317,549	$2,237,245
Carriage—				
Square yards	69,185	(2)	(2)	69,185
Value	$10,895	(2)	(2)	$10,895
Enameled—				
Square yards	11,574,980	(2)	4,249,307	7,325,679
Value	$1,542,467	(2)	$590,469	$951,998
Table—				
Square yards	38,026,083	(2)	8,164,293	29,861,790
Value	$3,540,181	(2)	$817,406	$2,722,775
Upholstery—				
Square yards	937,616	(2)	(2)	937,616
Value	$254,851	(2)	(2)	$254,851
All other—				
Square yards	2,790,393	.....	(2)	2,790,393
Value	$298,360	.....	(2)	$298,360
Linoleum, including cork carpet—				
Square yards	14,765,284	.....	(2)	14,765,284
Value	$4,223,992	.....	(2)	$4,223,992
Inlaid linoleum—				
Square yards	2,126,178	.....	(2)	2,126,178
Value	$1,104,808	.....	(2)	$1,104,808
All other products	$261,898	(2)	(2)	$261,898
Power:				
Number of establishments reporting	27	3	10	14
Total horsepower	11,204	255	5,734	5,305
Owned—				
Engines—				
Steam—				
Number	146	5	59	82
Horsepower	9,831	220	4,934	4,677
Gas and gasoline—				
Number	2	.....	.....	2
Horsepower	47	.....	.....	47
Electric motors—				
Number	117	.....	42	75
Horsepower	1,182	.....	740	442
Other power, horsepower	106	.....	60	46
Rented—				
Electric motors—				
Number	8	.....	.....	8
Horsepower	93	.....	.....	93
Other kind, horsepower	35	35	.....	.....

[1] Includes establishments distributed as follows: Illinois, 2; Maine, 1; Michigan, 1; New York, 5; Ohio, 3; Pennsylvania, 2.
[2] Included in "all other states," to avoid disclosing the operations of individual establishments.

BOOTS AND SHOES

BOOTS AND SHOES.

By Elmore W. Sanderson.

The statistics for "boots and shoes, factory product," and "boots and shoes, custom work and repairing," were combined in the reports prior to those of the census of 1880. As it is impossible to make a correct segregation of these statistics, and as the data presented in this report relate entirely to the factory product, no figures are given for these prior censuses. Reference is made, however, to the condition and growth of the industry during the earlier periods.

Table 1 presents a comparative summary of the statistics of the industry for the censuses from 1880 to 1905, with the percentages of increase for each period.

Table 1.—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1880 TO 1905.

	Census.				Per cent of increase.		
	1905	1900	1890	1880	1900 to 1905	1890 to 1900	1880 to 1890
Number of establishments	1,316	1,599	2,082	1,959	[1] 17.7	[1] 23.2	6.3
Capital	$122,526,093	$99,819,233	$95,282,311	$42,994,028	22.7	4.8	121.6
Salaried officials, clerks, etc., number	8,811	7,779	[1] 5,643	(3)	13.3	37.9	.....
Salaries	$8,706,082	$7,669,949	[2] $5,707,931	(3)	13.5	34.4	.....
Wage-earners, average number	149,924	141,830	133,690	111,152	5.7	6.1	20.3
Total wages	$99,059,680	$88,440,883	$60,607,145	$42,001,438	18.2	[1] 3.7	41.1
Men 16 years and over	95,257	90,415	91,466	82,547	5.4	[1] 1.1	10.7
Wages	$50,394,044	$42,811,430	$46,005,974	(3)	17.7	[1] 8.7	.....
Women 16 years and over	49,535	46,894	39,849	25,122	5.6	17.7	58.6
Wages	$17,681,703	$14,823,726	$13,393,611	(3)	19.3	10.7	.....
Children under 16 years	5,132	4,521	2,435	3,483	13.5	85.7	[1] 30.1
Wages	$983,273	$805,727	$307,560	(3)	22.0	119.2	.....
Miscellaneous expenses	$19,203,634	$10,669,402	$9,217,519	(4)	80.8	15.8	.....
Cost of materials used	$107,363,495	$108,632,654	$118,785,831	$102,442,442	17.0	42.0	16.0
Value of products	$320,107,458	$258,969,580	$220,649,358	$166,050,354	23.6	17.4	32.9

[1] Decrease.
[2] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[3] Not reported separately.
[4] Not reported.

There was a decided decrease in the number of establishments between 1900 and 1905, amounting to 283, or 17.7 per cent. The increase in capital during the same period was $22,706,860, or 22.7 per cent, which is about the percentage of increase in the value of products.

The increase in wages from 1900 to 1905 was distributed as follows: Men's wages, $7,583,214, or 17.7 per cent; women's wages, $2,858,037, or 19.3 per cent; and children's wages, $177,546, or 22 per cent. The percentage of increase for the number of wage-earners, as shown by the table, is very much less than the percentage of increase for value of products. The fact that the proportion of gain in value of products was much larger than that in the number of wage-earners is due principally to the increased use and efficiency of machinery and the improvement in the factory system; also to the large increase in the use of cut stock made by factories that do this kind of work exclusively.

Miscellaneous expenses include amount paid for rent of offices and buildings other than the factory or works, rental of machinery, and for interest, insurance, ordinary repairs of buildings and machinery, advertising, traveling expenses, and all other sundry expenses not elsewhere included. From 1900 to 1905 the increase in these expenses was $8,624,232, or 80.8 per cent.

The cost of materials in 1880 was reported as $102,442,442. In 1890 the cost had increased $16,343,389, or 16 per cent, over the amount shown for 1880. From 1890 to 1900 the cost increased $49,846,823, or 42 per cent; and from 1900 to 1905 the increase was $28,730,841, or 17 per cent.

The value of products in 1880 was $166,050,354. In 1890 it had increased $54,599,004, or 32.9 per cent. From 1890 to 1900 the increase was $38,320,222, or 17.4 per cent, and from 1900 to 1905 the increase was $61,137,878, or 23.6 per cent. It is interesting to note that while the percentage of increase for the cost of materials and that for the value of products

do not correspond for any period, the percentage of increase for the entire period covered by the table—1880 to 1905—was practically the same. The cost of materials increased $94,921,053, or 92.7 per cent, and value of products, $154,057,104, or 92.8 per cent.

Table 2 gives the number of establishments doing work for others exclusively and the number of shoe manufacturing establishments not engaged in such work at the censuses of 1890, 1900, and 1905, showing the percentages of decrease for each period.

TABLE 2.—*Number of establishments, by class of work, with per cent of decrease: 1890 to 1905.*

	CENSUS.			PER CENT OF DECREASE.	
	1905	1900	1890	1900 to 1905	1890 to 1900
Total	1,316	1,599	2,082	17.7	23.2
Establishments doing work for others exclusively	59	78	138	24.4	43.5
Shoe factories	1,257	1,521	1,944	17.4	21.8

At the census of 1890 the data for establishments doing work for others exclusively were not exact, but it is known that at least 138 such shops were included in the number of establishments reported for that year. Of the 59 establishments doing such work at the census of 1905, 56 were located in the state of Massachusetts. Table 3 gives the kind and value of work reported by such establishments in 1905.

TABLE 3.—*Number of establishments doing work for others, and kind and value of work done: 1905.*

KIND OF WORK DONE.	Number of establishments.	Value of work done.
Total	59	[1] $708,749
Stitching	19	257,121
Making buttonholes	9	103,084
Fitting	4	46,200
Making crimped vamps	3	11,166
Bottoming	2	84,420
Heeling	2	
Making counters	1	
Embossing	1	
Finishing	1	25,763
Lasting	1	
Tacking	1	
Two or more of above	15	180,995

[1] Table 16 gives the total value of work done for others as $792,116. The difference, $83,367, represents the value of work done for others by regular manufacturers.

The decrease in the number of shops doing work for others accounts for but a part of the decrease in the total number of establishments. A comparison of the reports for 1905 with those for 1900 shows that many establishments have gone out of existence, while others have increased largely their equipment and their output.

This concentration into large establishments is shown by the investment of capital per establishment, increasing from $62,426 in 1900 to $93,105 in 1905; the number of wage-earners, from 89 to 114; the amount paid in wages, from $36,548 to $52,477; and the value of products, from $161,957 to $243,243. The value of products of many of the establishments is also an illustration of this concentration. At the census of 1905 there were 4 establishments with products of over $5,000,000 each, 58 with a value of products of from $1,000,000 to $5,000,000 each, and 125 with a value of products of from $500,000 to $1,000,000 each.

Table 4 shows the amount of capital invested in land, buildings, machinery, tools, and implements, and cash and sundries at the censuses of 1890, 1900, and 1905, with the percentage that each item formed of the total capital at the three censuses.

TABLE 4.—*Capital, with proportion each class forms of total: 1890 to 1905.*

	1905		1900		1890	
	Amount.	Per cent of total.	Amount.	Per cent of total.	Amount.	Per cent of total.
Total	$122,526,093	100.0	$99,819,233	100.0	$95,282,311	100.0
Land	2,572,107	2.1	2,153,426	2.2	2,190,160	2.3
Buildings	8,690,331	7.1	6,858,014	6.9	5,463,879	5.7
Machinery, tools, and implements	18,964,510	15.5	16,807,305	16.8	13,873,364	14.6
Cash and sundries	92,299,145	75.3	74,000,488	74.1	73,754,908	77.4

While each item of capital for 1905 shows a substantially like ratio of increase over 1900 and 1890, the percentage of the items to the totals for each census period was practically the same. The proportion of the total capital reported in 1905 as invested in land was slightly less and in buildings slightly more than in 1900 and 1890; in machinery, tools, and implements the proportion was less in 1905 than in 1900, but more than in 1890; in cash and sundries the proportion was more in 1905 than in 1900, but less than in 1890.

Table 5 shows the total number of employees and the total amount paid them; the number and proportion of salaried employees and wage-earners, the amounts paid them, and the proportion paid to each class; the average number of each class of employees and the average amount of salaries and wages per establishment for 1900 and 1905, with the percentage of increase for each item.

TABLE 5.—*Employees, salaries, and wages, with per cent of increase: 1905 and 1900.*

	1905	1900	Per cent of increase.
Total number of all employees	158,735	149,609	6.1
Salaried employees	8,811	7,779	13.3
Per cent of total	5.6	5.2	.....
Wage-earners	149,924	141,830	5.7
Per cent of total	94.4	94.8	.....
Total amount paid all employees	$77,766,362	$66,110,832	17.6
Salaries	$8,706,682	$7,669,949	13.5
Per cent of total	11.2	11.6	.....
Wages	$69,059,680	$58,440,883	18.2
Per cent of total	88.8	88.4	.....
Average number of salaried employees per establishment	7	5	40.0
Average number of wage-earners per establishment	114	89	28.1
Average amount paid for salaries per establishment	$6,616	$4,797	37.9
Average amount paid for wages per establishment	$52,477	$36,548	43.6

From 1900 to 1905 the number of all employees reported increased 9,126, or 6.1 per cent, and the total amount paid for salaries and wages increased $11,655,530, or 17.6 per cent. The average number of salaried employees per establishment increased 2, or 40 per cent, and the average amount paid in salaries per establishment increased $1,819, or 37.9 per cent. The proportion of salaried employees was slightly greater for 1905 than for 1900, but the proportion of salaries was a little less. The average number of wage-earners per establishment increased 25, and the average amount paid for wages per establishment increased $15,929. At both censuses the wage-earners formed over 94 per cent of all the employees and received over 88 per cent of the amount paid in salaries and wages.

Table 6 shows the amounts reported in 1900 and 1905 for the various items of miscellaneous expenses, and gives the percentages of increase for the period.

TABLE 6.—*Miscellaneous expenses, with per cent of increase: 1905 and 1900.*

	1905	1900	Per cent of increase.
Total	$10,293,634	$10,669,402	80.8
Rent of works	1,147,759	1,000,689	14.7
Taxes	425,826	379,926	12.1
Rent of offices, interest, insurance, advertising, royalties, etc.	10,248,009	7,536,839	115.6
Contract work	1,471,980	1,751,048	[1] 16.0

[1] Decrease.

There is a slight increase in amount paid for rent of works and taxes and a small decrease in amount paid for contract work, but the increase in amount paid for rent of offices, etc., or all other miscellaneous expenses, is large. This is accounted for partly by the fact that at the 1905 census the amount paid for machines leased or held under royalties was ascertained for the first time and the total, $3,343,425, included with these items. It does not appear under what head this expense was reported at prior censuses. A further reason for the increase is the amount spent for advertising.

Table 7 shows for 1905 the number of establishments reporting the different kinds of materials, with the quantity and cost of each kind of material used; the cost of linings and trimmings and findings, and the amount paid for fuel, rent of power and heat, mill supplies, freight, and all other materials.

The number of establishments given in this table is not the number of distinct establishments, but the number reporting the different classes of materials. Consequently some establishments are counted several times. The number using purchased cut soles, counters, taps, heels, etc., was the largest, 908; of these establishments, 419 used these materials to the exclusion of uncut sole leather. The number using sole leather in the side was 678; of these, 162 did not use cut soles, etc., or heads, bellies, and shoulders. The latter class of materials was used by 425 establishments, but in only 26 exclusively.

TABLE 7.—*Materials used, by kind, quantity, and cost, and number of establishments reporting each kind: 1905.*

KIND.	Number of establishments reporting.	Unit of measure.	Quantity.	Cost of materials used.
Materials used, total cost				$197,363,495
Sole leather, in the side	678	Pounds	162,031,578	36,860,980
Sole leather (heads, bellies, shoulders, etc.)	425	Pounds	42,510,899	7,374,070
Split leather, finished	157	Pounds	10,749,526	2,047,504
Rolled splits	89	Pounds	3,890,701	632,429
Calf and kip skins	232	Pounds	4,240,190	2,939,268
Grain and other side leather	309	Square feet	89,010,877	11,805,645
Calfskins (russet, ooze, kangaroo, dongola calf, etc.)	592	Square feet	91,200,110	16,209,143
Patent and enamel leather	692	Square feet	47,720,221	12,053,512
Goatskins	759	Square feet	197,044,004	30,398,403
Sheep leather used for uppers	453	Square feet	36,473,154	2,879,270
All other upper leather	459	Square feet	73,012,064	12,587,285
Material other than leather used for uppers	210			1,950,146
Linings and trimmings, all kinds				10,561,367
Cut soles, counters, taps, heels, etc., purchased	908			24,143,824
Findings, purchased				13,080,280
Fuel, rent of power and heat, mill supplies, freight, and all other materials				11,834,369

Calfskins (russet, ooze, kangaroo, dongola calf, etc.) were used by 592 establishments, of which 313 did not use calf and kip skins. Calf and kip skins were used by 232 establishments, but only 38 used them exclusively. Of 157 establishments using split leather, finished, 86 did not use rolled splits; and of 89 using rolled splits, only 6 did not use split leather, finished.

There are two principal classes of leather used in the manufacture of boots and shoes: Leather from which soles, counters, taps, heels, etc., are made, known as *sole* leather, and leather from which vamps, quarters, etc., are made, known as *upper* leather.

The cost of sole leather in the side, heads, bellies, shoulders, etc., as reported at the census of 1905 was $44,235,050. This amount, added to the $24,143,824 paid for cut soles, counters, taps, heels, etc., purchased, makes the expenditure for sole leather $68,378,874, or 34.6 per cent, of the total cost of materials.

Upper leather cost $91,552,459, or 46.4 per cent, of the total cost of materials, and all upper material, including material other than leather, $93,508,605, or 47.4 per cent; linings, trimmings, and findings, $23,641,647, or 12 per cent; and fuel, rent of power and heat, mill supplies, freight, and all other materials, $11,834,369, or 6 per cent.

A noteworthy item in the table is the large amount paid for cut soles, etc., the increase for 1905 compared with 1900 being 40 per cent as against an increase in the cost of uncut sole leather of 12.9 per cent. Included in the cost of cut soles, however, is the cost of counters, parts of heels, and shank pieces made of leather board or fiber, a composition of leather scraps, rags, paper, etc. Except that some manufacturers use the shank pieces in high grade shoes, claiming their

superiority, this imitation sole leather is found in cheap shoes only. Many manufacturers find it of advantage to purchase cut soles, claiming they can get the grade and weight they want, save one operation, and not have on their hands sole leather they do not need.

Of upper leather, goatskin was the most largely reported in 1905. As a result of the success attending the tanning of such skins by the "chrome" process there has been put on the market a glazed kid that gives the greatest satisfaction to manufacturers. Its cost was 33.2 per cent of the cost of all upper leather. Calfskin, patent and enamel, and grain leather were also used to a considerable extent, but sheep and split leather were used in comparatively small quantities. A large amount is included under "all other upper leather," mainly because of the inability of some manufacturers to segregate the kinds and quantities of leather purchased. "Materials other than leather used for uppers" was separately considered at this census for the first time, and 210 establishments reported an expenditure of $1,956,146 for such materials.

Table 8 shows the number of establishments reporting the different kinds of products and the quantity and value of each kind for 1900 and 1905. The number of establishments is the number reporting the various kinds of products and not the number of distinct establishments. Therefore some establishments are included several times.

TABLE 8.—*Products, by kind, quantity, and value, with number of establishments reporting each kind, and per cent of increase: 1905 and 1900.*

KIND.	NUMBER OF ESTABLISHMENTS REPORTING.		VALUE.		
	1905	1900	1905	1900	Per cent of increase.
Products, total value	.....	.....	$320,107,458	$258,909,580	23.6
Boots, shoes, and slippers:					
Total number of pairs	.....	.....	242,110,035	217,965,419	11.1
Total value	.....	.....	$315,987,387	$255,720,266	23.6
Men's boots and shoes	483	560	.....	.....	.....
Number of pairs	.....	.....	83,434,322	07,742,839	23.2
Value	.....	.....	$142,038,032	$108,105,938	31.4
Boys' and youths' boots and shoes	299	388	.....	.....	.....
Number of pairs	.....	.....	21,717,236	21,030,479	3.3
Value	.....	.....	$24,301,298	$20,739,297	17.2
Women's boots and shoes	464	588	.....	.....	.....
Number of pairs	.....	.....	09,470,876	84,972,653	6.9
Value	.....	.....	$98,262,016	$81,804,303	20.1
Misses' and children's boots and shoes	377	551	.....	.....	.....
Number of pairs	.....	.....	41,416,967	41,843,202	[1] 1.0
Value	.....	.....	$34,056,919	$30,094,611	13.2
Men's, boys', and youths' slippers	108	135	.....	.....	.....
Number of pairs	.....	.....	4,403,097	4,446,965	[1] 1.0
Value	.....	.....	$3,464,561	$2,800,213	23.7
Women's, misses', and children's slippers	236	278	.....	.....	.....
Number of pairs	.....	.....	13,115,194	12,645,876	3.7
Value	.....	.....	$10,532,271	$10,134,393	3.9
All other kinds	157	126	.....	.....	.....
Number of pairs	.....	.....	8,552,343	5,283,405	61.9
Value	.....	.....	$3,331,690	$2,041,511	63.2
All other products	122	161	$3,327,955	$2,175,738	53.0
Amount received for work done for others	89	148	$792,116	$1,073,576	[1] 26.2

[1] Decrease.

The reports in 1905 showed that 24,144,616 more pairs of boots, shoes, and slippers were made in the United States than in 1900, a gain of 11.1 per cent; the value increased $60,267,121, or 23.6 per cent. The greatest increase was in the manufacture of men's boots and shoes, the increase being 15,691,483 pairs, or 23.2 per cent, and $33,932,694 in value, or 31.4 per cent. Boys' and youths' shoes increased but 686,757 pairs, or 3.3 per cent, while the value increased $3,562,001, or 17.2 per cent. The number of pairs of women's shoes manufactured increased 4,498,223, or 6.9 per cent, and the value $16,457,713, or 20.1 per cent. There was a decrease in number of misses' and children's shoes manufactured of 426,235 pairs, or 1 per cent, but an increase in value of $3,962,308, or 13.2 per cent. The manufacture of slippers was increased to the extent of 425,450 pairs, or 2.5 per cent, and $1,062,226 in value, or 8.2 per cent. For "all other kinds," which includes infants' shoes, moccasins, athletic and bathing shoes, etc., an increase of 3,268,938 pairs, or 61.9 per cent, and $1,290,179 in value, or 63.2 per cent, is shown. Instances of decreases and small increases in quantity which appear in the table are attributed to slight changes in classification, which resulted in swelling the total of "all other kinds" in 1905, thus causing the large increase in that item.

"All other products" included overgaiters and leggings, leather clothing, harness, collars, clogs, etc., and the increase since 1900 was $1,152,217, or 53 per cent.

"Amount received for work done for others" decreased $281,460, or 26.2 per cent.

Many establishments manufactured one kind of product exclusively. The following statement gives the number of such establishments in 1905:

Men's boots and shoes	198
Boys' and youths' boots and shoes	29
Women's boots and shoes	171
Misses' and children's boots and shoes	120
Men's, boys', and youths' slippers	11
Women's, misses', and children's slippers	92
All other kinds	68
Custom work	59

Table 9 is a comparative summary of the statistics of the industry for the censuses from 1880 to 1905, by states and geographic divisions. It shows also the relative rank of the various states with regard to capital and value of products, and gives the percentage of increase for each of these two items.

The New England states have led all the other geographic divisions in the production of boots and shoes ever since the inception of the industry in this country. In 1905 this division reported 51.4 per cent of the total capital reported for the boot and shoe industry in the United States, 53.1 per cent of the average number of wage-earners, 58.6 per cent of the total wages, and 56.6 per cent of the total value of products. Thus considerably more than half the country's activity in this industry was confined to New England.

TABLE 9.—COMPARATIVE SUMMARY, BY STATES ARRANGED BY GEOGRAPHIC DIVISIONS: 1880 TO 1905.

STATE.	Census.	Number of establishments.	CAPITAL. Rank.	CAPITAL. Total.	CAPITAL. Per cent of increase.	WAGE-EARNERS AND WAGES. Average number.	WAGE-EARNERS AND WAGES. Wages.	Miscellaneous expenses.	Cost of materials used.	PRODUCTS. Rank.	PRODUCTS. Value.	PRODUCTS. Per cent of increase.
United States	1905	1,316	.....	$122,526,093	22.7	149,024	$60,059,680	$19,293,634	$197,363,495	.....	$320,107,458	23.6
	1900	1,599	.....	99,819,233	4.8	141,830	58,449,883	10,609,402	168,632,654	.....	258,969,580	17.4
	1890	2,082	.....	95,282,311	121.6	133,690	60,667,145	9,217,519	118,785,831	.....	220,649,358	32.9
	1880	1,959	.....	42,994,028	.....	111,152	43,001,438	.....	102,442,442	.....	166,050,354	.....
New England states	1905	614	.....	63,015,461	20.8	79,537	40,462,967	9,748,391	113,523,764	.....	181,023,946	16.5
	1900	781	.....	52,174,549	[1]4.1	78,167	35,810,931	5,853,451	102,416,763	.....	155,367,997	10.2
	1890	1,204	.....	54,389,199	118.6	82,901	39,140,122	6,336,017	77,685,628	.....	140,932,656	26.6
	1880	1,125	.....	24,882,333	.....	71,517	28,574,114	.....	70,001,272	.....	111,364,440	.....
Maine	1905	50	7	4,450,039	[1]13.5	5,775	2,622,519	528,101	8,301,861	7	12,351,203	0.5
	1900	48	6	5,148,278	7.1	6,432	2,664,672	402,027	8,366,747	6	12,295,847	19.0
	1890	53	4	4,804,946	251.0	6,382	2,868,500	397,394	5,800,682	5	10,335,342	77.5
	1880	52	6	1,369,000	.....	3,919	1,335,168	.....	3,880,446	5	5,823,541	.....
New Hampshire	1905	50	5	7,931,070	[1]2.4	10,415	4,377,351	702,798	15,520,993	5	22,425,700	[1]4.2
	1900	67	3	8,123,481	105.3	12,007	4,971,954	453,706	16,509,725	3	23,405,558	95.3
	1890	64	5	3,956,774	133.3	7,012	3,337,167	256,643	6,749,322	3	11,986,003	65.8
	1880	59	5	1,696,200	.....	4,434	1,702,832	.....	4,751,908	4	7,230,804	.....
Vermont	1905	3	17	518,383	8.4	225	98,417	45,482	411,127	20	675,772	[1]14.8
	1900	6	19	478,184	37.1	355	128,771	25,970	561,786	18	792,707	49.7
	1890	7	18	348,827	296.4	227	94,766	32,450	346,557	19	529,486	167.1
	1880	6	18	88,000	.....	101	41,050	.....	126,688	19	198,200	.....
Massachusetts	1905	502	1	49,529,728	31.8	62,633	33,160,667	8,340,835	88,493,009	1	144,201,426	23.2
	1900	640	1	37,577,630	[1]15.7	58,645	27,745,820	4,826,896	75,751,964	1	117,115,243	0.6
	1890	1,057	1	44,567,702	111.2	67,374	32,379,899	5,508,233	63,928,182	1	116,387,900	21.4
	1880	982	1	21,098,133	.....	61,651	24,875,106	.....	59,906,773	1	95,900,510	.....
Rhode Island [2]	1900	5	25	57,358	106.0	9	1,888	27,480	179,980	23	241,278	51.0
	1890	3	23	27,850	.....	11	4,084	27,631	110,745	22	158,800	.....
Connecticut	1905	9	16	585,341	[1]25.9	489	204,013	131,175	787,774	16	1,279,755	[1]15.7
	1900	15	14	789,618	15.6	719	297,826	117,372	986,555	14	1,517,364	[1]1.2
	1890	20	15	683,100	8.3	995	455,706	53,666	750,140	14	1,535,125	[1]30.6
	1880	26	11	631,000	.....	1,412	529,058	.....	1,335,397	11	2,211,385	.....
Middle Atlantic states	1905	372	.....	24,773,414	10.1	30,277	12,802,835	3,880,003	32,871,600	.....	56,733,609	20.9
	1900	472	.....	22,496,583	7.0	30,257	11,202,119	2,254,049	28,709,063	.....	46,928,760	9.6
	1890	552	.....	21,020,753	84.2	29,321	12,390,279	1,284,249	21,536,179	.....	42,805,224	20.7
	1880	540	.....	11,410,222	.....	26,373	9,596,080	.....	20,982,074	.....	35,471,510	.....
New York	1905	188	2	14,106,058	17.7	16,556	7,582,896	2,256,546	19,792,932	2	34,137,040	33.4
	1900	223	2	11,983,239	0.3	15,796	6,138,653	1,251,902	15,611,386	2	25,585,631	8.1
	1890	257	2	11,950,891	91.9	15,361	6,629,641	812,099	12,383,851	2	23,661,204	24.7
	1880	272	2	6,227,537	.....	13,414	4,902,132	.....	11,502,251	2	18,979,259	.....
New Jersey	1905	51	10	3,038,877	[1]3.6	4,192	1,753,624	541,174	3,841,929	9	6,977,300	([3])
	1900	84	9	3,153,255	12.2	4,421	1,723,159	391,043	4,210,472	9	6,978,043	[1]3.8
	1890	109	9	2,811,098	191.5	5,162	2,206,652	129,513	3,417,180	8	7,255,409	54.7
	1880	89	9	964,245	.....	3,318	1,278,269	.....	2,837,861	6	4,689,286	.....
Pennsylvania	1905	119	6	7,197,959	4.9	8,878	3,230,443	1,014,272	8,701,463	6	14,607,867	10.4
	1900	146	5	6,860,480	27.2	9,144	3,111,113	572,624	8,210,846	5	13,235,933	27.8
	1890	158	3	5,394,799	48.7	7,616	3,094,582	311,684	5,012,096	4	10,354,850	8.0
	1880	145	3	3,627,840	.....	7,845	2,820,976	.....	5,425,844	3	9,590,002	.....
Maryland	1905	14	18	430,520	[1]13.8	651	235,572	68,101	535,276	17	1,011,303	[1]10.4
	1900	19	18	499,609	[1]42.2	806	289,194	38,480	676,359	16	1,129,153	[1]26.4
	1890	28	14	863,905	46.3	1,182	459,404	30,953	723,052	15	1,533,761	[1]30.7
	1880	34	12	590,600	.....	1,706	595,603	.....	1,216,118	10	2,212,903	.....
Southern states	1905	48	.....	2,495,327	90.0	3,303	897,280	402,449	4,712,607	.....	6,663,800	110.6
	1900	32	.....	1,313,293	8.6	2,047	482,049	129,414	2,366,981	.....	3,163,577	7.3
	1890	42	.....	1,209,532	239.1	1,451	587,433	133,482	1,637,858	.....	2,947,015	153.4
	1880	36	.....	356,700	.....	980	288,836	.....	687,758	.....	1,163,493	.....
Virginia	1905	6	14	975,482	52.1	1,738	369,138	72,604	1,915,038	13	2,627,244	80.9
	1900	5	15	641,166	27.8	1,153	206,119	35,122	1,150,969	15	1,452,480	13.6
	1890	7	16	501,961	725.1	252	115,414	83,682	874,564	16	1,279,069	582.1
	1880	5	20	60,800	.....	221	30,381	.....	116,893	21	187,520	.....
North Carolina	1905	7	27	86,220	128.7	89	24,679	9,354	116,521	27	185,635	152.6
	1900	3	27	37,700	[1]68.1	40	14,107	1,058	53,297	26	73,493	[1]52.9
	1890	4	21	118,000	247.1	95	26,720	3,473	76,670	23	155,900	44.9
	1880	5	23	34,000	.....	108	23,900	.....	65,000	23	107,600	.....
Georgia	1905	7	26	95,361	5.1	239	66,515	10,806	264,710	23	372,983	7.7
	1900	5	23	90,700	451.0	250	66,000	7,859	255,995	22	346,259	1,707.4
	1890	3	24	16,461	[1]60.6	22	4,104	1,034	7,917	24	18,542	[1]79.3
	1880	4	22	41,800	.....	38	11,445	.....	64,241	24	89,725	.....
Kentucky	1905	9	15	756,468	197.4	659	200,121	218,008	1,360,487	14	1,920,939	206.2
	1900	7	21	254,382	[1]9.2	207	50,819	64,313	456,018	21	630,358	19.8
	1890	11	20	280,166	42.1	296	112,295	33,640	266,210	20	526,387	[1]9.0
	1880	15	17	197,100	.....	472	159,587	.....	339,433	16	578,732	.....
Tennessee [4]	1905	4	23	173,766	.....	225	78,319	53,980	639,664	19	836,955	.....
	1880	3	25	6,000	.....	26	9,905	.....	17,191	25	35,826	.....
Louisiana	1905	10	20	351,048	21.6	370	136,786	20,464	377,716	21	620,014	[1]6.2
	1900	12	20	280,345	[1]1.3	397	145,004	21,062	442,062	20	660,087	[1]31.7
	1890	17	19	203,244	1,625.0	786	328,900	11,653	412,497	17	968,017	489.9
	1880	4	24	17,000	.....	115	53,618	.....	85,000	22	164,000	.....
Texas [5]	1905	5	28	50,082	.....	43	21,722	7,243	38,561	28	91,030	.....

[1] Decrease.
[2] Included in "all other states" in 1905. Not reported in 1880.
[3] Less than one-tenth of 1 per cent.
[4] Included in "all other states" in 1890 and 1900.
[5] Included in "all other states" in 1890. Not reported in 1880 and 1900.

TABLE 9.—COMPARATIVE SUMMARY, BY STATES, ARRANGED BY GEOGRAPHIC DIVISIONS: 1880 TO 1905.—Cont'd.

STATE.	Census.	Number of establishments.	CAPITAL. Rank.	CAPITAL. Total.	CAPITAL. Per cent of increase.	WAGE-EARNERS AND WAGES. Average number.	WAGE-EARNERS AND WAGES. Wages.	Miscellaneous expenses.	Cost of materials used.	PRODUCTS. Rank.	PRODUCTS. Value.	PRODUCTS. Per cent of increase.
North Central states	1905	245	.....	$30,707,691	39.3	35,753	$14,377,281	$5,153,922	$44,994,172	.....	$73,451,473	45.2
	1900	270	.....	22,048,211	32.9	29,974	10,289,065	2,304,536	33,300,952	.....	50,596,003	69.1
	1890	212	.....	16,592,691	221.0	17,360	7,281,303	1,306,036	16,076,758	.....	29,912,448	114.6
	1880	160	.....	5,169,040	.....	9,388	3,366,085	.....	8,475,479	.....	13,936,600	.....
Ohio	1905	62	3	10,230,015	35.5	13,890	5,222,723	2,277,107	14,557,515	3	25,140,220	40.3
	1900	81	4	7,549,142	137.7	12,718	3,989,744	637,537	11,074,008	4	17,920,854	111.1
	1890	63	8	3,176,318	175.2	5,743	2,303,393	257,369	4,480,206	7	8,489,728	103.7
	1880	51	7	1,154,200	.....	3,204	1,089,116	.....	2,498,178	7	4,167,476	.....
Indiana	1905	4	21	306,309	[1]43.5	226	70,610	40,135	299,612	22	459,700	[1]46.8
	1900	6	16	542,224	452.9	610	151,455	23,106	631,856	17	864,090	380.2
	1890	6	22	98,065	[1]56.7	173	57,079	3,708	90,157	21	179,936	[1]62.3
	1880	12	16	226,500	.....	341	111,465	.....	296,448	17	476,845	.....
Illinois	1905	44	8	3,656,671	8.3	3,947	1,865,319	580,076	5,656,109	8	9,026,238	[1]3.7
	1900	54	8	3,375,482	[1]10.7	4,461	1,959,959	347,774	6,334,625	8	9,375,842	7.1
	1890	56	6	3,781,476	118.7	3,992	1,806,998	388,001	4,931,986	6	8,756,824	175.1
	1880	33	4	1,729,200	.....	2,060	755,769	.....	1,834,999	9	3,183,026	.....
Michigan	1905	23	12	1,702,398	49.9	1,723	681,362	370,011	2,016,058	12	3,531,028	84.4
	1900	13	13	1,135,961	16.8	1,117	386,074	200,504	1,163,863	12	1,915,179	[1]7.3
	1890	12	13	972,534	183.1	1,309	495,202	89,088	1,209,387	12	2,065,531	69.8
	1880	10	15	343,500	.....	783	340,172	.....	736,184	14	1,216,255	.....
Wisconsin	1905	53	9	3,577,649	44.6	3,226	1,247,765	474,472	4,220,098	10	6,513,563	35.9
	1900	40	10	2,473,626	[1]5.6	2,507	821,403	279,913	3,170,921	10	4,791,084	61.2
	1890	32	10	2,621,606	377.7	2,036	774,163	146,345	1,466,557	11	2,972,233	71.1
	1880	20	13	548,800	.....	1,177	381,732	.....	1,147,140	13	1,736,773	.....
Minnesota	1905	17	11	2,432,365	8.7	1,714	718,600	382,056	2,631,689	11	4,169,732	15.3
	1900	16	11	2,237,540	24.7	2,025	719,231	151,042	2,378,156	11	3,615,801	77.9
	1890	8	11	1,794,711	287.6	1,099	524,978	99,962	1,090,722	13	2,032,814	118.5
	1880	5	14	463,000	.....	402	207,218	.....	571,644	15	930,192	.....
Iowa	1905	5	19	419,280	[1]17.3	478	185,603	50,135	521,590	18	853,990	8.6
	1900	7	17	506,757	16.5	506	191,783	18,718	507,492	19	786,141	36.9
	1890	6	17	435,066	612.8	292	110,100	16,309	286,716	18	574,378	136.3
	1880	3	19	61,040	.....	139	32,950	.....	166,090	18	243,040	.....
Missouri	1905	34	4	8,242,304	97.0	10,428	4,335,005	967,157	14,930,005	4	23,493,552	108.8
	1900	50	7	4,188,979	12.7	5,915	2,052,114	643,942	7,903,026	7	11,253,202	132.5
	1890	29	7	3,712,915	477.6	2,716	1,119,390	305,194	2,521,027	9	4,841,004	144.1
	1880	26	10	642,800	.....	1,282	447,663	.....	1,224,796	12	1,982,993	.....
Nebraska [2]	1905	3	24	140,700	223.4	121	50,234	12,773	161,496	24	263,450	259.9
	1900	3	26	43,500	.....	55	17,302	2,000	47,005	27	73,210	.....
Western states	1905	33	.....	1,486,580	2.3	940	495,345	102,450	1,220,389	.....	2,154,218	[1]4.0
	1900	36	.....	1,453,084	[1]16.5	1,209	540,946	84,327	1,356,829	.....	2,242,920	[1]33.9
	1890	56	.....	1,740,175	64.0	2,280	1,109,419	141,266	1,524,272	.....	3,395,043	[1]11.6
	1880	89	.....	1,061,233	.....	2,685	1,120,158	.....	2,130,647	.....	3,839,220	.....
Utah [3]	1905	4	25	130,863	5.3	109	46,601	2,304	111,883	26	196,211	[1]13.2
	1900	3	22	124,267	.....	140	52,558	5,017	156,046	24	225,986	19.1
	1880	8	21	60,050	.....	186	55,220	.....	108,160	20	189,669	.....
Washington [2]	1905	5	22	182,511	156.8	106	46,978	28,396	121,403	25	225,738	35.6
	1900	3	24	71,071	.....	75	31,461	14,937	102,599	25	166,423	.....
Oregon [4]	1905	3	29	33,756	.....	25	17,262	6,363	25,934	29	54,601	.....
California	1905	21	13	1,139,450	[1]9.4	700	384,504	65,306	961,169	15	1,677,668	[1]9.3
	1900	30	12	1,257,746	[1]27.7	994	456,927	64,373	1,008,184	13	1,850,511	[1]45.5
	1890	56	12	1,740,175	73.8	2,280	1,109,419	141,266	1,524,272	10	3,395,043	[1]7.0
	1880	81	8	1,001,183	.....	2,499	1,064,938	.....	2,022,487	8	3,649,551	.....
All other states	[5] 1905	4	.....	47,620	[1]85.7	54	23,972	6,320	40,873	.....	80,412	[1]88.0
	[6] 1900	8	.....	333,513	1.1	176	55,773	43,625	482,066	.....	670,323	2.2
	[7] 1890	16	.....	329,961	188.2	377	158,589	16,469	325,136	.....	656,072	138.5
	[8] 1880	9	.....	114,500	.....	209	55,265	.....	105,212	.....	275,091	.....

[1] Decrease.
[2] Included in "all other states" in 1890. Not reported in 1880.
[3] Included in "all other states" in 1890.
[4] Included in "all other states" in 1880, 1890, and 1900.
[5] Includes establishments distributed as follows: Colorado, 1; Delaware, 1; Indian Territory, 1; Rhode Island, 1.
[6] Includes establishments distributed as follows: Alabama, 1; Colorado, 1; Delaware, 1; Kansas, 1; Oregon, 2; Tennessee, 2.
[7] Includes establishments distributed as follows: Alabama, 1; Delaware, 1; Kansas, 2; Nebraska, 1; Oregon, 1; South Carolina, 2; Tennessee, 2; Texas, 3; Utah, 2; Washington, 1.
[8] Includes establishments distributed as follows: Colorado, 1; Idaho, 1; Kansas, 3; Mississippi, 2; Oregon, 1; West Virginia, 1.

The North Central and Middle Atlantic states contained almost the entire remainder of the industry. Of the totals for the country, the North Central states reported 25.1 per cent of the capital, 23.9 per cent of the average number of wage-earners, 20.8 per cent of the wages, and 22.9 per cent of the value of products; the Middle Atlantic states reported 20.2 per cent of the capital, 20.2 per cent of the average number of wage-earners, 18.5 per cent of the wages, and 17.7 per cent of the value of products.

Thus of the totals for the country in 1905 these three groups reported 96.7 per cent of the capital, 97.2 per cent of the average number of wage-earners, 97.9 per cent of the wages, and 97.2 per cent of the value of products, leaving a very small part of the manufacture of boots and shoes for the Southern and Western states.

Although New England retained a very substantial lead in the industry in 1905, the portion of the total capital and value of products reported from this division being more than twice as great as that from either the North Central or Middle Atlantic states, an examination of the table shows that at every census since 1880 New England's proportionate share of the industry has decreased. This decline has been very small, however, and for the entire period of twenty-five years the decrease has been only from 57.9 per cent of the total capital and 67.1 per cent of the total value of products reported for the whole country in 1880 to 51.4 and 56.6 per cent, respectively, in 1905. The Middle Atlantic states have likewise shown a decline in this respect, except that during the period from 1890 to 1900 there was a slight increase in the proportion of capital. This falling off in the proportion of the principal items of the industry reported from the eastern part of the country is due almost entirely to the enormous gains made in the North Central division. The part of the entire capital and value of products of the industry that has been reported from this division has increased at every census since 1880, rising from 12 per cent of the total capital and 8.4 per cent of the total value of products in 1880 to 25.1 per cent and 22.9 per cent, respectively, in 1905, and placing this division second only to New England at the census of 1905 in regard to the proportion that the capital and value of products reported formed of the corresponding totals for the United States.

In 1905, as compared with 1900, in New England the capital increased $10,840,912, or 20.8 per cent, and the value of products, $25,655,949, or 16.5 per cent. In the Middle Atlantic states for the same period the increase in capital was $2,276,831, or 10.1 per cent, and in value of products, $9,804,849, or 20.9 per cent. In the North Central states increases of $8,659,480, or 39.3 per cent, for capital and $22,855,470, or 45.2 per cent, for value of products were reported.

The increases shown for the North Central states approach, but by no means equal, those of New England in absolute amounts. During the previous decade, 1890 to 1900, there seems to have been a considerable decline in the rate of growth of the industry all over the country. This was especially noticeable in New England and the Middle Atlantic states, but was not very serious in the North Central states. As a consequence, in respect to absolute gains in capital and value of products, New England was exceeded in 1900 by the North Central states, but recovered its lead in this respect in 1905.

Of the states shown separately at the census of 1880, California, Connecticut, and Maryland have reported a considerable decrease in the value of products at every subsequent census. Indiana shows a large decrease from 1900 and the total value of products reported in 1905 was less than in 1880. For one or more censuses after 1880, 5 states reported an increase in production but since have decreased in value of products. These are Illinois, Louisiana, New Jersey, New Hampshire, and Vermont. Of the states which are shown separately for 1905, Nebraska, Oregon, Texas, and Washington either did not report production in 1880 or had so few factories as to be included "in all other states." Minnesota, New York, Pennsylvania, Virginia, Missouri, and Ohio are the only states to report increases in both capital and value of products at every census since 1880.

Between 1900 and 1905 there was considerable variation in the growth of the industry in the several states. Massachusetts retained first rank, which position it has occupied since the statistics of the industry were first taken. The proportions that the totals of the principal items for this state formed of the corresponding totals for the United States are shown in the following statement:

	PER CENT OF TOTAL.	
	1905	1900
Capital	40.4	37.6
Number of wage-earners	41.8	41.3
Wages	48.0	47.5
Value of products	45.1	45.2

All of the proportions except that for value of products show a slight increase in 1905 as compared with 1900. Thus, despite great gains made in many of the other states, especially those of the North Central states, Massachusetts retained its leadership in the industry. This is in strong contrast to the New England states as a whole, where, as before stated, the proportions of the principal items to the corresponding totals for the United States were considerably less in 1905 than in 1900, and shows that New England owes the maintenance of its prestige in the industry to the large gains made in Massachusetts.

The increase in capital reported for Massachusetts in 1905 as compared with 1900 was $11,952,098, or 31.8 per cent, and in value of products, $27,176,183, or 23.2 per cent. These are by far the largest absolute increases shown for capital and value of products by any state, and, in fact, are larger than the entire amount of these items reported by any state in the country except New York.

All of the New England states, except Massachusetts, reported a decrease in either capital or value of products in 1905. In 1900 Massachusetts reported a large decrease in capital and a very small increase comparatively in value of products, while all the other New England states, with the exception of Connecticut, reported considerable increases in both items.

Next to Massachusetts the most prominent state was New York, but the capital reported was less than one-third and the value of products less than one-fourth

the amounts of these items reported for Massachusetts in 1905.

The 10 states next in rank to Massachusetts and New York in value of products in 1905 are Ohio, Missouri, New Hampshire, Pennsylvania, Maine, Illinois, New Jersey, Wisconsin, Minnesota, and Michigan in the order named. In capital the states rank the same as in value of products, except that Wisconsin leads New Jersey. Massachusetts, New York, Illinois, and Minnesota occupied the same relative positions in reference to capital and value of products in 1905 as in 1900. New Hampshire, Pennsylvania, and Maine declined and Missouri and Ohio advanced in rank in both items during the five-year period. Michigan advanced in capital only.

The advance in rank of Ohio and Missouri is especially notable, these two states being fourth and seventh, respectively, in 1900 and third and fourth in 1905. The increase in Missouri at the census of 1905 as compared with 1900 was $4,058,325, or 97 per cent, in capital and $12,240,350, or 108.8 per cent, in value of products, the largest increases shown for these items by any state except Massachusetts. The gain in Ohio was $2,680,873, or 35.5 per cent, in capital and $7,219,366, or 40.3 per cent, in value of products. The state was third in rank in absolute increase of capital and fourth in increase of value of products, New York showing a larger increase in the latter item.

The large gains in Ohio and Missouri account for the great growth of the industry in the North Central states. The states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, and Pennsylvania, representing the East, reported products to the value of $236,746,162; Maryland, Virginia, North Carolina, Georgia, Kentucky, Tennessee, Louisiana, and Texas, representing the South, reported products to the value of $7,675,193; and Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, Nebraska, Utah, Washington, Oregon, and California, representing the West, reported products to the value of $75,605,691. Thus 8 extreme Eastern states produced $153,465,278 more than all the other states combined and 74 per cent of the entire product of the United States.

The number of establishments in the boot and shoe industry decreased in all the geographic divisions except the Southen states at the census of 1905 as compared with 1900. In the Western states this decrease has continued since 1880, and in the New England and Middle states since 1890. The decreases from 1900 to 1905 are very marked in most of the leading states in the industry, and the increases are principally found in states where the industry was comparatively small. Part of the large decrease in the number of establishments is due to the fact that the statistics include data for shops doing work for others, the number of such shops being much larger in 1880 and in 1890 than at later censuses.

Table 10 shows, by states, the amount of capital invested in machinery, tools, and implements for 1890, 1900, and 1905, and the percentages of increase, and gives the number of machines leased or held under royalties, and the amounts paid for the use of the same as reported at the census of 1905.

TABLE 10.—*Capital invested in machinery, tools, and implements, by states, with per cent of increase for each census period, 1890 to 1905, and number of machines leased or held under royalties and amount paid for use of same as reported in 1905.*

STATE.	Census.	CAPITAL INVESTED IN MACHINERY, TOOLS, AND IMPLEMENTS.		MACHINES LEASED OR HELD UNDER ROYALTIES.	
		Amount.	Per cent of increase.	Number.	Amount of rent.
United States	1905	$18,964,510	12.8	18,995	$3,343,425
	1900	16,807,305	21.1		
	1890	13,873,364			
California	1905	264,643	[1]23.0	204	10,920
	1900	343,633	6.0		
	1890	324,252			
Connecticut	1905	80,480	[1]31.3	115	7,328
	1900	117,172	[1]21.4		
	1890	148,981			
Georgia	1905	27,528	17.6	10	293
	1900	23,400	500.0		
	1890	3,900			
Illinois	1905	732,884	[1]6.2	486	40,670
	1900	781,083	22.8		
	1890	635,816			
Indiana	1905	30,573	[1]68.5	60	1,769
	1900	97,157	307.5		
	1890	23,845			
Iowa	1905	71,516	[1]17.3	88	10,027
	1900	86,471	21.8		
	1890	71,000			
Kentucky	1905	124,158	179.3	133	15,446
	1900	44,456	[1]36.5		
	1890	70,000			
Louisiana	1905	94,175	29.1	72	11,582
	1900	72,933	19.3		
	1890	61,125			
Maine	1905	523,396	[1]21.1	947	180,950
	1900	663,326	12.2		
	1890	591,304			
Maryland	1905	130,191	[1]22.2	162	12,269
	1900	167,326	[1]6.2		
	1890	178,433			
Massachusetts	1905	6,811,412	18.5	7,354	1,670,827
	1900	5,750,238	1.7		
	1890	5,656,038			
Michigan	1905	267,720	77.5	264	32,537
	1900	150,800	2.6		
	1890	146,997			
Minnesota	1905	409,362	21.4	310	31,520
	1900	337,236	143.5		
	1890	138,512			
Missouri	1905	1,220,824	51.7	1,182	233,419
	1900	804,568	108.4		
	1890	385,982			
Nebraska[2]	1905	46,100	429.9	28	5,777
	1900	8,700			
New Hampshire	1905	816,775	[1]23.2	1,562	191,542
	1900	1,063,569	58.1		
	1890	672,537			
New Jersey	1905	684,059	[1]7.1	586	94,165
	1900	736,375	38.2		
	1890	532,757			
New York	1905	2,445,143	3.5	1,775	334,146
	1900	2,362,396	16.6		
	1890	2,026,690			

[1] Decrease.

[2] Included in "all other states" in 1890.

TABLE 10.—*Capital invested in machinery, tools, and implements, by states, with per cent of increase for each census period, 1890 to 1905, and number of machines leased or held under royalties and amount paid for use of same as reported in 1905*—Continued.

STATE.	Census.	CAPITAL INVESTED IN MACHINERY, TOOLS, AND IMPLEMENTS.		MACHINES LEASED OR HELD UNDER ROYALTIES.	
		Amount.	Per cent of increase.	Number.	Amount of rent.
North Carolina	1905	$12,000	61.1	12	$3,573
	1900	7,450	[1] 35.2	.....	.....
	1890	11,500	.....	.....	.....
Ohio	1905	1,891,204	60.2	1,603	243,342
	1900	1,180,322	113.9	.....	.....
	1890	551,756	.....	.....	.....
Oregon [2]	1905	10,080	.....	10	446
Pennsylvania	1905	1,340,855	2.4	1,065	125,715
	1900	1,309,513	15.0	.....	.....
	1890	1,120,464	.....	.....	.....
Rhode Island [3]	1900	6,200	[1] 7.5	.....	.....
	1890	6,700	.....	.....	.....
Tennessee [2]	1905	47,567	.....	46	5,544
Texas [4]	1905	12,710	.....	15	2,065
Utah [5]	1905	24,500	12.7	36	876
	1900	21,743	.....	.....	.....
Vermont	1905	46,071	[1] 39.5	46	2,801
	1900	77,596	156.9	.....	.....
	1890	30,209	.....	.....	.....
Virginia	1905	154,104	227.6	181	16,597
	1900	47,034	[1] 40.6	.....	.....
	1890	79,238	.....	.....	.....
Washington [5]	1905	12,600	[1] 14.4	28	1,177
	1900	14,715	.....	.....	.....
Wisconsin	1905	611,810	32.4	581	54,807
	1900	462,255	48.6	.....	.....
	1890	311,059	.....	.....	.....
All other states	[6] 1905	19,170	[1] 72.5	34	395
	[7] 1900	69,638	[1] 18.3	.....	.....
	[8] 1890	85,209	.....	.....	.....

[1] Decrease.
[2] Included in "all other states" in 1890 and 1900.
[3] Included in "all other states" in 1905.
[4] Included in "all other states" in 1890. Not reported in 1900.
[5] Included in "all other states" in 1890.
[6] Includes states as follows: Colorado, Delaware, Indian Territory, and Rhode Island.
[7] Includes states as follows: Alabama, Colorado, Delaware, Kansas, Oregon, and Tennessee.
[8] Includes states as follows: Alabama, Delaware, Kansas, Nebraska, Oregon, South Carolina, Tennessee, Texas, Utah, and Washington.

The amount of capital invested in machinery, tools, and implements increased $2,933,941, or 21.1 per cent, from 1890 to 1900, and $2,157,205, or 12.8 per cent, from 1900 to 1905. The percentage of increase for the census period from 1900 to 1905 was relatively greater than that for the ten-year period between 1890 and 1900, but it was very much less than the percentage for total capital shown in Table 1. The value of the machines leased or held under royalties should be added to the amount of capital reported as invested in machinery to give the total machine equipment, but data concerning the value of these machines are not available. In 1905, for the first time, a census was taken of machines leased or held under royalties and the amount paid for their use. The number of establishments reporting such machines was 937, the number of machines reported was 18,995, and the amount paid for leases was $3,343,425. The sum paid for the leased machines is not a fair basis for an estimate as to the valuation of such machines, since the amount of the leases or royalties depends on the kind and amount of work done and not on the value of the machines. The result, however, with due allowance for machines the usefulness of which makes their income-producing power out of proportion to their intrinsic value, and for the fact that the figures given are less than they should be because some establishments failed to make returns, proves that the amount of capital invested in leased machines is very large.

Massachusetts reported the largest amount of capital invested in machinery in 1905, namely, $6,811,412, or 35.9 per cent of the total for the country. For 1905 as compared with 1900, 11 states show decreases in the amount of capital invested in owned machinery, the greatest amount of decrease being $246,794 for New Hampshire, and the greatest percentage of decrease being 68.5 for Indiana.

The total number of wage-earners employed in this industry in the United States increased 8,140, or 6.1 per cent, from 1890 to 1900, and 8,094, or 5.7 per cent, from 1900 to 1905. The number of men employed decreased 991, or 1.1 per cent, from 1890 to 1900, and increased 4,842, or 5.4 per cent, from 1900 to 1905. For the same periods the number of women increased 7,045, or 17.7 per cent, and 2,641, or 5.6 per cent, respectively, while the number of children increased 2,086, or 85.7 per cent, and 611, or 13.5 per cent, respectively.

Table 11 shows the average number of wage-earners—men, women, and children—employed in the boot and shoe industry and the proportion of each class to the total in the United States and in the several states for the censuses from 1890 to 1905.

TABLE 11.—*Average number of wage-earners and proportion of men, women, and children, by states: 1890 to 1905.*

STATE.	Census.	AVERAGE NUMBER OF WAGE-EARNERS.				PER CENT OF TOTAL.		
		Total.	Men 16 years and over.	Women 16 years and over.	Children under 16 years.	Men.	Women.	Children.
United States.	1905	149,924	95,257	49,535	5,132	63.6	33.0	3.4
	1900	141,830	90,415	46,894	4,521	63.7	33.1	3.2
	1890	133,690	91,406	39,849	2,435	68.4	29.8	1.8
California	1905	700	516	170	14	73.7	24.3	2.0
	1900	994	720	241	33	72.4	24.3	3.3
	1890	2,280	1,843	389	48	80.8	17.1	2.1
Connecticut	1905	480	282	187	20	57.7	38.2	4.1
	1900	710	456	254	9	63.4	35.8	1.3
	1890	995	698	285	12	70.2	28.6	1.2
Georgia	1905	230	184	36	20	77.0	14.6	8.4
	1900	250	190	40	20	76.0	16.0	8.0
	1890	22	18	3	1	81.8	13.6	4.6
Illinois	1905	3,947	2,451	1,369	127	62.1	34.7	3.2
	1900	4,461	2,684	1,544	233	60.2	34.6	5.2
	1890	3,992	2,678	1,282	32	67.1	32.1	0.8
Indiana	1905	226	146	71	9	64.6	31.4	4.0
	1900	610	434	170	6	71.1	27.9	1.0
	1890	173	124	46	3	71.7	26.6	1.7
Iowa	1905	478	250	200	28	52.3	41.8	5.9
	1900	566	272	227	67	48.1	40.1	11.8
	1890	292	176	116	.....	60.3	39.7	.....

TABLE 11.—*Average number of wage-earners and proportion of men, women, and children, by states: 1890 to 1905*—Continued.

STATE.	Census.	AVERAGE NUMBER OF WAGE-EARNERS.				PER CENT OF TOTAL.		
		Total.	Men 16 years and over.	Women 16 years and over.	Children under 16 years.	Men.	Women.	Children.
Kentucky	1905	659	357	251	51	54.2	38.1	7.7
	1900	207	94	69	44	45.4	33.3	21.3
	1890	296	178	108	10	60.1	36.5	3.4
Louisiana	1905	370	307	62	1	83.0	16.7	0.3
	1900	397	326	37	34	82.1	9.3	8.6
	1890	786	727	9	50	92.5	1.1	6.4
Maine	1905	5,775	3,942	1,791	42	68.3	31.0	0.7
	1900	6,432	4,346	2,064	22	67.6	32.1	0.3
	1890	6,382	4,047	2,301	34	63.4	36.1	0.5
Maryland	1905	651	406	226	19	62.4	34.7	2.9
	1900	896	597	285	14	66.6	31.8	1.6
	1890	1,182	792	380	10	67.0	32.2	0.8
Massachusetts	1905	62,633	41,386	20,139	1,108	66.1	32.1	1.8
	1900	58,645	39,022	18,636	987	66.5	31.8	1.7
	1890	67,374	47,817	18,577	980	71.0	27.6	1.4
Michigan	1905	1,723	974	573	176	56.5	33.3	10.2
	1900	1,117	691	417	9	61.9	37.3	0.8
	1890	1,309	847	454	8	64.7	34.7	0.6
Minnesota	1905	1,714	1,104	599	11	64.4	35.0	0.6
	1900	2,025	1,438	566	21	71.0	28.0	1.0
	1890	1,099	715	383	1	65.1	34.8	0.1
Missouri	1905	10,428	5,982	3,485	961	57.4	33.4	9.2
	1900	5,915	3,256	2,207	452	55.1	37.3	7.6
	1890	2,716	1,569	1,024	123	57.8	37.7	4.5
Nebraska [1]	1905	121	80	41	.....	66.1	33.9	.....
	1900	55	18	37	.....	32.7	67.3	.....
New Hampshire	1905	10,415	6,921	3,379	115	66.5	32.4	1.1
	1900	12,007	7,755	3,866	386	64.6	32.2	3.2
	1890	7,912	5,418	2,370	124	68.5	29.9	1.6
New Jersey	1905	4,192	2,580	1,388	224	61.6	33.1	5.3
	1900	4,421	2,740	1,497	184	62.0	33.8	4.2
	1890	5,162	3,294	1,720	148	63.8	33.3	2.9
New York	1905	16,556	10,543	5,678	335	63.7	34.3	2.0
	1900	15,796	9,754	5,483	559	61.8	34.7	3.5
	1890	15,361	10,150	4,839	372	66.1	31.5	2.4
North Carolina	1905	89	60	26	3	67.4	29.2	3.4
	1900	40	40	.....	.....	100.0	.....	.....
	1890	95	79	8	8	83.2	8.4	8.4
Ohio	1905	13,890	7,747	5,315	828	55.8	38.3	5.9
	1900	12,718	7,289	4,781	648	57.3	37.6	5.1
	1890	5,743	3,523	2,149	71	61.4	37.4	1.2
Oregon [2]	1905	25	24	1	.....	96.0	4.0	.....
Pennsylvania	1905	8,878	5,247	2,978	653	59.1	33.5	7.4
	1900	9,144	5,291	3,239	614	57.9	35.4	6.7
	1890	7,616	4,842	2,441	333	63.6	32.0	4.4
Rhode Island [3]	1900	9	4	4	1	44.5	44.5	11.0
	1890	11	7	3	1	63.6	27.3	9.1
Tennessee [2]	1905	225	136	60	29	60.4	26.7	12.9
Texas [4]	1905	43	38	3	2	88.4	7.0	4.6
Utah [1]	1905	109	72	32	5	66.0	29.4	4.6
	1900	140	98	40	2	70.0	28.6	1.4
Vermont	1905	225	126	99	.....	56.0	44.0	.....
	1900	355	199	155	1	56.0	43.7	0.3
	1890	227	141	76	10	62.1	33.5	4.4
Virginia	1905	1,738	1,332	342	64	76.6	19.7	3.7
	1900	1,153	1,021	127	5	88.6	11.0	0.4
	1890	252	168	77	7	66.7	30.5	2.8
Washington [1]	1905	106	78	28	.....	73.6	26.4	.....
	1900	75	50	22	3	66.7	29.3	4.0
Wisconsin	1905	3,226	1,949	991	286	60.4	30.7	8.9
	1900	2,507	1,494	849	164	59.6	33.9	6.5
	1890	2,036	1,273	727	36	62.5	35.7	1.8
All other states	[5] 1905	54	37	16	1	68.5	29.6	1.9
	[6] 1900	176	136	37	3	77.3	21.0	1.7
	[7] 1890	377	282	82	13	74.8	21.8	3.4

[1] Included in "all other states" in 1890.
[2] Included in "all other states" in 1890 and 1900.
[3] Included in "all other states" in 1905.
[4] Included in "all other states" in 1890. Not reported in 1900.
[5] Includes states as follows: Colorado, Delaware, Indian Territory, and Rhode Island.
[6] Includes states as follows: Alabama, Colorado, Delaware, Kansas, Oregon, and Tennessee.
[7] Includes states as follows: Alabama, Delaware, Kansas, Nebraska, Oregon, South Carolina, Tennessee, Texas, Utah, and Washington.

A study of the figures for the individual states shows that the largest number of wage-earners was reported for Massachusetts both in 1900 and in 1905; the numbers were 62,633, or 41.8 per cent of the total in the United States in 1905 and 58,645, or 41.3 per cent of the total in 1900. The number reported for this state in 1905 was nearly four times that reported for the state with the next highest number. In 1905 New York, Ohio, Missouri, and New Hampshire followed Massachusetts in the order named in total number of wage-earners. These 5 states, which were the only ones reporting over 10,000 wage-earners in 1905, had a combined total of 113,922, or 76 per cent of the entire number of wage-earners reported for the industry in the country.

These states were also the leading states in the number of men and the number of women wage-earners, New Hampshire leading Missouri in order of rank for the number of men. In 1900 Massachusetts, New York, Ohio, and New Hampshire led and Missouri was exceeded in number of wage-earners by Pennsylvania and Maine. As regards number of children employed in this industry, Massachusetts reported the largest number, namely, 1,108; Missouri was second with 961; Ohio, third with 828; Pennsylvania, fourth with 653; and New York, fifth with 335.

The returns for 15 states show a decrease in the number of wage-earners reported in 1905 compared with 1900. These states and the amounts of decrease are as follows: New Hampshire, 1,592; Maine, 657; Illinois, 514; Indiana, 384; Minnesota, 311; California, 294; Pennsylvania, 266; Maryland, 245; Connecticut, 230; New Jersey, 229; Vermont, 130; Iowa, 88; Utah, 31; Louisiana, 27; and Georgia, 11. The total decrease for the 15 states was 5,009. The largest percentage of decrease, 63, is shown for Indiana.

The states reporting in 1905 an increase in the total number of wage-earners as compared with 1900 and the amounts of increase are as follows: Missouri, 4,513; Massachusetts, 3,988; Ohio, 1,172; New York, 760; Wisconsin, 719; Michigan, 606; Virginia, 585; Kentucky, 452; and Nebraska, North Carolina, Texas, and Washington, for each of which an increase of less than 100 was reported. The total increase for the 12 states was 12,984.

The increases in Missouri and Ohio are especially noteworthy, and indicate the great development of the industry in these states.

There was a slight decrease in the proportion of men during each census period and an increase in the proportion of children. The proportion of women was greater in 1900 than in 1890, but slightly smaller as reported in 1905 than in 1900.

In 1905 Oregon reported the largest proportion of men, 96 per cent of the state total; Vermont, the largest proportion of women, 44 per cent; and Tennessee, the largest proportion of children, 12.9 per cent. Iowa reported the smallest proportion of men, 52.3 per cent; Oregon, the smallest proportion of

women, 4 per cent; and Louisiana, the smallest proportion of children of the states employing children, namely, three-tenths of 1 per cent. Four states, however—Nebraska, Oregon, Vermont, and Washington—reported no children in 1905.

As shown in Table 16, the greatest number of wage-earners employed at any one time during the census year 1905 was 174,650 and the least number, 125,001; in the census year 1900 the greatest number was 168,412 and the least number, 115,836. March was the most active month in 1905 and in 1900; the reports for 1905 show that the total average number employed during that month was 153,025, or 3,101 more than the average for the year, while the reports for 1900 show a total of 148,728, or 6,898 more than the average for the year.

Table 12 shows 13 cities reporting in 1905 products valued at over $5,000,000, ranked by value of products for the census years 1890, 1900, and 1905, with the percentages of increase. The figures for Lestershire, N. Y., can not be presented separately, as to do so would disclose operations of individual establishments.

TABLE 12.—CITIES REPORTING IN 1905 PRODUCTS OF OVER $5,000,000, RANKED BY VALUE OF PRODUCTS, WITH PER CENT OF INCREASE: 1890 TO 1905.

CITY.	1905		1900		1890		PER CENT OF INCREASE.	
	Rank.	Value of products.	Rank.	Value of products.	Rank.	Value of products.	1900 to 1905	1890 to 1900
Brockton, Mass	1	$30,073,014	1	$19,844,397	2	$16,171,624	51.5	22.7
Lynn, Mass	2	25,952,571	2	16,830,733	1	20,190,695	54.2	[1] 16.6
St. Louis, Mo	3	19,101,166	6	8,286,156	9	4,250,960	130.5	94.9
Haverhill, Mass	4	15,257,899	3	15,231,440	3	16,137,352	0.2	[1] 5.6
New York, N. Y	5	11,905,374	4	9,124,495	4	7,796,296	30.5	17.0
Cincinnati, Ohio	6	10,596,928	5	8,513,424	8	6,024,454	24.5	41.3
Rochester, N. Y	7	8,620,011	7	6,933,111	7	6,480,382	24.3	6.8
Marlboro, Mass	8	6,620,455	13	3,852,931	.....	(2)	71.8	.....
Manchester, N. H	9	6,567,903	11	4,052,204	22	30,024	62.1	10,283.9
Chicago, Ill	10	5,592,684	9	5,723,126	5	7,257,934	[1] 2.3	[1] 21.1
Boston, Mass	11	5,575,927	12	3,882,655	16	1,508,607	43.6	157.4
Columbus, Ohio	12	5,425,087	15	3,505,126	19	350,000	54.8	876.4
Philadelphia, Pa	13	5,171,859	8	5,931,045	6	6,851,834	[1] 12.8	[1] 13.4

[1] Decrease.

[2] Not reported separately.

The value of products reported in 1905 for the 13 cities producing more than $5,000,000 worth of boots and shoes was $156,460,878, or 48.9 per cent of the value of all the boots and shoes manufactured in the United States at that census. In 1900 the aggregate value of products for the same cities was $111,710,843, or 43.1 per cent of the total for the country. In 1890 the value of products for Marlboro, Mass., was not reported separately, and consequently does not appear in the table; but this omission does not detract seriously from the significance of the figures for that year. The aggregate value of products of the 12 other cities in 1890 was $93,076,352, or 42.2 per cent of the total for the United States.

The proportion which the aggregate production of these cities formed of the total for the United States at each census was not changed materially from 1890 to 1900; but the large increase in this proportion at the census of 1905 indicates that the boot and shoe industry is being strongly affected by the tendency to centralization which is characteristic of modern commercial activity.

This centralization is further emphasized by the fact that 6 of the 13 cities produced more than $10,000,000 worth of shoes each in 1905, and the value of their aggregate production amounted to $112,886,952, or 35.3 per cent of the total for the United States and 72.2 per cent of the total for the 13 cities. In 1900 the value of products reported for the same cities was $77,830,645, or 30.1 per cent of the total for the country and 69.7 per cent of the total for the 13 cities.

Brockton was the first city in the country in 1905 in the value of boots and shoes produced. The output of this city during the census year was valued at $30,073,014, and represented 9.4 per cent of the total value of products reported for the industry in the United States. Lynn, which had been the leading city for one hundred and seventy-five years, was displaced from first position by Brockton in 1900, and has since occupied second place. The value of products reported for Lynn in 1905 was $25,952,571, or 8.1 per cent of the total for the country.

The manufacture of boots and shoes was carried on almost entirely in eastern Massachusetts until well along in the last century. During the past fifty years, however, important centers of production have arisen in some of the other Eastern states and in the West. St. Louis, Cincinnati, Columbus, Chicago, Philadelphia, New York, and other cities of New York state, especially Rochester, have all become very prominent in the industry. This development does not seem to have detracted materially from the growth of the industry in the older center, the country apparently being able to take not only all the product which Massachusetts offers, but also that which is produced in other newly created centers.

At the census of 1905 only 2 of the 13 cities showed a decrease in value of products as compared with the

value reported in 1900. These cities were Philadelphia and Chicago, both having continued to decline at each census since 1890. All but 1 of the remaining cities reported large increases for the five-year period, in most cases the increase being greatly superior to that for the previous ten years. Haverhill, where there was a considerable decline at the census of 1900, reported a small increase in 1905. New York, Marlboro, Columbus, Cincinnati, Boston, Rochester, and Manchester reported increases between $1,000,000 and $3,000,000; and the 3 remaining cities—St. Louis, Brockton, and Lynn—reported increases between $8,000,000 and $11,000,000. The net increase in value of products for the 13 cities in 1905, as compared with 1900, was $44,750,035, or 40.1 per cent.

In 1905 the increase in value of products reported for St. Louis was $10,815,010, or 130.5 per cent. This is the most noteworthy increase shown by any of the cities prominent in the industry. So great has been the advance in production that it indicates clearly the establishment of an important center of shoe manufacture and distribution in the West similar to the concentration in New England. This interesting condition is probably due to the great increase in population which is taking place in the West and the creation in consequence of centers of production in that region. In 1900 Lynn and Haverhill, two large producing cities in New England, showed a considerable decline in value of products, but at the census of 1905 the gain in production reported for Lynn was the third largest of any of the cities, and Haverhill also showed an increase at this census over 1900, though production had not yet reached the magnitude reported in 1890. Indeed in 1900, when these two cities seemed to be losing ground in the industry, Manchester, another New England city, showed a remarkable gain, and Brockton reported increases at both censuses nearly equal to those of St. Louis, although the output of the industry in Brockton was already by far the largest of any city in the country.

Table 13 presents the value of products for 1900 and 1905 of 30 cities reporting in 1905 an output of between $1,000,000 and $5,000,000 worth of boots and shoes. There were 46 such places at this census; but 16 are omitted from the table in order to avoid disclosing the operations of individual establishments. Of these, 13 had less than 3 establishments, these places being Derry, Exeter, and Nashua, N. H.; Bridgewater, Milford, Spencer, Stoughton, Wayland, and Webster, Mass.; Auburn and Endicott, N. Y.; Lynchburg and Richmond, Va.; and 3 places—Stoneham, Mass., Rochester, N. H., and Hannibal, Mo.—each had 3 establishments, but all except a small part of the product, in each case, was that of one or two establishments.

TABLE 13.—*Cities and towns with three or more establishments reporting in 1905 products between $1,000,000 and $5,000,000, and their value of products: 1905 and 1900.*

CITY.	VALUE OF PRODUCTS.	
	1905	1900
Auburn, Me.	$4,263,162	$4,176,826
Portsmouth, Ohio	4,258,855	3,043,916
Newburyport, Mass.	3,920,960	2,714,693
Salem, Mass.	3,895,947	2,974,631
Whitman, Mass.	3,835,628	3,600,000
Abington, Mass.	3,269,556	2,170,880
Rockland, Mass.	2,992,148	1,604,000
Milwaukee, Wis.	2,929,405	2,195,928
Natick, Mass.	2,896,110	2,228,791
Lancaster, Ohio	2,699,000	968,020
Hudson, Mass.	2,632,375	2,317,636
Weymouth, Mass.	2,588,213	2,235,253
Beverly, Mass.	2,416,110	2,627,587
Newark, N. J.	2,382,051	2,530,048
Jefferson City, Mo.	2,354,918	2,236,278
St. Paul, Minn.	2,186,599	1,645,999
Chelsea, Mass.	2,044,250	739,817
Detroit, Mich.	2,038,673	1,212,742
South Braintree, Mass.	1,904,521	837,100
Worcester, Mass.	1,724,664	1,610,605
Lowell, Mass.	1,456,842	957,035
Middleboro, Mass.	1,302,730	1,066,568
San Francisco, Cal.	1,287,740	1,618,514
Syracuse, N. Y.	1,253,982	804,762
Burlington, N. J.	1,240,415	1,180,049
North Adams, Mass.	1,211,076	2,881,474
Allentown, Pa.	1,126,066	900,976
Carlisle, Pa.	1,078,401	918,315
Dover, N. H.	1,015,872	1,113,266
Baltimore, Md.	1,011,393	1,065,567

In 1905, of the 30 cities shown in this table, 12 reported value of products between $1,000,000 and $2,000,000; 12, between $2,000,000 and $3,000,000; 4, between $3,000,000 and $4,000,000; and 2, between $4,000,000 and $5,000,000.

Of the cities shown, 6 reported a decrease in value of products in 1905 as compared with 1900. These places are North Adams and Beverly, Mass.; Dover, N. H.; San Francisco, Cal.; Newark, N. J.; and Baltimore, Md. There were 2 cities that reported an increase in value of products of less than $100,000, namely, Auburn, Me., and Burlington, N. J. Increases between $100,000 and $500,000 were reported for 10 places, namely, Lowell, Weymouth, Hudson, Middleboro, Whitman, and Worcester, Mass.; Syracuse, N. Y.; Allentown and Carlisle, Pa.; and Jefferson City, Mo. Of the remaining places, 5 had increases between $500,000 and $1,000,000, namely, Salem and Natick, Mass.; Detroit, Mich.; Milwaukee, Wis.; and St. Paul, Minn.; and 7 had increases of more than $1,000,000, namely, Lancaster and Portsmouth, Ohio; and Rockland, Chelsea, Newburyport, Abington, and South Braintree, Massachusetts.

The largest decrease for the period, $1,670,398, was reported for North Adams, Mass., and the largest increase, $1,730,980, for Lancaster, Ohio.

The net increase for the 30 cities and towns was $13,030,846, or 23.2 per cent. This percentage of increase compared with the percentage of 40.1 for the 13 cities having more than $5,000,000 in value of products indicates a proportionately more rapid growth of the industry in the large centers.

The total value of products for the 60 cities and towns reporting in 1905 an output of $1,000,000 and over was $259,977,631, or 81.2 per cent of the total for the United States, and for the 57 cities and towns having an output of $1,000,000 and over in 1900 it was $195,761,287, or 75.6 per cent of the total.

Of the cities and towns that reported over $1,000,000 value of products in 1905, 9 reported less than that amount in 1900 and were not shown separately at that census, and 2 (Endicott, N. Y., and Lynchburg, Va.) reported no products at all. In 1905, 8 (New Bedford, North Brookfield, and Randolph, Mass.; Claremont, Portsmouth, and Somersworth, N. H.; Dixon, Ill.; and Minneapolis, Minn.) dropped from the $1,000,000 rank which they held in 1900, and consequently are not shown in the preceding table.

Table 14 shows the number of establishments reporting power, total horsepower, and the amount and kind of power used, for the census years 1890, 1900, and 1905.

TABLE 14.—*Number of establishments reporting power, and amount of each kind of power: 1890 to 1905.*

	1905	1900	1890
Number of establishments	1,316	1,599	2,082
Number of establishments reporting power	1,116	1,284	1,364
Total horsepower	62,587	50,623	30,686
Owned:			
Engines—			
Steam—			
Number	534	632	738
Horsepower	40,228	34,666	22,602
Gas or gasoline—			
Number	115	90	.....
Horsepower	2,355	1,156	300
Waterwheels—			
Number	30	52	40
Horsepower	1,586	2,240	1,845
Electric motors—			
Number	536	117	.....
Horsepower	6,367	1,029	529
Other power, horsepower	51	91	89
Rented:			
Electric, horsepower	5,328	3,422	.....
Other kind, horsepower	6,672	7,419	5,312

The proportion of establishments reporting power was 65.5 per cent in 1890, 80.3 per cent in 1900, and 84.8 per cent in 1905. The small proportion not reporting power were mainly establishments that made handmade shoes or used machinery operated by foot or hand power.

The average horsepower per establishment reporting power was 22.5 in 1890, 39.4 in 1900, and 56.1 in 1905.

Including "other power" both owned and rented, which is practically all steam, the amount of steam-power reported was 28,003 horsepower in 1890, 42,176 horsepower in 1900, and 46,951 horsepower in 1905. Between the censuses of 1890 and 1900 the increase was 50.6 per cent, and between 1900 and 1905 it was only 11.3 per cent. Steam is still the principal kind of power used, although the proportion it forms of the total has decreased from 91.3 per cent in 1890 to 83.3 in 1900, and to 75 in 1905.

For electric power there was a remarkable increase. The reports showed only 529 horsepower generated by electricity in 1890, or 1.7 per cent of the total for all kinds of power. This increased to 5,051 horsepower, or 10 per cent of the total in 1900, and to 11,695 horsepower, or 18.7 per cent of the total in 1905. The percentage of gain from 1890 to 1900 was 854.8 and from 1900 to 1905, 131.5.

The use of power generated by gas engines has also increased, although its proportion to the total has been small—1 per cent in 1890, 2.3 in 1900, and 3.8 in 1905.

Waterpower shows a decided decrease proportionately. The percentage of the total was 6 in 1890, 4.4 in 1900, and 2.5 in 1905.

Reference to Table 16, in which statistics of power are presented by states, shows that in 1905 Massachusetts reported the most horsepower, 20,597, or 32.9 per cent of total; Ohio was next with 7,431; Missouri, third with 7,371; and New York, fourth with 5,952. The total horsepower for these 4 states was 41,351, or 66.1 per cent of the total for the United States. Each of the remaining states reported less than 5,000 horsepower.

Missouri had the greatest average horsepower per establishment, 216.8, and every establishment in the state reported the use of power. Utah ranked second, with an average of 166.7, 3 of its 4 establishments reporting. Ohio ranked third with an average of 123.9 horsepower, and 60 out of 62 factories in the state reported power.

Massachusetts averaged only 47.1 horsepower per establishment, and 65 of the establishments in the state did not report the use of power. In 1905 the use of power of some kind was reported for every state in which the manufacture of boots and shoes was carried on.

Export trade in the boot and shoe industry has continued for nearly one hundred years. From a small beginning the trade grew slowly until in 1865 a total value of a little over $2,000,000 was reached, but the following year it dropped to almost nothing and continued so until 1870, when there was a revival, and the increase has been fairly steady ever since.

Table 15 shows the quantities and values of the exports of leather boots and shoes from 1870 to 1905.

TABLE 15.—*Quantities and values of the exports of leather boots and shoes: 1870 to 1905.*[1]

YEAR.	Number of pairs.	Value.	YEAR.	Number of pairs.	Value.
1905	5,315,699	$8,057,697	1887	623,714	$732,517
1904	4,642,531	7,238,940	1886	554,365	648,069
1903	4,197,566	6,665,017	1885	492,906	598,151
1902	3,966,766	6,182,098	1884	502,122	602,025
1901	3,492,041	5,526,200	1883	442,687	530,057
1900	3,016,720	4,276,656	1882	389,120	488,815
1899	1,934,277	2,711,385	1881	300,968	374,343
1898	1,307,031	1,816,538	1880	378,274	441,069
1897	1,224,484	1,708,224	1879	320,355	402,557
1896	1,036,235	1,436,686	1878	351,152	408,436
1895	822,412	1,010,228	1877	300,484	414,690
1894	647,318	777,354	1876	263,508	368,633
1893	493,027	590,754	1875	293,051	420,303
1892	745,112	914,974	1874	243,500	383,417
1891	551,733	651,343	1873	260,759	421,548
1890	587,108	662,074	1872	325,296	502,089
1889	518,750	585,902	1871	301,216	445,466
1888	563,871	654,896	1870	276,170	419,612

[1] Bureau of Statistics, Department of Commerce and Labor, Statistical Abstract of the United States.

The average annual value of the leather boots and shoes exported during the decade from 1870 to 1880 was $425,635; for the following ten years it was $566,664; for the next ten years it was $1,228,046; and for the six years ending with 1905 it was $6,324,450.

The total value of the exports for 1905 was $8,057,697, a sum nearly equal to the total value of the exports for the twenty years from 1870 to 1890 and about two-thirds of the total for the ten years from 1890 to 1900. From 1900 to 1905 the value of the exports nearly doubled, increasing from $4,276,656 to $8,057,697, a gain of $3,781,041, or 88.4 per cent.

There is a demand from England, Germany, France, Belgium, Switzerland, Australia, South America, Central America, and even from South Africa and China for American made shoes. If styles are made to conform to the wants of foreign countries, and marketing difficulties, like replenishing stocks, are overcome, there seems to be no reason why the United States, which leads the nations in the manufacture of shoes, should not lead in supplying the markets of the world.

The increase in amount of power owned and rented in connection with the manufacture of boots and shoes in the United States from 1890 to 1905 was 31,901 horsepower, or 104 per cent. With the increased use of power and machinery there has followed an increased value of products per wage-earner, which was $1,494 in 1880, $1,650 in 1890, $1,826 in 1900, and $2,135 in 1905.

Table 16 is a detailed summary of the statistics for the industry, by states, for 1905.

HISTORICAL AND DESCRIPTIVE.

Early history.—Historians state that some kind of a covering has always been used for the feet, for even in the most ancient times, when the ordinary individual went barefooted, men of rank wore foot gear of some sort.

The contrivances devised to protect and ornament the feet ranged from a single piece of leather fixed to the foot by means of a strap, to elaborate shoes embroidered with gold and ornamented with pearls.

In America cordwainers or shoemakers settled first in Massachusetts about 1629, then later on in Virginia, Connecticut, New York, New Jersey, Pennsylvania, and Rhode Island. They did work for their neighbors or went to the homes of people in sparsely settled regions to make and repair shoes. While at work the shoemaker sat upon a low bench having at one end a leather covered seat and at the other a series of compartments for tools. Underneath was a drawer to hold thread, patterns, etc., and within easy reach other necessary articles were placed. It is remarkable that to-day after several centuries the same style of outfit is used by thousands of shoemakers or cobblers engaged in mending shoes.

No changes of any consequence occurred in the industry until 1750, and then a period of slow transition began. Some enterprising shoemakers commenced to employ other shoemakers, division of labor was instituted, and the quality of shoes improved.

With increased population the production was increased and the business extended. Lynn, Mass., which was the "cradle of the industry," became the leading boot and shoe producing city, and, with scarcely an interruption, held this rank until 1900, when Brockton, Mass., was first and Lynn second, although the value of products reported in 1905 for the latter city was over $25,000,000.

Early in the nineteenth century shops were made larger; cutting, binding, and bottoming departments were established; and workmen began to devote themselves to particular branches of the work. This was the beginning of the change of boot and shoe making from a hand trade to a factory industry.

Machinery.—Until the invention of the wooden shoe peg in 1811, a few shoes were nailed, but nearly all were sewed. All the processes were hand work, but the availability of machinery was being considered and the London Society of Arts had offered premiums for the invention of machines that would enable shoemakers to work in a standing position and thus relieve the pressure upon the breast and the fatigue caused by the stooping position. Little was accomplished, however, and the few machines invented both here and abroad were very crude. Labor was cheap and the demand was not very pressing, so the old methods continued in use. While some men employed others to work for them, all were shoemakers and the manufacturers of later times were unknown.

In 1852 American shops began using sewing machines for closing and binding uppers with dry thread. This use of the sewing machine marked the beginning of a new era in the making of boots and shoes. Soon "rolling," "buffing," "splitting," and "racing" machines were employed to prepare sole leather for use. The invention of these machines and others, such as a machine for sewing soles to shoes; of die-machines to cut soles, taps, and heels; cable-wire nailers; sandpapering, heel making, burnishing, and pegging machines; and also the substitution of steampower for handpower occurred between 1845 and 1860.

The following quotation from "The United States of America," Vol. II, pages 855 to 857, edited by N. S. Shaler, S. D., presents an interesting summary of the inventions that have been of use in the manufacture of boots and shoes:

> The progress of invention for the ten years from 1860 to 1870 may be summarily stated as follows: The McKay sole-sewing and turned-shoe machines and the Townsend and Bean wax-thread machines were introduced, and peggers by Sargent, Whittemore, and

Stevens were perfected. Machines for nailing soles with wire were made by Sargent, Blake, Libby, and Goddu, and for screwing on soles by Sellier, Lemercier, Cabourg, and others; and various forms of nail wire were invented by Smith, Goddard, Wickersham, and others. The "American" lasting machine, improved from the Wells, and the lasting tacker and pegger of Ingalls and Fisher, came into use; and also the machines of G. W. Ellis and C. W. Glidden, for pricking, breasting, nailing, and trimming heels, which, perfected by Mr. Glidden under the direction of the McKay Heeling Machine Association, became and continue to be the leading machines of their kind.

During the same time there were introduced the power crimping machines, the sole-rounding machine of Stevens, the channel cutter of McKay, Blake, and others, the sole-molding machine of Johnson, the sole-beating machines of Gilmore and Tripp, while initial experiments were being made in rotary heel trimmers, heel and edge burnishers, and some other minor machines which were perfected at a later date. During this decade also were begun the turned-shoe welt and fair-stitch sewing machine by Daniel Mills and Charles Goodyear, which, consolidated with the McKay turned-shoe machine, and developed by the Goodyear and McKay Company, laid the foundation for the very successful line of turned and welt shoe machines now put out by that company.

During the next ten years the "Union" and "National" wax-thread machines, and the "Varney" pegger, were added to the existing list, the lock-stitch wax-thread machines were begun, and the compressed peg strip of Sturtevant was introduced. The "cable-wire" and "standard-screw" nailers were perfected by Mr. Goddu, and the continuous screw-wire, by Mr. Van Wagenen, of the American Cable-Screw Wire Company. Henry Dunham put out a machine to drive loose nails (afterwards acquired by the McKay Association), and L. Farnsworth a nail sorter for loading heels. The McKay heel machines were improved by Mr. Glidden, and others were brought out by Messrs. Baldwin, H. H. Bigelow, and E. Fisher, all of which became the property of the McKay and Bigelow Heel Machine Association. Welt and turned-shoe machines were being perfected by the Goodyear and McKay Company, and lasting machines were made by Thompson, Copeland, Glidden, and Fairfield, which were finally merged in the McKay and Copeland Lasting Machine Association in 1882.

In addition to these, there were introduced during this decade a number of finishing machines, and such as were less essential, though still valuable in economizing labor; and among the more important of these may be mentioned the following: The Busell heel and edge trimmers, the Tapley burnisher, shank-burnishing and buffing machine, skiving machines, heel-stiffener and box-toe machines, boot-treeing machines, the Bray eyelet and lacing-hook setters, etc.

* * * * *

Since 1880 the Goodyear Company has added to its catalogue the shuttle fair-stitch, the new-welt sewer, and several minor machines; and the Campbell shuttle, the Eppler turned-shoe, and the McKay high-speed machine have been introduced. The McKay and Bigelow Associations have improved the Fisher and issued the "Automatic" and "Rapid" heel machines, and the competing "National" and "American" heel nailers and several heel-slugging machines have been put out. The Busell Company has perfected its rotary trimmers, and others have been made by A. F. Smith, the Acme Company, and Glidden. The McKay Association has put out the high speed "standard screw" and several other perfected machines, and a variety of wire nailers have been tried on cheap work.

The "Boston," and "Hand method," the Copeland "Rapid," and the Chase lasting machines have been put in use, the latter on men's fine shoes; and the heel burnishers have been made automatic and an electric method of burnishing introduced, which bids fair to supersede the others. Besides these, button-sewing, button-fastening, lacing-hook, and a variety of subordinate machines have been made.

Types of shoes.—There are three standard types of shoes manufactured; the oldest is the McKay. This shoe is sewed by being placed over a horn and the sewing done from a channel in the outsole through the sole and insole. The machine makes a "chain" or "loop" stitch from a single wax thread and leaves a ridge of thread on the inside of the shoe. It is a cheap grade shoe and extensively manufactured and used, despite the fact that when the outsole is worn through and a new one desired, it must be nailed on, there being no welt to which to sew the sole.

The next type in importance is the "turned" shoe. This shoe is made inside out and turned after stitching; the main effect of this process is that it gives flexibility to the shoe and thus causes it to be unsurpassed for women and for house use. Shoes made by this process, moreover, are neat in appearance and soft and comfortable to the feet. The best shoe made, however, is the "welt" shoe. This shoe is made on a machine which sews from the channel of the insole, through upper and welt, uniting all three, and leaving the loop on the outside of the welt. The outsole is then stitched to the welt only, by another machine, which sews from a channel made in the outsole, through outsole and welt.

The machines which make the "turned" and "welt" shoes, together with other machines that were made necessary to prepare and trim the insole, skive, round, channel, level, "separate or divide stitch," etc., comprise what is known as the "Goodyear system." To this sytem is due the perfection of the "turned" and "welt" shoes, the kinds that have made the American product famous.

Lasts and patterns.—In the manufacture of boots and shoes lasts and patterns take an important part.

Lasts are made of maple, persimmon, and basswood. The wood should be clean cutting, free from knots, not apt to split, hard of texture, and smooth grained. Trunks of small trees or branches of large ones are used chiefly, and those with thick bark yield the best timber for this purpose.

The trunks or boughs, after being cut into triangular pieces called "spokes," usually about 36 inches in length, are seasoned, a process requiring about two years. Then they are cut into three parts, called "blocks," and it is these blocks that are purchased by last manufacturers. The block when sawed by a circular saw into something like the shape required is ready to be turned by a last turning machine in accordance with the design and size wanted. Knifing is the next process, and then other machines are used to drill, rasp, scrape, and finish.

Standard lasts are modeled by hand from various designs and are held to standard girth measure. Fifty years ago they were crudely made in whole sizes and two or three widths only; now they are finely finished

in half and quarter sizes and many widths. As a consequence ready-made shoes are more generally worn than formerly.

There are many ways of making patterns and the processes are simple. In some factories a mold is taken to fit the last and the pattern is designed from this mold, allowances being made for seams, laps, and lasting. These patterns are made of pasteboard with brass bound edges or of zinc or iron. When comparisons are made between American and foreign made shoes, it is conceded that America leads. This is not only on account of superior workmanship, but also because of style and fit, qualities for which American last and pattern makers deserve a large share of the credit.

Methods of manufacture.—Lasts and patterns being furnished, the next step is the cutting of the upper leathers, linings, etc. Cutters must be skilled in their work and have a knowledge of the materials to be cut, and judgment sufficient to prevent any serious waste.

In the office of the factory, tickets describing the style of shoe required and other details are made out and sent to the distributing room, from which the stock, patterns, etc., are sent to the cutters. The outside of the shoe is cut by the upper cutters and the linings and trimmings by the trimming cutters.

The vamps, quarters, linings, trimmings, etc., are made into bundles and sent to the fitting department. Here pieces that are too heavy are run through a splitting machine and the edges are beveled by means of a skiving machine. Next, the different parts are pasted together, dried, and then sent to different machines, each machine being adjusted for its particular work. In the fitting room such processes as inking, perforating toe caps or vamps, beading, marking facings, and stitching are carried on.

The completed upper next passes to the sole-leather rooms, in which department also the major part of the work is done by machinery. By the use of the cutting machine the sides of leather are made into strips the length of the sole required. These strips are passed through a powerful machine, which hardens the leather and removes all irregularities from its surface. They are then shaved down to a uniform thickness, also by machinery, and placed under dies which cut them out in the desired shape. The smaller pieces are died out in the form of lifts or heel pieces, which are joined together to the proper thickness and cemented, after which they are put in presses to make them solid. The top lift is not added until after the heel has been nailed to the shoe. The remaining sole leather is used for shank pieces, rands, and bottom leveling.

For the insole a lighter grade of leather is used. This leather is first cut into strips and then it is cut into the correct shape by a machine in which the required pattern has been placed; it is then shaved uniformly and channeled around the under edge for receiving the upper. The counters are died and skived, by machine, and the welts are cut into strips.

The uppers and soles are then sent to the bottoming department, where the first operation is that of lasting or tacking the uppers to the insoles. Then the upper, insole, and welt are firmly sewed together by the inseam-machine operator. Next, the bottom is filled, usually with granulated cork, and leveled off, and the steel shank piece is inserted. Then the bottom is coated with cement, and the outside sole pressed onto it by a machine. Next, the shoe is sent through a rounding machine, which rough trims and channels the outsole. After this process it goes to a channel-turning machine, and the channel is turned back for the stitching. Then it goes again to the stitching machine, which stitches through the welt and outsole, outside of the upper. The next steps are cementing, laying down the channel, and leveling, then trimming and heeling. The heels are nailed on in the rough and afterward trimmed into shape by a machine operating revolving knives, a breasting machine shaping the front of the heel. Still another machine drives in the brass nails and cuts them off flush with the top pieces. Then a machine for dividing or wheeling stitches is used and the edges of the soles are trimmed by an edging machine. Next, the heel is scoured and inked; the edges are set; the heels are burnished in ink and wax; and the soles are buffed, blacked, and polished by machinery. The shoes are then cleaned, and, after the lasts are removed, they are treed and packed.

TABLE 16.—BOOTS AND SHOES—DETAILED

		United States.	California.	Connecticut.	Georgia.	Illinois.	Indiana.
1	Number of establishments	1,316	21	9	7	44	4
	Capital:						
2	Total	$122,526,093	$1,139,450	$585,341	$95,361	$3,656,671	$306,309
3	Land	$2,572,107	$64,055	$1,900	$1,050	$160,900	$4,500
4	Buildings	$8,690,331	$32,085	$9,740	$3,000	$476,425	$25,205
5	Machinery, tools, and implements	$18,964,510	$264,643	$80,480	$27,528	$732,884	$30,573
6	Cash and sundries	$92,299,145	$778,667	$493,221	$63,783	$2,286,462	$246,031
7	Proprietors and firm members	1,424	56	11	11	32	1
	Salaried officials, clerks, etc.:						
8	Total number	8,811	50	46	10	287	23
9	Total salaries	$8,706,682	$51,378	$52,185	$9,380	$322,626	$19,833
	Officers of corporations—						
10	Number	683	7	6	1	28	4
11	Salaries	$1,723,773	$12,880	$13,440	$1,200	$96,970	$6,600
	General superintendents, managers, clerks, etc.—						
12	Total number	8,128	43	40	9	259	19
13	Total salaries	$6,982,909	$38,498	$38,745	$8,180	$225,656	$13,233
	Men—						
14	Number	5,613	33	30	9	171	13
15	Salaries	$5,850,363	$33,600	$32,973	$8,180	$184,606	$11,133
	Women—						
16	Number	2,515	10	10	.....	88	6
17	Salaries	$1,132,546	$4,898	$5,772	.....	$41,050	$2,100
	Wage-earners, including pieceworkers, and total wages:						
18	Greatest number employed at any one time during the year	174,650	819	579	249	4,891	296
19	Least number employed at any one time during the year	125,001	638	237	239	2,790	254
20	Average number	149,924	700	489	239	3,947	226
21	Total wages	$69,059,680	$384,504	$204,013	$66,515	$1,865,319	$70,610
	Men 16 years and over—						
22	Average number	95,257	516	282	184	2,451	146
23	Wages	$50,394,644	$311,849	$133,260	$56,765	$1,344,334	$52,000
	Women 16 years and over—						
24	Average number	49,535	170	187	35	1,369	71
25	Wages	$17,681,763	$70,110	$68,029	$6,750	$502,821	$17,065
	Children under 16 years—						
26	Average number	5,132	14	20	20	127	9
27	Wages	$983,273	$2,545	$2,724	$3,000	$18,164	$1,545
	Average number of wage-earners, including pieceworkers, employed during each month:						
	Men 16 years and over—						
28	January	95,467	526	255	191	2,619	149
29	February	96,829	530	270	191	2,663	153
30	March	97,523	515	280	193	2,557	154
31	April	94,892	494	277	187	2,078	14
32	May	91,848	470	286	188	1,761	164
33	June	92,383	480	284	188	2,033	182
34	July	93,730	508	281	186	2,517	181
35	August	95,573	528	286	174	2,596	183
36	September	96,069	545	289	174	2,580	185
37	October	95,874	540	294	170	2,611	37
38	November	96,363	531	296	179	2,712	175
39	December	96,533	525	286	178	2,685	175
	Women 16 years and over—						
40	January	49,466	172	148	35	1,394	62
41	February	50,211	172	142	35	1,410	65
42	March	50,603	169	177	35	1,377	70
43	April	49,383	164	175	35	1,186	20
44	May	47,872	153	164	35	1,062	80
45	June	47,948	153	199	35	1,332	91
46	July	48,466	164	197	35	1,443	86
47	August	49,751	175	204	35	1,458	88
48	September	49,838	179	206	35	1,469	92
49	October	50,136	189	223	35	1,427	35
50	November	50,219	178	213	35	1,454	82
51	December	50,527	172	205	35	1,416	81
	Children under 16 years—						
52	January	4,892	11	10	20	107	12
53	February	4,983	10	24	20	113	12
54	March	4,899	10	24	20	121	11
55	April	4,950	12	20	20	115	.....
56	May	4,966	16	21	20	104	11
57	June	5,224	15	18	20	115	11
58	July	5,464	17	21	20	129	11
59	August	5,385	17	22	20	139	10
60	September	5,244	16	20	20	145	10
61	October	5,192	13	20	20	154	.....
62	November	5,197	17	17	20	142	10
63	December	5,188	14	23	20	140	10
	Miscellaneous expenses:						
64	Total	$19,293,634	$65,396	$131,175	$10,806	$580,076	$40,135
65	Rent of works	$1,147,759	$15,635	$6,295	$3,088	$38,120	$120
66	Taxes	$425,826	$4,152	$1,612	$1,014	$11,574	$1,685
67	Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.	$16,248,069	$45,609	$75,807	$6,704	$530,382	$38,330
68	Contract work	$1,471,980	.....	$47,461	.....	.....	.....
	Materials used:						
69	Total cost	$197,363,495	$961,169	$787,774	$264,710	$5,656,109	$299,612
	Sole leather, in the side—						
70	Pounds	162,631,578	1,365,616	446,608	333,895	6,852,821	281,175
71	Cost	$36,860,980	$347,884	$106,114	$78,893	$1,550,886	$93,193
	Sole leather, heads, bellies, shoulders, etc.—						
72	Pounds	42,510,899	248,221	220,350	7,050	1,139,248	87,883
73	Cost	$7,374,070	$39,956	$32,572	$1,372	$219,993	$10,236
	Split leather, finished—						
74	Pounds	10,749,526	29,443	69,710	100,000	117,580	56,930
75	Cost	$2,047,504	$7,479	$17,644	$20,000	$25,951	$16,386
	Rolled splits—						
76	Pounds	3,890,791	1,300	.....	.....	16,675	.....
77	Cost	$632,429	$240	.....	.....	$2,934	.....
	Calf and kip skins—						
78	Pounds	4,240,190	90,455	3,553	25,260	260,749	55,700
79	Cost	$2,939,268	$54,970	$3,162	$20,164	$176,072	$25,064
	Grain and other side leather—						
80	Square feet	89,610,877	759,779	121,050	413,100	2,873,378	157,819
81	Cost	$11,805,645	$133,510	$15,236	$51,775	$364,148	$21,154

SUMMARY, BY STATES: 1905.

Iowa.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	
5	9	10	50	14	502	23	17	34	1
$410,280	$756,468	$351,048	$4,450,939	$430,520	$49,529,728	$1,702,398	$2,432,305	$8,242,304	2
$1,000	$35,500	$28,500	$02,870	.....	$720,615	$145,510	$900	$247,500	3
$155,072	$61,534	$68,775	$311,300	$21,000	$2,712,402	$186,175	$9,250	$1,192,591	4
$71,516	$124,158	$94,175	$523,396	$130,191	$6,811,412	$207,720	$409,362	$1,220,824	5
$190,192	$535,276	$160,498	$3,553,373	$279,320	$39,285,299	$1,102,093	$2,012,853	$5,581,389	6
1	8	15	39	14	616	17	8	6	7
20	53	37	352	55	3,400	178	215	486	8
$18,459	$46,996	$31,149	$368,696	$43,852	$3,245,029	$189,704	$188,365	$564,442	9
1	12	2	39	8	174	15	10	38	10
$780	$22,600	$5,000	$94,630	$11,600	$481,247	$36,300	$21,110	$87,385	11
19	41	35	313	47	3,226	163	205	448	12
$17,679	$24,396	$26,149	$274,066	$32,252	$2,763,782	$153,464	$167,255	$477,057	13
18	31	20	231	37	2,035	116	130	376	14
$17,079	$20,588	$24,670	$241,122	$29,058	$2,205,843	$134,102	$143,627	$435,961	15
1	10	6	82	10	1,191	47	75	72	16
$600	$3,808	$1,479	$32,944	$3,194	$557,939	$19,362	$23,628	$41,096	17
550	861	474	7,001	735	74,191	2,000	1,930	11,903	18
386	533	364	4,539	634	50,778	1,607	1,401	8,757	19
478	659	370	5,775	651	62,633	1,723	1,714	10,428	20
$185,663	$200,121	$136,786	$2,022,519	$235,572	$33,160,667	$681,362	$718,600	$4,335,005	21
250	357	307	3,942	406	41,386	974	1,104	5,082	22
$112,767	$134,017	$121,127	$1,052,332	$166,119	$24,700,436	$401,479	$550,941	$2,865,577	23
200	251	62	1,791	226	20,139	573	500	3,485	24
$68,492	$58,232	$15,479	$661,576	$66,987	$8,219,513	$158,671	$165,901	$1,234,964	25
28	51	1	42	19	1,108	176	11	961	26
$4,404	$6,972	$180	$8,611	$2,466	$240,718	$31,212	$1,758	$234,464	27
266	371	308	4,083	396	41,475	1,021	1,125	5,654	28
246	354	313	4,143	394	42,192	1,035	1,164	5,778	29
240	345	316	4,117	397	42,792	1,021	1,167	5,960	30
242	412	309	3,939	396	41,767	962	1,056	5,945	31
245	362	316	3,666	391	39,994	961	1,012	5,975	32
260	390	311	3,625	389	39,751	890	1,055	6,075	33
275	379	320	3,785	388	40,203	925	1,079	6,061	34
240	360	319	3,863	424	41,293	935	1,079	5,996	35
230	367	325	3,893	430	41,718	945	1,111	6,002	36
243	345	313	3,973	427	41,733	960	1,117	6,101	37
256	312	268	4,046	413	41,880	1,007	1,144	6,097	38
257	287	266	4,171	427	41,744	1,026	1,139	6,080	39
206	272	63	1,986	215	20,254	600	601	3,207	40
197	273	63	1,970	215	20,699	597	631	3,337	41
201	239	65	1,854	216	20,930	587	617	3,408	42
207	274	67	1,837	216	20,502	568	575	3,481	43
212	271	69	1,679	214	19,536	576	561	3,430	44
214	253	63	1,651	217	19,067	530	595	3,481	45
220	261	67	1,610	215	19,321	543	597	3,447	46
184	237	63	1,650	237	20,083	555	572	3,516	47
180	250	64	1,695	241	20,178	547	609	3,406	48
184	243	63	1,702	244	20,312	576	585	3,664	49
200	231	53	1,840	240	20,287	608	617	3,643	50
195	208	44	1,928	242	20,580	589	628	3,650	51
32	83	.....	37	16	1,057	189	8	923	52
31	73	.....	35	16	1,078	188	9	933	53
23	42	.....	35	16	1,075	179	9	940	54
23	52	1	38	16	1,082	167	10	914	55
24	57	1	38	16	1,038	166	13	956	56
32	52	1	50	17	1,065	168	14	971	57
34	52	2	53	17	1,165	171	14	957	58
30	52	2	51	21	1,196	174	14	942	59
22	57	1	44	21	1,180	167	11	950	60
24	42	1	43	22	1,151	171	11	996	61
32	28	1	40	25	1,114	184	10	1,017	62
29	22	2	40	25	1,095	188	9	1,033	63
$50,135	$218,098	$20,464	$528,101	$68,101	$8,340,835	$370,011	$382,056	$967,157	64
$900	$2,396	$3,876	$17,093	$10,354	$443,512	$23,358	$41,281	$46,664	65
$1,184	$1,366	$350	$16,657	$2,496	$203,268	$13,545	$9,932	$17,863	66
$48,051	$111,633	$25,238	$488,850	$55,251	$6,835,805	$332,658	$278,546	$623,936	67
.....	$103,603	.....	$5,492	.....	$858,250	$450	$52,297	$278,694	68
$521,500	$1,360,487	$377,716	$8,301,861	$535,276	$88,403,009	$2,016,058	$2,631,689	$14,936,005	69
303,566	1,390,700	339,548	7,658,444	245,555	70,333,559	2,908,173	3,183,936	14,018,209	70
$79,654	$336,380	$97,591	$1,780,379	$83,411	$15,225,012	$700,613	$761,783	$3,194,790	71
45,831	414,210	115,288	1,562,201	25,165	22,469,034	231,316	475,082	4,845,549	72
$7,894	$69,485	$25,590	$244,738	$6,587	$3,745,110	$33,908	$90,926	$881,801	73
.....	22,000	3,000	303,793	160	7,263,699	27,461	10,000	817,400	74
.....	$4,400	$600	$60,760	$32	$1,353,262	$8,700	$2,000	$154,325	75
.....	144,928	400	272,240	137	967,829	26,490	130,568	469,758	76
.....	$25,900	$72	$51,053	$30	$135,998	$3,953	$21,962	$70,499	77
.....	.....	1,667	220,033	3,880	1,240,246	170,862	170,178	385,140	78
.....	.....	$970	$140,328	$2,892	$812,553	$129,544	$111,365	$280,413	79
89,817	1,435,538	90,575	4,652,360	6,000	34,367,766	1,726,116	1,488,239	2,833,412	80
$11,722	$172,470	$12,082	$600,183	$500	$4,282,646	$245,613	$206,585	$430,634	81

TABLE 16.—BOOTS AND SHOES—DETAILED

		United States.	California.	Connecticut.	Georgia.	Illinois.	Indiana.
	Materials used—Continued.						
	Calfskins (russet, ooze, kangaroo, dongola calf, etc.)—						
82	Square feet	91,290,110	121,658	117,955	2,620	1,744,440	322,295
83	Cost	$16,209,143	$23,584	$25,060	$685	$316,430	$61,214
	Patent and enamel leather—						
84	Square feet	47,720,221	58,566	94,690	2,348	722,689	29,216
85	Cost	$12,053,512	$15,018	$32,355	$577	$191,675	$6,165
	Goatskins—						
86	Square feet	197,044,004	248,505	742,788	257,050	4,543,367	49,815
87	Cost	$30,398,403	$54,363	$148,309	$31,207	$798,768	$8,652
	Sheep leather used for uppers—						
88	Square feet	36,473,154	119,482	547,488	1,870	434,953	.....
89	Cost	$2,879,270	$10,820	$72,405	$147	$29,714	.....
	All other upper leather—						
90	Square feet	73,012,064	558,040	60,400	69,870	2,217,397	6,250
91	Cost	$12,587,285	$106,773	$15,645	$14,111	$450,904	$1,000
92	Materials, other than leather, used for uppers, cost	$1,956,146	$1,787	$85,622	$60	$85,192	$12
93	Linings and trimmings, all kinds, cost	$10,561,367	$28,092	$45,169	$5,661	$265,136	$9,110
94	Cut soles, counters, taps, heels, etc., purchased, cost	$24,143,824	$31,867	$75,964	$4,712	$486,887	$10,328
95	Findings, purchased, cost	$13,080,280	$54,275	$55,423	$19,922	$370,481	$19,586
96	Fuel	$799,982	$2,991	$6,196	$2,150	$36,093	$2,830
97	Rent of power and heat	$410,992	$4,166	$2,980	$499	$11,324	$579
98	Mill supplies	$291,243	$2,296	$1,622	$852	$9,399	$2,060
99	All other materials	$9,119,836	$40,271	$42,186	$5,861	$223,254	$11,204
100	Freight	$1,212,316	$827	$4,110	$6,062	$40,868	$839
	Products:						
101	Total value	$320,107,458	$1,677,668	$1,279,755	$372,983	$9,026,238	$459,700
	Men's boots and shoes—						
102	Number of pairs	83,434,322	495,708	240,744	191,860	3,463,185	120,497
103	Value	$142,038,632	$1,252,565	$312,286	$236,720	$6,033,195	$231,640
	Boys' and youths' boots and shoes—						
104	Number of pairs	21,717,236	116,451	85,336	20,000	691,165	157,420
105	Value	$24,301,298	$186,028	$91,569	$20,000	$814,887	$199,085
	Women's boots and shoes—						
106	Number of pairs	69,470,876	103,558	210,310	100,212	887,707	.....
107	Value	$98,262,016	$217,685	$516,400	$88,610	$1,252,152	.....
	Misses' and children's boots and shoes—						
108	Number of pairs	41,416,967	5,545	23,824	20,000	694,140	43,500
109	Value	$34,056,919	$6,463	$37,302	$12,000	$550,836	$28,975
	Men's, boys', and youths' slippers—						
110	Number of pairs	4,403,097	12,916	2,740	.....	43,099	.....
111	Value	$3,464,561	$7,010	$3,491	.....	$35,812	.....
	Women's, misses', and children's slippers—						
112	Number of pairs	13,115,194	11,722	25,237	.....	218,166	.....
113	Value	$10,532,271	$5,217	$16,407	.....	$190,099	.....
	All other kinds—						
114	Number of pairs	8,552,343	.....	7,000	23,571	146,000	.....
115	Value	$3,331,690	.....	$3,600	$9,813	$70,893	.....
116	All other products	$3,327,955	$1,500	$298,700	$4,100	$78,214	.....
117	Amount received for work done for others	$792,116	$1,200	.....	$1,740	$150	.....
	Boot and shoe machines leased or held under royalties:						
118	Number	18,995	204	115	10	486	60
119	Total amount paid for leases or royalties (included above in miscellaneous expenses)	$3,343,425	$10,920	$7,328	$293	$40,670	$1,769
	Power:						
120	Number of establishments reporting	1,116	13	9	5	35	4
121	Total horsepower	62,587	241	238	61	2,052	133
	Owned—						
	Engines—						
	Steam—						
122	Number	534	3	5	2	16	1
123	Horsepower	40,228	145	131	45	1,307	40
	Gas or gasoline—						
124	Number	115	.....	1	.....	11	3
125	Horsepower	2,355	.....	5	.....	192	76
	Water wheels—						
126	Number	30	.....	.....	.....	.....	.....
127	Horsepower	1,586	.....	.....	.....	.....	.....
	Water motors—						
128	Number	4	.....	.....	.....	.....	.....
129	Horsepower	26	.....	.....	.....	.....	.....
	Electric motors—						
130	Number	536	.....	.....	.....	16	.....
131	Horsepower	6,367	.....	.....	.....	214	.....
132	Other power, horsepower	25	.....	.....	.....	.....	.....
	Rented—						
	Electric motors—						
133	Number	533	11	3	4	14	4
134	Horsepower	5,328	96	27	16	90	17
135	Other kind, horsepower	6,672	.....	75	.....	249	.....
136	Furnished to other establishments, horsepower	786	.....	.....	.....	41	.....

SUMMARY, BY STATES: 1905—Continued.

Iowa.	Kentucky.	Louisiana.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	
171,842 $30,945	63,200 $8,320	131,800 $31,187	4,303,134 $729,005	314,848 $58,156	47,402,256 $8,286,295	212,010 $33,431	500,000 $95,185	7,560,719 $1,316,869	82 83
209,167 $49,035	347,028 $79,036	65,783 $21,486	1,644,539 $341,344	126,619 $23,785	23,046,359 $5,445,339	159,208 $39,517	247,865 $67,430	3,461,620 $735,118	84 85
947,595 $164,254	2,176,241 $295,549	239,466 $48,423	9,602,404 $1,385,831	971,679 $145,383	77,496,344 $11,404,907	2,526,486 $459,489	1,555,452 $307,157	18,566,585 $2,837,177	86 87
230,268 $16,140	69,901 $4,220	56,140 $3,486	1,220,237 $93,885	36,006 $2,006	16,866,329 $1,434,719	114,300 $15,238	688,233 $54,839	1,210,044 $74,080	88 89
14,321 $2,541 $18,683 $14,794 $70,979 $29,486 $3,098 $528 $1,287 $11,807 $7,843	863,000 $128,000 $6,000 $39,728 $48,500 $75,605 $1,394 $2,610 $4,130 $46,420 $12,340	204,538 $39,704 $11,586 $18,244 $22,556 $18,571 $1,083 $4,200 $1,589 $12,012 $5,775	1,800,677 $266,961 $212,258 $367,255 $1,045,834 $535,673 $43,814 $16,432 $20,310 $321,828 $43,381	147,300 $24,605 $22,439 $31,083 $75,516 $36,957 $3,813 $2,232 $949 $12,172 $1,228	42,454,428 $7,200,430 $701,945 $5,575,695 $11,790,130 $6,184,912 $282,019 $194,421 $71,841 $3,916,709 $387,266	284,053 $50,117 $2,900 $28,903 $24,290 $138,505 $6,446 $6,440 $8,591 $64,118 $15,742	2,040,044 $354,484 $21,381 $100,231 $126,933 $150,214 $14,082 $6,312 $7,523 $100,470 $18,827	2,626,647 $547,212 $77,713 $700,895 $1,724,520 $1,054,067 $57,780 $15,135 $33,252 $618,335 $124,484	90 91 92 93 94 95 96 97 98 99 100
$853,900	$1,129,930	$620,014	$12,351,293	$1,011,393	$144,291,426	$3,531,028	$4,160,732	$23,493,552	101
115,890 $225,845	420,707 $409,458	280,065 $576,828	5,709,462 $8,283,975	64,632 $203,122	44,878,020 $79,253,195	786,602 $1,531,156	1,162,677 $2,022,821	5,740,720 $10,648,182	102 103
16,363 $20,453	185,204 $278,500	2,535 $3,126	1,048,268 $1,056,345	22,036 $32,787	8,430,461 $8,677,053	176,727 $231,875	387,408 $576,075	1,819,192 $2,640,762	104 105
287,144 $520,272	805,062 $864,684	2,825 $3,390	2,244,921 $2,666,830	337,473 $608,623	28,190,058 $36,396,276	716,263 $1,415,730	419,591 $676,642	5,903,114 $7,475,002	106 107
59,160 $59,160	388,740 $376,217	.....	150,182 $112,892	229,359 $149,338	12,036,958 $9,041,318	229,848 $230,531	403,546 $464,836	2,365,017 $2,228,009	108 109
200 $100	.....	820 $1,065	9,710 $11,548	1,100 $1,452	3,549,189 $2,831,040	10,910 $11,860	.....	26,500 $21,200	110 111
400 $160	.....	88,088 $31,365	20,224 $18,247	12,189 $12,767	8,519,071 $6,452,162	77,008 $86,626	42,000 $56,700	223,306 $149,673	112 113
.....	.....	.....	78,820 $112,439	8,231 $2,301	1,644,419 $538,748	14,624 $11,721	224,338 $167,911	272,000 $51,000	114 115
$22,000	.....	$3,500 $740	$70,782 $18,235	$663 $250	$410,187 $601,447	$11,432 $97	$204,464 $283	$274,324 $4,500	116 117
88 $10,027	133 $15,440	72 $11,582	947 $180,950	162 $12,260	7,354 $1,670,827	264 $32,537	310 $31,520	1,182 $233,419	118 119
5 263	8 204	7 160	41 2,744	12 176	437 20,597	18 696	13 1,033	34 7,371	120 121
5 253	3 115	1 50	30 2,017	2 60	175 14,028	11 410	5 500	20 4,385	122 123
.....	.....	2 8	2 14	6 54	13 120	3 85	1 20	.....	124 125
.....	.....	.....	7 225	.....	1 60	.....	.....	.....	126 127
.....	.....	.....	1 3	.....	.....	.....	.....	.....	128 129
.....	3 26	.....	4 92	.....	53 903	12 47	17 150	193 2,227	130 131
.....	.....	.....	.....	.....	.....	.....	.....	.....	132
1 10	9 143	14 111	16 158	6 25	91 1,478	19 154	46 363	20 209	133 134
.....	10	.....	235	37	4,008	.....	.....	550	135
.....	.....	.....	47	.....	161	.....	.....	.....	136

TABLE 16.—BOOTS AND SHOES—DETAILED

		Nebraska.	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.
1	Number of establishments	3	50	51	188	7	62
	Capital:						
2	Total	$140,700	$7,931,070	$3,038,877	$14,106,058	$86,220	$10,230,015
3	Land	$1,200	$115,075	$67,150	$268,820	$4,775	$304,304
4	Buildings	$3,000	$395,183	$288,266	$819,496	$3,830	$774,788
5	Machinery, tools, and implements	$46,100	$816,775	$684,059	$2,445,143	$12,000	$1,891,204
6	Cash and sundries	$90,400	$6,604,037	$1,999,402	$10,572,599	$65,615	$7,259,719
7	Proprietors and firm members	3	57	48	197	11	45
	Salaried officials, clerks, etc.:						
8	Total number	5	498	233	992	9	988
9	Total salaries	$6,400	$449,312	$265,789	$960,076	$6,400	$991,049
	Officers of corporations—						
10	Number	2	21	35	84	2	88
11	Salaries	$3,000	$66,250	$87,096	$199,902	$1,500	$264,421
	General superintendents, managers, clerks, etc.—						
12	Total number	3	477	198	908	7	900
13	Total salaries	$3,400	$383,062	$178,693	$760,174	$4,900	$726,628
	Men—						
14	Number	2	356	144	615	6	617
15	Salaries	$2,500	$329,868	$155,938	$630,890	$4,600	$605,087
	Women—						
16	Number	1	121	54	293	1	283
17	Salaries	$900	$53,194	$22,755	$129,284	$300	$121,541
	Wage-earners, including pieceworkers, and total wages:						
18	Greatest number employed at any one time during the year	168	12,226	4,483	19,086	107	15,374
19	Least number employed at any one time during the year	125	8,651	3,802	14,087	84	12,268
20	Average number	121	10,415	4,192	16,556	89	13,890
21	Total wages	$50,234	$4,377,351	$1,753,924	$7,582,896	$24,679	$5,222,723
	Men 16 years and over—						
22	Average number	80	6,921	2,580	10,543	60	7,747
23	Wages	$35,812	$3,152,517	$1,297,567	$5,588,685	$20,293	$3,552,857
	Women 16 years and over—						
24	Average number	41	3,379	1,388	5,678	26	5,315
25	Wages	$14,422	$1,204,935	$413,518	$1,941,543	$4,000	$1,521,091
	Children under 16 years—						
26	Average number	.....	115	224	335	3	828
27	Wages	.....	$19,899	$42,839	$52,668	$386	$148,775
	Average number of wage-earners, including pieceworkers, employed during each month:						
	Men 16 years and over—						
28	January	67	7,076	2,568	10,500	52	7,761
29	February	67	7,040	2,581	10,738	53	7,852
30	March	67	7,043	2,578	10,870	53	7,756
31	April	64	6,851	2,586	10,751	54	7,577
32	May	65	6,414	2,598	10,474	54	7,499
33	June	67	6,650	2,588	10,393	65	7,599
34	July	98	6,750	2,583	10,585	65	7,708
35	August	97	6,948	2,575	10,702	65	7,845
36	September	93	7,021	2,534	10,729	65	7,779
37	October	87	7,163	2,557	10,110	65	7,734
38	November	91	7,060	2,585	10,250	65	7,819
39	December	97	7,036	2,627	10,414	64	7,995
	Women 16 years and over—						
40	January	20	3,460	1,428	5,450	21	5,353
41	February	30	3,440	1,391	5,664	21	5,385
42	March	30	3,429	1,406	5,758	20	5,361
43	April	32	3,344	1,363	5,692	20	5,106
44	May	31	3,161	1,399	5,680	20	5,008
45	June	32	3,178	1,416	5,690	30	5,185
46	July	51	3,328	1,388	5,739	30	5,294
47	August	51	3,392	1,391	5,807	30	5,375
48	September	48	3,470	1,301	5,843	30	5,370
49	October	51	3,529	1,363	5,616	30	5,366
50	November	51	3,421	1,385	5,609	30	5,451
51	December	55	3,396	1,425	5,588	30	5,628
	Children under 16 years—						
52	January	.....	102	224	340	3	741
53	February	.....	107	231	353	3	734
54	March	.....	104	220	338	2	715
55	April	.....	112	223	329	2	758
56	May	.....	110	225	319	3	798
57	June	.....	118	226	307	3	976
58	July	.....	153	227	351	3	1,017
59	August	.....	149	225	352	3	872
60	September	.....	110	213	339	3	821
61	October	.....	106	218	329	3	825
62	November	.....	101	226	328	4	838
63	December	.....	108	230	335	4	841
	Miscellaneous expenses:						
64	Total	$12,773	$702,798	$541,174	$2,256,546	$9,354	$2,277,107
65	Rent of works	$2,650	$51,640	$19,284	$211,388	$840	$116,362
66	Taxes	$911	$16,740	$7,072	$28,858	$408	$57,342
67	Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.	$9,212	$632,703	$480,400	$1,979,419	$8,106	$2,099,803
68	Contract work	.....	$1,715	$34,418	$36,881	.....	$3,600
	Materials used:						
69	Total cost	$161,496	$15,529,993	$3,841,929	$19,792,932	$116,521	$14,557,515
	Sole leather, in the side—						
70	Pounds	333,820	14,375,382	2,262,043	13,106,464	154,194	9,893,393
71	Cost	$79,160	$2,711,332	$715,317	$2,892,941	$34,787	$2,880,999
	Sole leather, heads, bellies, shoulders, etc.—						
72	Pounds	67,936	3,536,710	503,750	1,434,186	31,250	3,326,333
73	Cost	$8,462	$534,392	$101,894	$315,481	$5,000	$688,706
	Split leather, finished—						
74	Pounds	.....	679,188	126,240	113,761	.....	301,782
75	Cost	.....	$125,826	$29,248	$24,435	.....	$61,006
	Rolled splits—						
76	Pounds	.....	1,081,423	.....	66,610	.....	585,335
77	Cost	.....	$188,548	.....	$15,341	.....	$88,671
	Calf and kip skins—						
78	Pounds	24,400	597,063	84,912	193,570	12,950	343,217
79	Cost	$18,636	$411,258	$80,712	$182,657	$7,027	$245,814
	Grain and other side leather—						
80	Square feet	83,110	15,890,155	84,430	10,936,289	124,820	2,421,179
81	Cost	$12,268	$1,867,034	$15,803	$1,631,056	$19,843	$344,212

SUMMARY, BY STATES: 1905—Continued.

Oregon.	Pennsylvania.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	Wisconsin.	All other states.[1]	
3	119	4	5	4	3	6	5	53	4	1
$33,756	$7,197,959	$173,766	$56,082	$130,863	$518,383	$975,482	$182,511	$3,577,649	$47,620	2
$500	$198,605	$1,503	$3,000	$19,100	$2,000	$9,000	$1,750	$96,625	$3,000	3
$2,397	$661,184	$16,998	$3,500	$39,500	$21,121	$67,000	$9,000	$311,914	$8,000	4
$10,080	$1,340,855	$47,567	$12,710	$24,500	$46,971	$154,104	$12,600	$611,810	$19,170	5
$20,779	$4,997,315	$107,698	$36,872	$47,763	$448,291	$745,378	$159,161	$2,557,300	$17,450	6
.....	177	5	7	2	1	.....	6	28	2	7
.....	497	16	.....	3	24	63	12	256	3	8
.....	$482,122	$10,264	.....	$2,700	$23,375	$81,194	$11,260	$254,252	$1,275	9
.....	40	4	.....	.....	.....	7	1	45	.....	10
.....	$110,812	$8,500	.....	.....	.....	$19,200	$1,000	$70,350	.....	11
.....	448	12	.....	3	24	56	11	211	3	12
.....	$371,310	$10,764	.....	$2,700	$23,375	$61,994	$10,260	$183,902	$1,275	13
.....	362	9	.....	3	18	45	9	165	3	14
.....	$334,861	$9,752	.....	$2,700	$20,339	$56,208	$9,300	$164,443	$1,275	15
.....	86	3	.....	.....	6	11	2	46	.....	16
.....	$36,449	$1,012	.....	.....	$3,036	$5,786	$960	$19,459	.....	17
27	9,068	248	46	117	268	1,043	137	3,901	72	18
23	7,977	207	42	108	87	1,576	99	2,682	26	19
25	8,878	225	43	109	225	1,738	100	3,220	54	20
$17,262	$3,230,443	$78,319	$21,722	$46,601	$98,417	$369,138	$46,978	$1,247,765	$23,972	21
24	5,247	136	38	72	126	1,332	78	1,949	37	22
$16,482	$2,302,656	$56,690	$20,174	$37,358	$64,236	$299,892	$38,398	$896,744	$20,380	23
1	2,978	60	3	32	99	342	28	991	10	24
$780	$832,164	$16,506	$1,248	$8,583	$34,181	$60,092	$8,580	$301,413	$3,517	25
.....	653	29	2	5	.....	64	.....	286	1	26
.....	$95,623	$5,123	$300	$660	.....	$8,554	.....	$49,608	$75	27
24	5,188	127	38	70	139	1,371	85	1,922	40	28
25	5,279	128	38	70	138	1,377	66	1,921	30	29
27	5,344	130	38	71	143	1,349	66	1,898	36	30
27	5,163	134	38	71	145	1,337	80	1,899	37	31
27	5,252	138	38	70	142	1,336	77	1,836	37	32
23	5,298	139	37	70	146	1,318	76	1,904	37	33
22	5,108	140	37	71	145	1,172	77	1,898	33	34
25	5,267	142	37	72	139	1,276	78	1,987	32	35
22	5,228	141	38	72	122	1,299	84	2,007	41	36
22	5,314	139	39	75	118	1,376	83	1,989	40	37
22	5,200	142	39	75	89	1,386	83	2,010	41	38
22	5,173	132	39	77	46	1,387	81	2,057	40	39
1	2,953	55	3	30	103	342	28	975	10	40
1	3,006	54	3	30	108	351	28	968	15	41
1	3,037	56	3	31	105	353	28	962	18	42
1	2,980	58	3	32	107	357	29	934	18	43
1	2,972	61	3	32	107	344	28	906	17	44
1	2,959	61	3	32	107	343	26	998	15	45
1	2,969	64	3	32	109	237	27	978	10	46
1	3,051	66	3	32	101	332	28	1,023	11	47
1	2,895	66	3	32	89	372	30	1,028	10	48
1	3,007	62	3	33	98	364	30	995	10	49
1	2,971	60	3	34	87	353	28	1,037	17	50
1	2,936	57	3	34	67	356	26	1,028	17	51
.....	608	26	2	5	.....	50	.....	282	4	52
.....	643	26	2	5	.....	49	.....	288	.....	53
.....	660	27	2	5	.....	57	.....	292	2	54
.....	648	28	2	5	.....	75	.....	296	2	55
.....	652	30	2	5	.....	71	.....	298	2	56
.....	655	27	2	5	.....	71	.....	283	2	57
.....	679	32	2	5	.....	48	.....	284	.....	58
.....	693	34	2	5	.....	66	.....	294	.....	59
.....	703	33	2	5	.....	68	.....	283	.....	60
.....	649	30	2	5	.....	71	.....	286	.....	61
.....	634	28	2	5	.....	71	.....	303	.....	62
.....	612	27	2	5	.....	71	.....	303	.....	63
$6,363	$1,014,272	$53,980	$7,243	$2,304	$45,482	$72,604	$28,396	$474,472	$6,320	64
$1,644	$48,460	$1,825	$1,403	$30	$1,200	$2,948	$4,356	$28,840	$2,107	65
$222	$7,965	$735	$100	$900	$558	$4,085	$590	$12,348	$204	66
$4,407	$957,002	$23,877	$5,650	$1,374	$22,993	$65,571	$23,450	$433,284	$3,919	67
.....	$845	$27,543	.....	.....	$20,731	.....	.....	.....	.....	68
$25,934	$8,701,463	$639,664	$38,561	$111,883	$411,127	$1,015,938	$121,403	$4,220,008	$40,873	69
41,586	5,549,426	1,152,110	19,200	183,668	547,766	841,740	216,774	4,279,877	12,240	70
$11,136	$1,404,476	$219,742	$6,500	$44,407	$102,120	$209,288	$62,979	$954,308	$4,005	71
.....	1,138,431	56,747	25,780	16,620	.....	14,033	.....	472,695	.....	72
.....	$230,467	$8,441	$9,580	$3,028	.....	$3,640	.....	$54,193	.....	73
.....	357,993	11,000	.....	3,204	76,550	140,100	10,000	114,436	.....	74
.....	$73,106	$1,664	.....	$400	$14,995	$22,416	$3,000	$22,869	.....	75
.....	64,954	25,220	.....	.....	.....	.....	.....	45,915	.....	76
.....	$14,107	$4,203	.....	.....	.....	.....	.....	$8,318	.....	77
1,200	140,682	.....	3,150	3,850	.....	42,000	6,658	148,589	1,220	78
$1,100	$96,234	.....	$3,185	$2,276	.....	$31,500	$5,410	$94,338	$1,615	79
14,000	1,699,598	830,376	2,400	90,883	1,427,915	717,707	34,016	4,229,410	550	80
$3,000	$232,658	$119,836	$528	$16,017	$126,144	$81,980	$5,133	$781,085	$190	81

[1] Includes establishments distributed as follows: Colorado, 1; Delaware, 1; Indian Territory, 1; Rhode Island, 1.

TABLE 16.—BOOTS AND SHOES—DETAILED

		Nebraska.	New Hampshire.	New Jersey.	New York.	North Carolina.	Ohio.
	Materials used—Continued.						
	Calfskins (russet, ooze, kangaroo, dongola calf, etc.)—						
82	Square feet	9,358	11,143,193	2,024,238	4,122,471	.....	5,955,694
83	Cost	$1,690	$1,829,757	$406,596	$969,927	.....	$1,096,884
	Patent and enamel leather—						
84	Square feet	12,260	2,315,058	1,046,874	5,492,544	.....	5,218,808
85	Cost	$3,588	$464,546	$277,173	$2,169,588	.....	$1,221,432
	Goatskins—						
86	Square feet	30,240	15,132,606	5,851,851	17,223,795	67,000	19,251,600
87	Cost	$6,048	$1,878,258	$850,467	$3,160,082	$10,000	$3,375,545
	Sheep leather used for uppers—						
88	Square feet	18,328	5,101,781	1,573,110	3,191,158	360	2,579,110
89	Cost	$1,388	$359,330	$107,839	$261,756	$30	$165,613
	All other upper leather—						
90	Square feet	.....	3,479,647	862,430	5,738,941	100,000	3,094,341
91	Cost	.....	$440,802	$158,423	$1,205,288	$14,000	$464,051
92	Materials, other than leather, used for uppers, cost	.....	$115,899	$40,735	$261,135	.....	$158,574
93	Linings and trimmings, all kinds, cost	$1,806	$683,683	$145,860	$844,726	$1,037	$917,846
94	Cut soles, counters, taps, heels, etc., purchased, cost	$6,692	$2,006,386	$493,908	$2,732,713	$3,500	$1,202,503
95	Findings, purchased, cost	$11,280	$948,797	$258,340	$1,307,399	$7,661	$788,336
96	Fuel	$644	$79,303	$24,376	$91,690	$999	$59,118
97	Rent of power and heat	$2,800	$12,061	$2,733	$65,025	.....	$18,576
98	Mill supplies	$100	$12,428	$4,233	$43,513	$144	$16,616
99	All other materials	$4,184	$737,008	$117,377	$1,498,962	$10,168	$630,867
100	Freight	$2,750	$123,345	$10,895	$119,217	$2,325	$132,146
	Products:						
101	Total value	$263,450	$22,425,700	$6,977,300	$34,137,049	$185,635	$25,140,220
	Men's boots and shoes—						
102	Number of pairs	116,964	7,835,134	543,657	5,576,787	78,543	1,661,202
103	Value	$241,100	$10,006,403	$2,096,535	$8,471,548	$127,751	$3,243,185
	Boys' and youths' boots and shoes—						
104	Number of pairs	3,400	3,614,135	87,104	1,205,183	11,405	1,590,508
105	Value	$5,100	$3,616,521	$129,108	$1,510,097	$11,994	$1,938,704
	Women's boots and shoes—						
106	Number of pairs	.....	4,759,444	672,309	7,174,649	11,940	9,797,003
107	Value	.....	$4,470,244	$855,674	$14,999,905	$14,330	$15,318,723
	Misses' and children's boots and shoes—						
108	Number of pairs	.....	4,581,406	4,513,538	4,993,445	13,453	5,014,436
109	Value	.....	$3,442,745	$3,297,067	$4,885,003	$12,488	$4,454,444
	Men's, boys', and youths' slippers—						
110	Number of pairs	.....	244,020	33,276	393,968	1,204	25,379
111	Value	.....	$171,054	$32,802	$277,680	$783	$21,596
	Women's, misses', and children's slippers—						
112	Number of pairs	.....	1,026,288	304,760	1,643,444	.....	166,674
113	Value	.....	$576,706	$402,498	$1,645,431	.....	$160,005
	All other kinds—						
114	Number of pairs	15,000	50,000	29,420	2,779,814	.....	8,064
115	Value	$17,250	$35,000	$11,437	$928,646	.....	$2,475
116	All other products	.....	$96,027	$152,179	$1,403,229	$17,510	$1,088
117	Amount received for work done for others	.....	$11,000	.....	$15,450	$779	.....
	Boot and shoe machines leased or held under royalties:						
118	Number	28	1,562	586	1,775	12	1,603
119	Total amount paid for leases or royalties (included above in miscellaneous expenses).	$5,777	$191,542	$94,165	$334,146	$3,573	$243,342
	Power:						
120	Number of establishments reporting	2	48	39	147	5	60
121	Total horsepower	85	4,816	1,435	5,952	70	7,431
	Owned—						
	Engines—						
	Steam—						
122	Number	.....	40	35	44	1	43
123	Horsepower	.....	3,537	1,388	3,372	25	4,085
	Gas or gasoline—						
124	Number	1	.....	4	13	3	26
125	Horsepower	50	.....	38	179	20	1,188
	Water wheels—						
126	Number	.....	10	.....	8	1	.....
127	Horsepower	.....	667	.....	542	25	.....
	Water motors—						
128	Number	.....	.....	1	1	.....	.....
129	Horsepower	.....	.....	10	10	.....	.....
	Electric motors—						
130	Number	.....	10	1	9	.....	145
131	Horsepower	.....	275	15	98	.....	1,454
132	Other power, horsepower	.....	25	.....	.....	.....	.....
	Rented—						
	Electric motors—						
133	Number	4	5	4	128	.....	45
134	Horsepower	35	122	34	1,048	.....	523
135	Other kind, horsepower	.....	190	.....	703	.....	201
136	Furnished to other establishments, horsepower	.....	147	10	64	.....	203

SUMMARY, BY STATES: 1905—Continued.

Oregon.	Pennsylvania.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	Wisconsin.	All other states.	
.....	2,500,513	163,316	21,040	94,325	50,572	102,585	3,056	1,069,972	11,000	82
.....	$478,574	$27,738	$6,375	$10,727	$8,092	$26,288	$580	$327,569	$1,980	83
.....	2,584,031	1,050	8,100	2,650	5,760	450,646	.....	354,783	11,060	84
.....	$685,082	$221	$2,800	$666	$1,100	$83,396	.....	$93,197	$2,783	85
.....	11,295,685	721,066	1,080	27,518	51,102	5,014,413	.....	2,410,090	42,085	86
.....	$1,807,360	$82,198	$344	$4,700	$6,345	$652,581	.....	$408,136	$6,870	87
.....	1,237,830	.....	940	6,693	4,800	196,903	.....	951,290	6,000	88
.....	$92,854	.....	$87	$495	$300	$14,961	.....	$69,938	$480	89
30,000	4,249,180	126,195	17,000	10,336	38,000	.....	160,548	1,741,475	10,400	90
$5,761	$724,259	$16,405	$4,000	$1,421	$5,000	.....	$31,931	$311,257	$2,200	91
.....	$27,325	.....	.....	$127	$26,375	$44,640	.....	$33,427	$331	92
$269	$476,346	$30,149	$1,525	$4,105	$25,288	$83,544	$3,827	$108,805	$1,625	93
.....	$1,172,530	$12,058	$1,100	$1,846	$33,650	$457,638	.....	$471,030	$9,254	94
$1,150	$559,559	$46,706	$400	$10,548	$27,624	$106,217	$6,270	$241,420	$5,887	95
.....	$40,802	$1,340	.....	$1,678	$200	$8,499	$90	$24,587	$1,061	96
$540	$18,956	$4,510	$235	$390	$2,900	.....	$915	$9,503	$930	97
$160	$19,692	$3,603	$82	$135	$4,375	$13,044	$10	$6,426	$72	98
$2,276	$399,790	$47,866	$1,500	$3,710	$21,153	$50,424	$915	$164,749	$1,340	99
$512	$57,286	$12,984	$260	$4,607	$8,466	$24,073	$325	$43,283	$250	100
$54,601	$14,607,867	$836,955	$91,030	$196,211	$675,772	$2,627,244	$225,738	$6,513,563	$80,412	101
19,630	1,116,021	530,287	18,660	51,546	.....	89,450	59,598	2,064,125	1,040	102
$54,601	$2,027,191	$654,222	$72,200	$101,170	.....	$137,848	$151,281	$3,423,844	$8,765	103
.....	1,035,721	107,008	.....	29,008	.....	216,116	39,985	548,867	.....	104
.....	$1,167,701	$118,049	.....	$44,925	.....	$203,278	$73,222	$654,054	.....	105
.....	3,417,319	2,282	400	11,655	543,874	2,013,468	25	737,567	29,713	106
.....	$6,165,006	$2,853	$1,250	$17,982	$446,192	$1,964,707	$175	$1,245,516	$51,013	107
.....	4,429,528	5,374	.....	20,730	290,851	297,404	.....	600,983	.....	108
.....	$3,607,816	$5,374	.....	$28,644	$108,584	$243,886	.....	$612,091	.....	109
.....	6,778	.....	.....	.....	.....	.....	.....	41,288	.....	110
.....	$6,699	.....	.....	.....	.....	.....	.....	$29,369	.....	111
.....	321,063	.....	.....	.....	.....	94,500	.....	228,654	.....	112
.....	$359,025	.....	.....	.....	.....	$66,875	.....	$302,308	.....	113
.....	3,009,090	50,808	.....	.....	.....	.....	70	186,984	4,000	114
.....	$1,241,966	$51,206	.....	.....	.....	.....	$560	$71,344	$3,200	115
.....	$22,482	$1,161	$4,380	$3,490	$60,996	$10,560	.....	$174,887	$100	116
.....	$9,981	$4,000	$13,200	.....	.....	.....	$500	$150	$17,334	117
10	1,065	46	15	36	46	181	28	581	34	118
$446	$125,715	$5,544	$2,065	$876	$2,801	$16,597	$1,177	$54,807	$395	119
2	90	4	3	3	3	6	3	47	4	120
15	3,255	200	15	500	71	734	31	1,886	23	121
.....	50	1	.....	2	.....	6	.....	15	.....	122
.....	2,456	80	.....	405	.....	405	.....	889	.....	123
.....	9	.....	.....	.....	.....	1	.....	15	1	124
.....	75	.....	.....	.....	.....	20	.....	207	4	125
.....	.....	.....	.....	.....	.....	.....	.....	3	.....	126
.....	.....	.....	.....	.....	.....	.....	.....	67	.....	127
.....	.....	.....	.....	.....	1	.....	.....	.....	.....	128
.....	.....	.....	.....	.....	3	.....	.....	.....	.....	129
.....	8	.....	.....	5	.....	21	.....	39	.....	130
.....	155	.....	.....	15	.....	219	.....	497	.....	131
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	132
2	32	6	4	2	3	.....	3	33	4	133
15	323	20	15	20	13	.....	31	221	11	134
.....	246	100	.....	.....	55	.....	.....	5	8	135
.....	23	.....	.....	.....	.....	.....	.....	.....	.....	136

LEATHER,
TANNED, CURRIED, AND FINISHED

LEATHER, TANNED, CURRIED, AND FINISHED.

By Elmore W. Sanderson.

The statistics of the manufacture of leather, tanned, curried, and finished, presented in this report for the census of 1905, cover the calendar year ending December 31, 1904, and comparisons are confined chiefly to the censuses of 1900 and 1905. Table 1, however, is a comparative summary of the industry, 1850 to 1905, with the percentage of increase for each census period.

Table 1.—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1850 TO 1905.

	Census.							Per cent of increase.					
	1905 [1]	1900	1890	1880	1870	1860	1850	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	1,049	1,306	1,787	5,028	7,569	5,188	6,686	[2] 19.7	[2] 26.9	[2] 68.2	[2] 25.6	45.9	[2] 22.4
Capital	$242,584,254	$173,977,421	$98,088,698	$73,383,911	$61,124,812	$39,025,620	$22,774,795	39.4	77.4	33.7	20.1	56.6	71.4
Salaried officials, clerks, etc., number	3,251	2,442	[3] 2,635	(4)	(4)	(4)	(4)	33.1	[2] 7.3	.....	.....	.....	.....
Salaries	$4,451,906	$3,158,842	[3] $2,735,890	(4)	(4)	(4)	(4)	40.9	15.5	.....	.....	.....	.....
Wage-earners, average number	57,239	52,109	42,302	40,282	35,243	26,246	25,505	9.8	22.9	5.2	14.3	34.3	2.5
Total wages	$27,049,152	$22,591,091	$21,249,989	$16,503,828	$14,505,775	$8,175,508	$6,541,678	19.7	6.3	28.8	13.8	77.4	25.0
Men 16 years and over	54,517	50,402	41,733	39,081	34,423	25,858	25,129	8.2	20.8	6.8	13.5	33.1	2.9
Wages	$26,321,552	$22,140,234	$21,094,335	(4)	(4)	(4)	(4)	18.9	5.0	.....	.....	.....	.....
Women 16 years and over	1,814	1,173	264	475	353	388	466	54.6	344.3	[2] 44.4	34.6	[2] 0.0	[2] 16.7
Wages	$525,031	$339,167	$82,699	(4)	(4)	(4)	(4)	54.8	310.1	.....	.....	.....	.....
Children under 16 years	908	534	305	726	467	(4)	(4)	70.0	35.2	[2] 45.6	55.5	.....	.....
Wages	$202,569	$111,690	$72,955	(4)	(4)	(4)	(4)	81.4	53.1	.....	.....	.....	.....
Miscellaneous expenses	$12,498,501	$7,023,416	$5,397,672	(5)	(5)	(5)	(5)	78.0	30.1	.....	.....	.....	.....
Cost of materials used	$191,179,073	$155,000,004	$122,046,721	$156,384,117	$118,560,634	$49,812,659	$26,420,881	23.3	26.1	[2] 21.4	31.9	138.6	88.5
Value of products, including custom work	$252,620,086	$204,038,127	$172,136,002	$200,264,944	$157,237,597	$75,698,747	$43,457,808	23.8	18.5	[2] 14.0	27.4	107.7	74.2

[1] Exclusive of the statistics of 12 establishments engaged primarily in the manufacture of other products. These establishments made leather to the value of $154,032.
[2] Decrease.
[3] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[4] Not reported separately.
[5] Not reported.

During the fifty-five years covered by this table the capital increased nearly tenfold, the number of wage-earners more than doubled, and the total wages increased more than threefold. Capital made the greatest gain, and the total wages paid increased proportionately more than the number of wage-earners. At the census of 1905 compared with that of 1850 the increase in the value of products was $209,163,088, or 481.3 per cent, and the total value reported was over a quarter of a billion dollars. There has thus been a substantial increase since 1850 in every item except number of establishments.

Table 2 shows the amount of capital in land; buildings; machinery, tools, and implements; and cash and sundries, with the percentage that each item forms of the totals for 1900 and 1905.

Table 2.—*Capital, with per cent each item is of total: 1905 and 1900.*

	1905		1900	
	Amount.	Per cent of total.	Amount.	Per cent of total.
Total	$242,584,254	100.0	$173,977,421	100.0
Land	9,842,011	4.0	14,170,485	8.2
Buildings	35,684,642	14.7	20,785,412	11.9
Machinery, tools, and implements	32,880,457	13.6	15,022,230	8.6
Cash and sundries	164,167,244	67.7	123,990,285	71.3

Capital in land shows a decrease both in amount and percentage; that in buildings, and in machinery, tools, and implements, an increase; and that in cash and sundries, an increase in amount but a slight decrease in the percentage of total.

The number of salaried officials, clerks, etc., increased 809, or 33.1 per cent, and formed 4.5 per cent of all employees in 1900 and 5.4 per cent in 1905. Their salaries increased $1,293,064, or 40.9 per cent, and formed 12.3 per cent of the total for salaries and wages combined in 1900 and 14.1 per cent in 1905. The number of wage-earners increased 5,130, or 9.8 per cent, and their wages $4,458,061, or 19.7 per cent. The average number of wage-earners per establishment was 40 in 1900 and 55 in 1905, an increase of 15, or 37.5 per cent, and the average amount paid for wages was $17,298 in 1900 and $25,786 in 1905, an increase of $8,488, or 49.1 per cent.

Of the 52,109 wage-earners reported in 1900, men formed 96.7 per cent, women 2.3 per cent, and children 1 per cent. Of the 57,239 reported in 1905, men formed 95.2 per cent, women 3.2 per cent, and children 1.6 per cent. The small proportion of women and children is due to the fact that the character of the work and the atmosphere surrounding tanneries make their exclusion almost a necessity. Those employed work chiefly in goatskin factories, in which they trim, season, glaze, and tend measuring machines, etc. Out of a total of 2,722 women and children employed in the industry, as shown by Table 12, Delaware reported 911 and Pennsylvania 1,085; both states are large producers of glazed kid. The balance of 726 was scattered among 21 other states, only 2 of which reported a hundred women and none as many as a hundred children.

The greatest number of wage-earners employed at any one time during the year was 68,464 and the least number, 46,740. The largest average number employed in any one month was 57,718, in the month of March, and the smallest 56,121, in the month of January.

Miscellaneous expenses increased $5,475,085, or 78 per cent. Table 3 shows the items comprising these expenses, for 1900 and 1905, with the proportion each bears to the total.

TABLE 3.—*Miscellaneous expenses, with per cent each item is of total: 1905 and 1900.*

	1905		1900	
	Amount.	Per cent of total.	Amount.	Per cent of total.
Total	$12,498,501	100.0	$7,023,416	100.0
Rent of factory or works	358,822	2.9	270,310	3.8
Taxes	670,441	5.4	593,990	8.5
Rent of offices, interest, insurance, advertising, etc	10,588,070	84.7	6,105,720	86.9
Contract work	881,168	7.0	53,396	0.8

The following is a tabular statement of the total increase in value of materials, with the amount and percentage of increase of each of the several classes, and the proportion of each class to total cost of materials for 1900 and 1905:

	INCREASE.		PER CENT OF TOTAL.	
	Amount.	Per cent.	1905	1900
Total	$36,179,069	23.3	100.0	100.0
Hides and skins	21,921,956	17.7	76.1	79.7
Tanning, currying, and finishing materials	12,218,321	44.5	20.8	17.7
Fuel, rent of power and heat, mill supplies, all other materials, and freight	2,038,792	51.2	3.1	2.6

The proportionate cost of hides and skins was a little less for 1905 than in 1900 and that of the other two classes of materials correspondingly more; the proportionate increase in the cost of hides and skins was also much the smallest.

Table 4 shows the materials used, by kind, quantity, and cost, and the number of establishments reporting the different kinds.

TABLE 4.—*Materials used, by kind, quantity, and cost, with number of establishments reporting: 1905.*

KIND.	Number of establishments.	Unit of measure.	Quantity.	Cost.
Materials used, total cost				$191,179,073
Hides and skins:				
Hides, all kinds	669	Number	17,581,613	89,126,593
Calf and kip skins	192	Number	12,481,221	15,725,616
Coltskins	19	Number	1,336,848	2,007,160
Goatskins	119	Number	47,665,603	26,756,012
Sheepskins	204	Number	27,492,359	10,547,883
All other skins	64	Number	1,649,033	1,304,661
Tanning materials:				
Hemlock bark	301	Cords	1,000,328	8,471,292
Oak bark	406	Cords	422,269	3,765,509
Gambier	186	Bales	80,610	752,347
Hemlock bark extract	107	Barrels	21,766	265,665
Oak bark extract	219	Barrels	214,391	2,300,395
Quebracho	281			2,490,487
Sumac	169	Tons	7,958	338,614
Chemicals	383			2,847,441
All other materials used in tanning	512			3,798,244
Currying and finishing materials:				
Rough leather, purchased rough	72	Sides	2,414,102	8,136,661
Rough grains, purchased rough	17	Sides	342,332	980,260
Rough splits, purchased rough	31	Sides	1,365,720	1,108,243
All other rough leather, purchased rough	25			627,491
Oil, stearin, degras, tallow, and all other materials used in currying	670			3,807,186
Fuel, rent of power and heat, mill supplies, all other materials, and freight				6,021,313

The number of establishments severally given in Table 4 is the number reporting each class of material; hence many establishments are counted several times.

Hides to the number of 17,581,613 were reported as used by 669 establishments at a cost of $89,126,593, or 46.6 per cent of the total cost of materials. As compared with the census of 1900, there was an increase of 1,742,751 in the number of hides and of $11,341,833 in their cost. Hides were converted chiefly

into sole, grain, harness, belting, carriage, and furniture leather, but some were sold in the rough.

There were 90,625,064 skins used, which cost $56,341,332, an increase of 6,754,583, or 8.1 per cent, in their number and of $10,580,123, or 23.1 per cent, in their cost. The proportion which the principal kinds of skins used formed of the total number and cost of skins is shown in the following tabular statement:

	Per cent of total number.	Per cent of total cost.
Goatskins	52.6	47.5
Calf and kip skins	13.8	27.9
Sheepskins	30.3	18.7
Colt and other skins	3.3	5.9

The amount paid for tanning materials of all kinds was $25,029,994, or 13.1 per cent of the total cost of materials. Of this amount, hemlock bark, the largest single item, formed 33.8 per cent; oak bark, only 15 per cent, although used by the largest number of establishments, and tanning extracts 10.3 per cent. The use of hemlock and oak bark extracts has increased greatly since 1900, as the total cost reported for that year was $700,979 and for 1905, $2,566,060—an increase of $1,865,081, or 266.1 per cent. The increase in the total cost of tanning, currying, and finishing materials, was $12,218,321, and of this amount the increase in "extracts" formed 15.3 per cent, the great increase in the use of which is due partly to the compact form in which they can be shipped, thus enabling a considerable saving in the cost of transportation. As much of the quebracho, the use of which has increased because of its efficacy and cheapness, is in the form of extract, the actual increase in the use of extracts is much greater, even, than the given figures indicate. Although the cost of vegetable tanning materials was much greater than that of any other kind, the cost of chemicals reported was somewhat more than 10 per cent of the total cost of tanning materials, and their use was reported by 383 tanneries.

Currying and finishing materials cost $14,659,841, or 7.7 per cent of the total cost of all materials. Of these, rough leather purchased rough was the largest item, though reported by only 72 establishments; and oil, tallow, etc., the next largest item, was reported by 670 establishments. The amount paid for fuel, freight, etc., formed only 3.1 per cent of the total cost of materials. In the cost of fuel, tanneries effect a large saving by drying the spent bark that comes from the leaches and using it in the furnaces along with coal and wood.

Table 5 is a comparative summary of the principal statistics of the industry, by states, for 1900 and 1905.

TABLE 5.—COMPARATIVE SUMMARY,

	STATE.	Census.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC. Number.	SALARIED OFFICIALS, CLERKS, ETC. Salaries.	WAGE-EARNERS AND WAGES. Average number.	WAGE-EARNERS AND WAGES. Wages.	Miscellaneous expenses.	COST OF MATERIALS USED. Total.	COST OF MATERIALS USED. Hides and skins.	COST OF MATERIALS USED. Tanning, currying, and finishing materials.	COST OF MATERIALS USED. Fuel, rent of power and heat, mill supplies, all other materials, and freight.	PRODUCTS. Aggregate value.
1	United States	1905	1,049	$242,584,254	3,251	$4,451,906	57,239	$27,049,152	$12,498,501	$191,179,073	$145,467,925	$39,680,835	$6,021,313	$252,620,986
2		1900	1,306	173,977,421	2,442	3,158,842	52,109	22,591,091	7,023,416	155,000,004	123,545,969	27,471,514	3,082,521	204,038,127
3	Alabama	1905	4	946,282	7	8,896	261	77,026	79,878	606,402	453,663	112,572	40,167	844,403
4		1900	18	464,005	8	7,200	165	71,440	44,107	672,017	564,795	84,773	22,449	1,005,358
5	Arkansas [1]	1900	3	2,190	.....	.....	3	750	37	3,590	2,835	635	120	5,859
6	California	1905	49	6,368,078	116	183,583	1,515	945,051	277,474	5,912,140	4,592,459	1,170,716	148,965	8,072,257
7		1900	45	4,820,205	75	106,458	1,454	870,973	180,795	5,809,428	4,395,363	1,296,115	117,950	7,405,081
8	Connecticut	1905	9	894,079	21	28,270	169	81,633	44,739	542,660	388,030	131,174	23,456	748,038
9		1900	7	639,408	12	13,506	179	90,058	23,087	681,399	516,145	144,168	21,086	801,478
10	Delaware	1905	20	6,645,852	192	250,583	2,836	1,176,061	291,267	7,910,779	6,899,431	753,100	258,248	10,250,842
11		1900	20	5,178,804	156	166,139	2,457	1,044,903	226,083	7,027,715	6,160,096	668,902	198,717	9,400,504
12	Georgia	1905	29	2,406,238	24	29,446	533	153,956	41,183	1,887,156	1,505,015	319,825	62,316	2,382,127
13		1900	36	1,434,390	26	20,413	410	92,030	24,724	928,129	747,913	138,999	41,217	1,187,697
14	Illinois	1905	28	11,649,246	97	134,674	2,770	1,326,440	427,961	8,173,788	7,109,142	888,352	176,294	10,758,196
15		1900	27	4,751,474	86	176,646	2,263	1,145,170	181,350	5,784,474	4,936,454	679,967	168,053	7,847,835
16	Indiana	1905	13	1,247,656	18	20,384	265	133,701	45,655	764,318	628,368	121,983	13,967	1,050,945
17		1900	23	1,321,455	27	26,872	400	161,942	61,747	1,187,397	907,091	262,251	18,055	1,589,802
18	Kentucky	1905	20	4,428,693	62	89,611	728	326,696	266,140	2,807,259	2,151,197	563,116	92,946	3,952,277
19		1900	23	4,681,389	53	61,063	810	321,658	112,659	2,881,896	2,336,136	482,022	63,738	3,757,016
20	Louisiana [2]	1900	3	6,193	.....	.....	4	1,341	78	6,355	5,800	472	83	10,157
21	Maine	1905	27	1,464,735	29	31,232	515	236,987	65,473	1,973,701	1,580,501	315,189	78,011	2,500,146
22		1900	31	1,376,106	36	26,798	587	229,268	102,332	1,943,204	1,562,672	322,230	58,293	2,451,713
23	Maryland	1905	17	2,018,666	24	36,587	531	217,579	66,919	1,482,680	992,750	373,879	116,051	1,911,348
24		1900	22	1,088,725	13	17,429	455	156,182	40,860	1,411,457	1,197,109	191,521	22,827	1,754,102
25	Massachusetts	1905	132	27,070,206	526	686,334	9,074	4,556,327	1,942,733	23,040,897	16,676,365	5,153,271	1,211,261	33,352,999
26		1900	119	15,317,940	355	405,648	7,010	3,379,698	662,553	19,793,757	14,451,069	4,817,175	525,513	26,067,714
27	Michigan	1905	25	6,860,797	92	146,745	1,747	865,673	449,649	7,271,023	5,805,403	1,293,143	172,477	9,340,349
28		1900	27	5,214,042	72	95,507	1,427	559,142	248,297	4,697,367	3,912,727	666,943	117,697	6,015,590
29	Minnesota	1905	9	82,260	2	2,400	40	19,350	3,016	88,016	66,278	12,961	8,777	132,533
30		1900	9	23,060	.....	.....	18	3,550	483	9,803	4,587	4,209	1,007	19,336
31	Mississippi [2]	1900	4	2,460	.....	.....	1	240	13	2,202	1,862	340	.....	3,556
32	Missouri	1905	9	1,345,163	21	37,344	217	131,212	75,530	734,478	564,627	152,651	17,200	1,128,332
33		1900	9	922,083	20	35,360	185	98,578	27,846	557,131	441,043	102,150	13,938	816,720
34	New Hampshire	1905	8	1,516,497	51	66,103	492	215,101	100,454	1,326,376	524,999	761,310	40,067	1,773,611
35		1900	12	1,900,277	51	54,275	552	219,292	145,008	2,053,367	937,947	962,475	152,945	2,664,942
36	New Jersey	1905	73	12,492,373	342	500,917	4,953	2,793,327	873,542	15,272,124	7,852,411	6,828,241	591,472	21,495,329
37		1900	77	9,906,119	276	412,847	4,178	2,057,197	507,753	9,582,507	7,068,592	2,172,978	290,937	13,747,155
38	New York	1905	118	24,037,904	241	340,309	5,444	2,485,162	980,851	16,274,903	12,774,019	2,807,967	692,917	21,642,945
39		1900	147	19,062,817	193	264,724	6,530	2,775,115	558,470	17,424,300	13,863,145	3,041,022	520,133	23,205,991
40	North Carolina	1905	34	2,568,965	37	61,265	534	149,258	93,209	2,088,036	1,670,867	310,569	56,600	2,662,174
41		1900	75	1,299,798	28	29,259	366	105,132	32,685	1,129,402	953,635	133,756	42,011	1,502,378
42	Ohio	1905	40	6,915,341	94	142,455	1,610	839,171	336,888	4,462,093	3,524,131	717,057	220,905	6,512,754
43		1900	58	5,822,580	74	80,680	1,384	617,409	160,315	3,774,298	3,018,710	691,532	64,056	5,182,065
44	Oregon	1905	11	272,048	.....	.....	94	67,365	11,115	366,757	285,764	66,035	14,958	484,673
45		1900	16	173,144	1	900	53	27,532	4,551	190,184	146,196	39,115	4,873	249,728
46	Pennsylvania	1905	205	72,972,114	754	927,434	14,413	6,417,750	4,049,820	55,411,927	43,129,248	11,083,860	1,198,819	69,427,852
47		1900	254	57,320,227	506	643,895	13,396	5,457,518	2,432,724	42,403,503	34,460,237	7,010,702	932,564	55,615,009
48	Rhode Island	1905	6	252,972	8	14,080	87	48,275	13,320	228,471	193,867	29,553	5,051	346,647
49		1900	5	157,900	6	7,930	69	32,092	5,832	207,317	175,176	28,975	3,166	292,939
50	South Carolina	1905	3	17,080	1	200	4	1,286	99	6,342	4,800	1,354	188	10,822
51		1900	5	5,595	.....	.....	10	2,000	525	12,743	9,986	2,500	257	18,387
52	Tennessee	1905	29	4,013,289	40	63,736	736	251,665	140,511	2,851,259	2,226,410	496,973	127,876	3,583,871
53		1900	44	3,444,197	29	35,496	803	239,870	91,197	2,184,311	1,888,653	228,113	67,545	2,802,117
54	Texas	1905	5	23,400	2	1,100	22	8,242	1,259	34,986	28,600	5,606	780	61,225
55		1900	11	24,763	2	1,300	29	9,216	1,158	52,207	41,093	9,728	1,386	76,508
56	Utah [2]	1900	4	8,625	.....	.....	3	1,500	215	3,482	2,250	1,150	82	5,863
57	Vermont	1905	4	201,466	7	6,040	60	27,066	25,136	277,286	229,644	46,612	1,030	342,312
58		1900	8	160,906	5	5,450	68	31,225	10,694	300,162	248,915	44,640	6,607	365,099
59	Virginia	1905	44	4,635,224	71	95,032	1,055	357,699	253,094	4,719,206	3,890,761	735,829	92,616	5,829,812
60		1900	65	4,032,387	59	84,602	889	313,677	252,548	3,695,817	3,101,034	497,654	97,129	4,716,920

[1] None reported in 1905.

[2] Included in all other states in 1905.

BY STATES: 1905 AND 1900.

PRODUCTS—continued.															
Leather, sold in the rough.		Sole leather.		Upper leather.				Goatskins (tanned and finished).		Sheepskins (tanned and finished).		Harness leather.		All other leather, all other products, and custom work (value).	
				Total value.	Calf and kip skins.		All other (value).								
Sides.	Value.	Sides.	Value.		Number.	Value.		Number.	Value.	Number.	Value.	Sides.	Value.		
4,678,292	$10,180,949	17,937,938	$69,205,600	$52,784,265	12,355,765	$23,372,365	$20,411,900	45,691,492	$37,887,349	20,597,598	$11,168,820	4,369,561	$20,274,188	$51,119,806	1
4,220,634	6,804,345	15,472,072	55,481,625	41,848,552	8,855,983	15,693,596	26,154,956	47,043,032	35,672,081	20,290,985	8,353,755	3,444,616	16,712,056	39,104,813	2
.....	.....	128,898	800,384	.....	.....	.....	.....	25	12	.....	.....	10,760	33,570	10,437	3
3,040	7,818	218,790	974,000	3,496	863	1,536	1,960	1,013	864	425	225	2,650	9,030	9,925	4
.....	.....	.....	.....	950	150	120	830	100	60	150	45	2,000	4,500	304	5
140,655	352,799	575,393	2,071,579	356,631	106,571	241,728	114,903	3,000	12,000	1,012,816	341,262	339,041	1,994,647	2,133,330	6
130,595	309,405	556,063	2,532,988	345,597	122,152	195,124	150,473	6,400	6,040	1,135,250	318,900	379,323	1,976,755	1,916,296	7
14,417	5,055	.....	.....	3,120	.....	.....	3,120	.....	.....	48,000	40,000	4,378	16,648	683,215	8
20,392	24,470	.....	.....	8,340	.....	.....	8,340	.....	.....	.....	.....	1,201	5,142	853,520	9
.....	.....	44,020	77,238	119,980	110	285	119,695	10,928,313	9,102,207	463,404	281,754	.....	.....	660,573	10
27,490	56,060	.....	.....	132,000	.....	.....	132,000	9,303,769	8,634,800	175,272	61,921	.....	.....	515,717	11
20,848	41,051	314,435	1,493,979	14,940	2,525	6,158	8,782	825	1,314	212	64	253,575	700,040	130,739	12
71,502	161,091	57,952	300,985	135,112	35,302	67,877	67,235	2,500	2,323	31,150	10,312	56,200	226,132	351,742	13
128,100	59,460	123,198	585,000	6,417,631	2,293,950	4,741,324	1,676,307	.....	.....	1,696,713	964,699	53,674	267,890	2,464,116	14
150,976	74,470	68,324	310,296	5,225,588	1,455,154	3,034,367	2,191,221	.....	.....	1,203,323	540,193	34,303	170,000	1,527,288	15
15,000	12,000	10,600	61,800	1,150	250	1,150	.....	.....	.....	50	50	231,102	877,353	98,592	16
31,000	15,250	.....	.....	43,320	16,507	42,865	655	.....	.....	10,335	5,600	193,777	1,011,613	513,813	17
54,160	261,930	393,808	2,117,495	12,933	5,033	12,850	83	636	393	42,734	23,051	187,632	1,075,228	460,347	18
14,014	67,071	442,975	2,314,770	1,000	.....	.....	1,000	100	70	88,961	44,410	206,748	1,091,901	237,785	19
.....	.....	.....	.....	1,267	700	767	500	300	200	6,000	3,000	100	500	5,190	20
5,000	5,025	484,600	1,493,440	141,751	1,271	3,072	138,679	.....	.....	2,032,800	587,416	.....	.....	272,514	21
3,450	3,104	685,650	1,451,679	358,708	5,127	9,396	349,312	.....	.....	1,940,870	472,520	230	950	164,752	22
11,356	49,164	126,034	622,360	269,806	41,760	64,539	205,267	30,000	24,000	112,750	84,200	11,765	68,240	793,569	23
125,760	260,350	48,310	221,476	424,172	132,738	209,940	214,232	41,000	23,750	330,890	137,400	16,634	91,030	595,915	24
136,808	179,152	137,110	429,236	15,321,936	4,041,330	7,463,088	7,858,848	6,878,955	5,277,991	6,862,980	3,900,146	.....	.....	8,244,538	25
254,880	203,434	69,980	267,500	11,202,310	2,248,254	4,017,224	7,275,080	8,956,118	6,012,205	8,590,503	3,636,839	4,600	14,800	4,550,626	26
202,402	72,447	1,353,203	4,954,749	1,938,788	312,591	512,333	1,426,455	.....	.....	593,964	218,634	195,695	854,690	1,301,041	27
122,757	128,420	914,954	3,090,684	818,038	150	150	817,888	.....	.....	617,423	234,336	212,386	980,832	754,274	28
68	340	12,000	61,000	14,162	40	32	14,130	22	11	300	350	6,310	25,310	31,360	29
700	1,600	115	345	1,615	300	410	1,205	20	10	1,124	773	655	2,995	11,998	30
.....	.....	50	125	2,800	100	250	2,550	200	181	.....	.....	100	450	.....	31
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	52	78	124,210	675,019	453,285	32
.....	.....	232	1,392	500	371	500	.....	170	204	620	522	72,380	387,467	426,635	33
.....	.....	.....	.....	359,480	3,112	8,540	350,940	420,000	225,000	136,830	59,922	70,984	186,470	942,739	34
2,071	1,168	.....	.....	318,149	21,406	44,824	173,325	258,108	200,928	1,153,994	434,915	87,214	189,826	1,619,956	35
798,073	873,093	.....	.....	2,404,056	96,992	172,550	2,231,506	3,481,123	3,161,780	1,228,500	743,802	75,242	405,219	13,907,379	36
329,751	453,653	.....	.....	2,255,070	530,350	999,235	1,255,835	4,969,191	3,061,738	454,988	283,012	33,865	177,840	7,516,436	37
567,019	836,408	1,385,986	4,977,072	6,724,150	1,122,832	1,662,513	5,061,637	1,033,155	922,035	4,768,772	3,040,763	184,182	995,947	4,137,570	38
679,028	1,130,248	1,446,242	4,555,818	8,346,177	990,213	1,442,322	6,903,855	1,801,518	1,898,957	2,997,036	1,360,885	146,341	765,500	5,048,400	39
356,700	1,451,455	74,883	398,396	38,114	3,395	5,519	32,595	1,166	856	1,295	430	50,690	188,130	584,782	40
105,857	475,810	31,389	124,449	71,857	11,579	18,743	53,114	2,046	1,212	3,080	1,214	29,156	89,184	738,652	41
150,393	181,347	148,864	954,869	895,869	503,687	883,379	12,490	3,500	2,500	24,360	10,224	309,434	1,860,772	2,607,173	42
65,060	38,017	134,962	1,016,048	55,648	27,421	44,225	11,423	1,600	1,775	86,670	30,535	336,015	1,831,651	2,108,791	43
15,250	42,670	60	300	5,940	3,430	5,700	240	80	200	200	100	47,080	235,215	200,248	44
2,580	1,450	806	3,030	7,070	4,099	7,597	373	252	250	2,305	1,140	31,570	142,790	93,092	45
822,608	2,298,589	9,476,130	33,553,670	4,715,006	243,950	621,863	4,093,143	22,909,407	19,156,181	1,090,180	567,879	518,178	2,989,450	6,147,071	46
666,080	1,318,801	8,183,522	28,691,603	2,699,743	419,593	641,955	2,057,788	21,602,961	15,796,782	1,090,822	600,423	450,352	2,491,722	4,015,935	47
.....	.....	.....	.....	8,600	2,467	8,600	.....	.....	.....	230,400	140,200	.....	.....	197,847	48
200	1,000	.....	.....	22,615	9,800	22,615	.....	.....	.....	201,600	106,500	.....	.....	162,824	49
.....	.....	60	250	350	.....	.....	350	.....	.....	.....	.....	4,250	10,100	122	50
3,300	8,400	50	125	630	220	290	340	50	25	125	52	2,850	8,355	800	51
169,748	656,018	229,508	1,210,860	141,777	1,014	2,225	139,552	643	509	6,094	3,183	49,111	124,070	1,437,554	52
211,749	557,048	205,042	1,086,284	19,068	6,494	11,753	7,315	382	305	3,471	1,756	53,105	195,203	941,493	53
3,334	10,000	400	1,200	.....	.....	.....	.....	.....	.....	.....	.....	8,900	33,750	16,275	54
3,000	450	1,022	3,752	3,494	400	730	2,764	975	886	12,240	5,657	5,105	19,875	42,394	55
.....	.....	600	1,975	2,875	210	400	2,475	.....	.....	.....	.....	230	1,000	13	56
55,552	182,202	.....	.....	75	60	75	.....	.....	.....	1,000	1,200	25,337	150,264	8,481	57
102,200	160,300	.....	.....	186,978	400	600	186,378	.....	.....	700	900	575	3,311	13,010	58
345,278	1,590,818	503,907	2,926,054	6,348	1,494	3,430	2,909	.....	.....	55,951	28,108	35,235	130,503	1,147,621	59
128,378	480,042	400,166	2,189,000	15,451	2,594	4,434	11,017	23	24	16,235	10,700	26,350	94,386	1,017,528	60

TABLE 5.—COMPARATIVE SUMMARY,

	STATE.	Census.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS AND WAGES.		Miscellaneous expenses.	COST OF MATERIALS USED.				PRODUCTS.
					Number.	Salaries.	Average number.	Wages.		Total.	Hides and skins.	Tanning, currying, and finishing materials.	Fuel, rent of power and heat, mill supplies, all other materials, and freight.	Aggregate value.
61	Washington	1905	3	$37,950	.....	.....	8	$5,752	$1,641	$41,108	$32,544	$7,234	$1,330	$58,061
62		1900	3	17,600	.....	.....	3	2,125	580	25,701	19,920	4,785	996	32,605
63	West Virginia	1905	33	8,750,696	48	$88,514	946	434,263	246,136	4,769,123	3,696,392	904,981	167,750	6,061,509
64		1900	46	5,049,615	37	62,889	664	224,444	144,458	2,541,197	2,095,566	389,436	56,195	3,210,753
65	Wisconsin	1905	33	30,409,164	322	457,702	5,556	2,686,904	1,291,921	19,870,887	15,963,629	3,431,564	475,694	25,845,123
66		1900	42	18,283,591	230	314,956	5,262	2,241,861	735,767	16,040,304	13,347,209	2,344,775	348,320	20,074,373
67	All other states	[1]1905	9	39,820	2	930	24	13,174	1,888	32,892	26,610	3,158	3,124	57,424
68		[2]1900	8	63,351	1	600	22	6,963	1,890	31,881	24,008	5,297	2,576	44,877

[1] Includes establishments distributed as follows: Colorado, 1; Iowa, 2; Louisiana, 1; Mississippi, 2; North Dakota, 1; South Dakota, 1; Utah, 1.
[2] Includes establishments distributed as follows: Arizona, 1; Iowa, 2; Kansas, 1; Nebraska, 2; South Dakota, 2.

BY STATES: 1905 AND 1900—Continued.

PRODUCTS—continued.															
Leather, sold in the rough.		Sole leather.		Upper leather.				Goatskins (tanned and finished).		Sheepskins (tanned and finished).		Harness leather.		All other leather, all other products, and custom work (value).	
				Total value.	Calf and kip skins.		All other (value).								
Sides.	Value.	Sides.	Value.		Number.	Value.		Number.	Value.	Number.	Value.	Sides.	Value.		
.....	.....	.....	.....	$7,488	1,872	$7,488	.....	.....	.....	2,400	$1,500	7,800	$34,750	$14,323	61
.....	.....	.....	.....	24,000	3,120	3,000	$21,000	.....	.....	6,400	2,050	.....	.....	5,055	62
83,889	$311,022	1,262,538	$5,270,545	3,018	770	1,795	1,823	.....	.....	830	458	57,011	322,249	153,617	63
156,034	447,171	363,954	1,742,354	14,980	2,556	4,777	10,209	.....	.....	2,106	980	95,720	520,322	484,940	64
573,434	687,114	1,091,531	4,231,785	12,858,777	3,564,723	6,940,331	5,918,446	2	$7	146,755	116,406	1,504,944	6,097,051	1,853,383	65
816,809	377,726	1,630,988	4,500,714	9,104,678	2,797,925	4,862,420	4,242,258	30,471	25,117	46,610	23,904	961,966	4,194,372	1,847,862	66
7,600	20,800	673	3,333	1,780	530	1,780	.....	340	263	7,250	3,050	2,927	10,935	16,054	67
.....	.....	25	125	3,250	775	2,250	1,000	4,675	4,275	20,250	12,440	840	3,547	21,240	68

Of the 34 states shown separately in Table 5, in only 5 was there an increase in number of establishments, namely: Massachusetts, 13; California, 4; Connecticut, 2; Illinois, 1; and Rhode Island, 1. The net loss was 257, and a decrease of 10 or more is shown for each of the following states: Pennsylvania, 49; North Carolina, 41; New York, 29; Virginia, 21; Ohio, 18; Tennessee, 15; Alabama, 14; West Virginia, 13; and Indiana, 10. The great decrease between 1880 and 1890, as shown in Table 1, is due to the fact that prior to 1890 tanning and currying were treated as separate industries, and an establishment carrying on both processes in the same city or town was counted twice. Beginning with the census of 1890, however, the two processes have been treated as one industry, and under such conditions an establishment doing both is counted but once.

From 1900 to the year 1905, the capital increased $68,606,833, or 39.4 per cent. Nearly every state contributed toward this increase, only 4 showing a loss, as follows: New Hampshire, $383,780; Kentucky, $252,696; Indiana, $73,799; and Texas, $1,363. Three states each reported an increase of over $10,000,000, namely: Pennsylvania, $15,651,887; Wisconsin, $12,125,573; and Massachusetts, $11,752,266.

All states presented in the table show an increase in amount of wages paid except New Hampshire, Vermont, Connecticut, New York, Indiana, South Carolina, and Texas. The state of Massachusetts shows the largest increase, $1,176,629; Pennsylvania, the next largest with $960,232; and New Jersey, the third with $736,130.

PRODUCTS.

Statistics for some of the principal kinds of leather for 1900 and 1905 are shown in Table 5, and Table 6 shows the kind, quantity, and value of products and the number of establishments reporting each kind for 1905.

TABLE 6.—*Products, by kind, quantity, and value, with number of establishments reporting each kind: 1905.*

KIND.	Number of establishments reporting.	Unit of measure.	Quantity.	Value.
Total				$252,620,986
Rough leather, sold in the rough	145	Sides	2,054,281	7,801,249
Rough grains, sold in the rough	6	Sides	258,624	584,418
Rough splits, sold in the rough	59	Sides	2,365,387	1,795,282
Sole leather:				
Oak	103	Sides	3,607,963	19,157,805
Union	39	Sides	4,400,011	17,371,780
Hemlock	73	Sides	9,929,964	32,676,015
Upper leather, other than calf, kip, or colt skins:				
Grain, satin, kangaroo, etc. (side leather).	98	Sides	6,850,469	15,487,252
Finished splits	62	Number	6,205,050	5,993,231
Patent and enameled shoe leather.	32	Sides	1,356,777	3,335,352
Horsehide	21	Sides	412,367	889,480
Coltskins	17	Number	1,323,211	3,706,585
Calf and kip skins, tanned and finished:				
Flesh finished	102	Number	1,802,338	3,511,784
Grain finished	81	Number	10,211,885	18,996,551
Patent and enameled	7	Number	341,542	864,030
Goatskins, tanned and finished:				
Black	95	Number	40,019,614	32,822,282
Colored	34	Number	5,671,878	5,065,067
Sheepskins, tanned and finished	172	Number	20,597,598	11,168,829

TABLE 6.—*Products, by kind, quantity, and value, with number of establishments reporting each kind: 1905*—Continued.

KIND.	Number of establishments reporting.	Unit of measure.	Quantity.	Value.
Belting leather	26	Sides	859,564	$4,754,456
Harness leather	298	Sides	4,369,561	20,274,188
Carriage leather	41	Hides	622,836	5,453,157
Trunk, bag, and pocketbook leather	38			4,920,750
Bookbinders' leather	31			2,283,761
Leather for manufacture of gloves	45			3,344,614
Furniture leather	25	Hides	204,268	2,327,647
All other leather, including offal leather.	204			12,180,238
All other products, including by-products, glue stock, etc.	536			7,665,223
Amount charged for tanning, currying, or finishing for others.	251			8,189,960
Custom work, stock tanned or finished for others:				
For tanners, curriers, and finishers—				
Hides tanned		Number	860,918	6,109,481
Skins tanned		Number	2,646,632	1,658,168
Sides curried		Number	331,385	1,046,675
Splits curried		Number	390,366	412,366
Skins curried or finished		Number	3,672,590	3,405,291
For others, not tanners, curriers, or finishers—				
Hides tanned		Number	426,096	2,922,995
Skins tanned		Number	13,279,613	8,587,529
Sides curried		Number	1,070,669	2,702,039
Splits curried		Number	341,753	402,813
Skins curried or finished		Number	12,208,534	8,821,397

The several products do not in every case cover the entire quantity of each particular kind of leather manufactured. Goatskins are reported separately, and they also enter into the products reported under "leather for manufacture of gloves;" sheepskins, reported separately, are also found under "bookbinders' leather" and "leather for manufacture of gloves;" calfskins of the class of "calf and kip skins" are also found under "bookbinders' leather;" and "patent and enameled leather," although reported separately under "upper leather" and "calf and kip skins," also constitutes a large part of carriage, furniture, and harness leather. The totals for the industry do not include the quantity or value of hides and skins custom tanned, curried, or finished.

Sole leather.—The value of the output of sole leather in 1900 constituted 27.2 per cent of the value of all leather manufactured in the United States; at the census of 1905 it formed 27.4 per cent. The increase in number of hides produced was 2,465,866, or 15.9 per cent, and in value, $13,723,975, or 24.7 per cent. In 1900 the state of Pennsylvania reported 52.9 per cent and in 1905, 52.8 per cent of the entire quantity of sole leather produced in the United States. During the period the number of sides produced in the state increased 1,292,617, or 15.8 per cent, and the value $4,862,073, or 16.9 per cent. There is no state comparable with Pennsylvania in the manufacture of sole leather. Michigan, New York, West Virginia, and Wisconsin were the only other states that reported individually a million sides or more in 1905, and their combined total was only slightly more than one-half of the number of sides reported by Pennsylvania. Of the remaining 28 states, shown separately in

Table 5, 18 reported a total of 3,367,778 sides, and 10 states reported none at all.

Of all the sole leather reported in 1905, 77.5 per cent was produced in the group of states consisting of Pennsylvania, New York, Ohio, Maryland, Virginia, West Virginia, Kentucky, Tennessee, and Georgia. The concentration in this section is due to the proximity of hemlock and oak forests, from which is obtained the bark that is used so largely for tanning. Michigan, Wisconsin, Maine, and California produced 19.5 per cent of the sole leather, and the remaining 3 per cent was produced in various other states.

Of the total quantity of sole leather produced, oak leather formed 20.1 per cent of the total number of sides, union 24.5 per cent, and hemlock 55.4 per cent. Of the total value reported, oak leather formed 27.7 per cent, union 25.1 per cent, and hemlock 47.2 per cent.

The following is a summary of establishments that reported sole leather exclusively in 1905:

Number of establishments	144
Capital	$92,215,661
Salaried officials, clerks, etc., number	435
Salaries	$723,836
Wage-earners, average number	10,789
Total wages	$4,687,893
Miscellaneous expenses	$3,130,982
Cost of materials used	$54,698,223
Value of products	$64,841,056

The tanning of sole leather is practically a separate industry, as the establishments summarized in this table reported in 1905, 93.7 per cent of the value of all such leather tanned in the United States.

Rough leather.—At the census of 1905 compared with that of 1900 rough leather, sold in the rough, showed an increase in value of $3,316,604, or 48.3 per cent. Of the 6 leading states in value of products, Pennsylvania ranked first at both censuses and showed an increase of $979,788, or 74.3 per cent. Virginia ranked second in 1905 and fourth in 1900, with an increase of $1,101,176, or 244.9 per cent, in value of products; North Carolina was third in 1905 and fifth in 1900, the increase being $975,645, or 205 per cent; New Jersey was fourth in 1905 and sixth in 1900, with an increase of $420,040, or 92.7 per cent; New York was fifth in 1905 and second in 1900, the value of products having decreased $293,840, or 26 per cent; and Wisconsin, the state holding sixth rank in 1905, was eighth in 1900, the increase being $309,388, or 81.9 per cent.

Upper leather.—Upper leather, as shown in Table 5, is divided into calf and kip skins and "all other." In 1905 compared with 1900 the number of calf and kip skins increased 3,499,782, or 39.5 per cent, and the value $7,678,769, or 48.9 per cent. Of the total number tanned and finished, 82.6 per cent were "grain" finished, 14.6 per cent "flesh" finished, and 2.8 per cent were made into patent and enameled leather. Massachusetts, Wisconsin, Illinois, and New York produced 89.2 per cent of the skins, these being the only states reporting over a million skins each. Massachusetts was the largest producer of calf and kip skins in the United States, with 32.7 per cent of the total, and also made the largest gain over 1900, the increase in number of skins being 1,793,076 and in value $3,445,864. Wisconsin produced the next largest quantity, 28.9 per cent, with an increase over 1900 of 766,798 in number of skins and $2,077,911 in value. Illinois, New York, Ohio, and Michigan each showed a large increase in production, while New Jersey reported the largest decrease.

The amount and value of the various kinds of leather included under the head "upper leather, other than calf, kip, or colt skins," and the number of establishments reporting same are shown in Table 6. A comparison of the figures in this table with those in the corresponding table in the Census report for 1900 shows that "grain," etc., and "finished splits" decreased both in amount and in value, and that horsehide decreased somewhat in amount, but increased in value. Patent and enameled shoe leather increased 472.6 per cent in quantity and 205.3 per cent in value—a notable fact—as at one time it was said that this kind of leather could not be made successfully in the United States. A comparison in regard to coltskins is not possible, as the figures were not given separately in 1900. Ninety-three per cent of the coltskins reported in 1905 were manufactured in Pennsylvania and nearly all the remainder in New York state. Wisconsin, Massachusetts, and New York produced 81.7 per cent of the grain leather, etc., Wisconsin leading with 1,923,636 sides, valued at $4,751,770. These states also reported about the same percentage of finished splits, Massachusetts leading with 2,357,182, valued at $2,667,982. Massachusetts, Pennsylvania, and New Jersey made 86.3 per cent of the patent and enameled shoe leather reported in this country in 1905. Massachusetts reported the greatest number of sides, 506,450, valued at $981,551, but New Jersey, while returning only 318,182 sides, reported a value of $1,497,893—evidently a much higher grade of leather. Horsehides were produced mainly in Illinois and Wisconsin. Massachusetts, Wisconsin, New York, Illinois, Pennsylvania, New Jersey, and Michigan produced 95.6 per cent of the total value of "upper leather other than calf, kip, or colt skins."

The value of upper leather, $52,784,265, given in Table 5 does not include upper leather made of goat and sheep skins. These skins, a separate class of products, are used for a variety of purposes, and it is impossible from the Census reports to make a segregation of the number used for upper leather.

Goatskins.—There was a decrease of 2.9 per cent in the number of goatskins and an increase of 6.2 per cent in value, and, notwithstanding the output reported in

1905 formed but 15 per cent of the value of all leather produced in the United States compared with 17.5 per cent in 1900, goatskins continued to lead in number and value all other kinds of skins manufactured. The skins were converted chiefly into "glazed kid" by what is known as the "chrome" process and used for shoe uppers, although some were made into "glove" leather, etc. Table 6 shows that 40,019,614 skins, or 87.6 per cent, were finished "black," and 5,671,878, or 12.4 per cent, "colored." Of the production of this class of leather in the United States, Pennsylvania led at the census of 1905, as in 1900, the output reported in 1905 amounting to 50.1 per cent of the total. Delaware reported the next largest output of goatskins—23.9 per cent of the total number. Massachusetts, New Jersey, and New York followed in the order named, and these 5 states produced 45,230,953 skins, valued at $37,620,284, practically the entire production of the United States.

Sheepskins.—Although the number of sheepskins tanned and finished increased only 1.5 per cent, the total value increased 33.7 per cent. Ninety and eight-tenths per cent of the skins were produced by the following states, named in order of quantity reported: Massachusetts, New York, Maine, Illinois, New Jersey, Pennsylvania, and California. Massachusetts, New York, and Maine also led in the production of sheepskins in 1900 and ranked in the order named. In 1905 Massachusetts reported 33.5 per cent of the number of finished sheepskins produced in the United States. As compared with 1900 there was, however, a decrease of 1,697,583 skins, or 19.8 per cent, in number, but an increase of $263,307, or 7.2 per cent, in value. Notwithstanding these figures, the state was still first in this branch of the industry. New York reported an increase in quantity of 1,771,736 skins, or 59.1 per cent, and in value of $1,688,878, or 124.1 per cent, and Maine showed a slight increase over 1900 in both number of skins and value. A variety of articles are made from sheepskins, such as pocketbooks, gloves, cushions, bellows, traveling bags, shoe linings and trimmings, saddle pads, imitation chamois skins, sporting goods, and many fancy articles. It is tanned and finished much better than formerly, and is not only made to resemble closely other varieties of leather of superior quality, but is used for shoes of a cheap grade. Skins dressed with the wool on are made into coats, caps, mats, sleigh robes, gloves, etc.

Harness leather.—The production of harness leather increased during the period 1900 to 1905, 924,945, or 26.9 per cent, in number of sides, and $3,562,132, or 21.3 per cent, in value.

Wisconsin reported the largest production, 1,504,944 sides, valued at $6,097,651. The state also led in 1900 and increased its production from 1900 to 1905 by 542,978 sides, or 56.4 per cent, in quantity and $1,903,279, or 45.4 per cent, in value. Pennsylvania was second in 1905, as in 1900, with a product of 518,178 sides, valued at $2,989,450, which is an increase of 67,826 sides, or 15.1 per cent in number, and of $497,728, or 20 per cent, in value. California was next, as in 1900, although reporting a decrease both in quantity and in value. Ohio was fourth, with a decrease of 26,581 in number of sides, but an increase of $29,121 in value. Kentucky was the only other state reporting a product of over a million dollars in value. Five states—Wisconsin, Pennsylvania, California, Ohio, and Kentucky—produced 2,859,229 sides, valued at $13,927,748, or 68.7 per cent of the entire production of the country. Maine, Massachusetts, Rhode Island, Delaware, Iowa, and Utah produced no harness leather, and the products of Alabama, Connecticut, Maryland, Minnesota, South Carolina, Texas, and Washington were of a less value than $100,000 each. The production of harness leather, as shown by Table 6, was reported by 298 establishments, the largest number manufacturing any one kind of leather.

Other products.—With respect to the remaining kinds of leather, a comparison of the figures in this table with corresponding statistics of the census of 1900 shows that carriage and furniture leather increased both in quantity and in value, the increase in furniture leather being especially notable, namely, 102.4 per cent in number of hides and 153.3 per cent in value. Trunk, bag, pocketbook, bookbinders', and glove leather also show, respectively, increases in value over 1900.

Included under "all other leather" are kangaroo skins, used for shoe uppers; lambskins, used chiefly for gloves; sealskins, used for cloaks and caps when dressed by tanning establishments; alligator skins, used for valises, satchels, and cigar cases; skirting leather; offal leather, etc. The principal items comprising "all other products" were wool, hair, and glue stock. The value of the wool sold in the census year is estimated at $2,225,000.

There were 251 establishments reporting custom work in 1905, 104 of them exclusively. Many made a specialty of enameling, embossing, coloring, cleaning, paring, skiving, etc. The estimated number and value of hides and skins that were tanned, curried, or finished for others are given in Table 6, hides or skins tanned and then curried or finished being included in the totals for each process.

Table 7 shows the rank of states according to capital, average number of wage-earners, total wages, and value of products, for 1900 and 1905.

TABLE 7.—RANK OF STATES ACCORDING TO CAPITAL, AVERAGE NUMBER OF WAGE-EARNERS, WAGES, AND VALUE OF PRODUCTS: 1905 AND 1900.

STATE.	Census.	CAPITAL.		WAGE-EARNERS AND WAGES.				VALUE OF PRODUCTS.	
		Rank.	Amount.	Average number.		Wages.		Rank.	Value.
				Rank.	Number.	Rank.	Amount.		
United States	1905	.....	$242,584,254	.....	57,239	.....	$27,049,152	.....	$252,620,986
	1900	.....	173,077,421	.....	52,109	.....	22,591,091	.....	204,038,127
Alabama	1905	22	946,282	21	261	23	77,026	22	844,403
	1900	23	404,005	23	165	23	71,440	21	1,005,358
Arkansas [1]	1900	34	2,190	31	3	33	750	33	5,859
California	1905	11	6,368,078	10	1,515	8	945,051	9	8,072,257
	1900	10	4,820,205	8	1,454	8	870,973	8	7,405,981
Connecticut	1905	23	804,079	23	160	22	81,633	23	748,038
	1900	22	630,408	22	179	22	90,058	22	891,478
Delaware	1905	10	6,645,852	6	2,836	7	1,176,061	7	10,250,842
	1900	8	5,178,804	6	2,457	7	1,044,903	6	9,400,504
Georgia	1905	16	2,406,238	16	533	18	153,956	17	2,382,127
	1900	16	1,434,390	18	410	21	92,030	20	1,187,697
Illinois	1905	6	11,040,246	7	2,770	6	1,326,440	6	10,758,196
	1900	11	4,751,474	7	2,203	6	1,145,170	7	7,847,835
Indiana	1905	21	1,247,656	20	265	20	133,701	21	1,050,945
	1900	18	1,321,455	19	400	17	101,942	18	1,589,802
Kentucky	1905	13	4,428,693	14	728	13	326,696	13	3,952,277
	1900	12	4,081,389	12	810	11	321,658	12	3,757,016
Louisiana [2]	1900	31	6,103	30	4	32	1,341	31	10,157
Maine	1905	19	1,464,735	18	515	15	236,987	16	2,500,146
	1900	17	1,376,106	15	587	14	220,268	16	2,451,713
Maryland	1905	17	2,018,666	17	531	16	217,570	18	1,911,348
	1900	20	1,088,725	17	455	18	156,182	17	1,754,102
Massachusetts	1905	3	27,070,206	2	9,074	2	4,556,327	2	33,352,999
	1900	4	15,317,040	2	7,010	2	3,370,698	2	26,007,714
Michigan	1905	9	6,800,707	8	1,747	9	895,673	8	9,340,349
	1900	7	5,214,042	9	1,427	10	559,142	9	6,015,590
Minnesota	1905	27	82,260	27	40	27	19,350	27	132,533
	1900	28	23,000	28	18	28	3,550	20	19,336
Mississippi [2]	1900	33	2,400	32	1	34	240	34	3,556
Missouri	1905	20	1,345,163	22	217	21	131,212	20	1,128,382
	1900	21	922,083	21	185	20	98,578	23	816,720
New Hampshire	1905	18	1,516,497	19	492	17	215,101	19	1,773,611
	1900	15	1,060,277	16	552	16	210,202	15	2,094,942
New Jersey	1905	5	12,492,373	5	4,953	3	2,703,327	5	21,405,329
	1900	5	6,906,110	5	4,178	5	2,057,197	5	13,747,155
New York	1905	4	24,037,904	4	5,444	5	2,485,162	4	21,642,945
	1900	2	19,062,817	3	6,530	3	2,775,115	3	23,205,091
North Carolina	1905	15	2,568,965	15	534	19	140,258	15	2,062,174
	1900	19	1,209,708	20	360	19	105,132	19	1,502,378
Ohio	1905	8	6,015,341	9	1,610	10	830,171	10	6,512,754
	1900	6	5,822,580	10	1,384	9	617,409	10	5,182,065
Oregon	1905	24	272,048	24	94	24	67,365	24	484,673
	1900	24	173,144	26	53	26	27,532	26	249,728
Pennsylvania	1905	1	72,972,114	1	14,413	1	6,417,750	1	69,427,852
	1900	1	57,320,227	1	13,306	1	5,457,518	1	55,615,000
Rhode Island	1905	25	252,972	25	87	25	48,275	25	340,647
	1900	26	157,900	24	60	24	32,092	25	202,930
South Carolina	1905	30	17,080	30	4	30	1,286	30	10,822
	1900	32	5,595	29	10	30	2,000	30	18,387
Tennessee	1905	14	4,013,289	13	736	14	251,605	14	3,583,871
	1900	14	3,444,197	13	803	13	239,870	14	2,802,117
Texas	1905	29	23,400	28	22	28	8,242	28	61,225
	1900	27	24,703	27	29	27	9,216	27	76,508
Utah [2]	1900	30	8,625	31	3	31	1,500	32	5,803
Vermont	1905	26	201,466	26	60	26	27,066	26	342,312
	1900	25	160,006	25	68	25	31,225	24	365,090
Virginia	1905	12	4,635,224	11	1,055	12	357,699	12	5,820,812
	1900	13	4,032,387	11	880	12	313,077	11	4,716,920
Washington	1905	28	37,950	29	8	29	5,752	29	58,061
	1900	29	17,000	31	3	29	2,125	28	32,605

[1] None reported in 1905.

[2] Included in "all other states" in 1905.

TABLE 7.—RANK OF STATES ACCORDING TO CAPITAL, AVERAGE NUMBER OF WAGE-EARNERS, WAGES, AND VALUE OF PRODUCTS: 1905 AND 1900—Continued.

STATE.	Census.	CAPITAL.		WAGE-EARNERS AND WAGES.				VALUE OF PRODUCTS.	
		Rank.	Amount.	Average number.		Wages.		Rank.	Value.
				Rank.	Number.	Rank.	Amount.		
West Virginia	1905	7	$8,750,696	12	946	11	$434,263	11	$6,061,509
	1900	9	5,049,615	14	664	15	224,444	13	3,210,753
Wisconsin	1905	2	30,409,164	3	5,556	4	2,686,904	3	25,845,123
	1900	3	18,283,591	4	5,262	4	2,241,861	4	20,074,373
All other states	[1] 1905	.....	39,820	.....	24	.....	13,174	.....	57,424
	[2] 1900	.....	63,351	.....	22	.....	6,963	.....	44,877

[1] Includes establishments distributed as follows: Colorado, 1; Iowa, 2; Louisiana, 1; Mississippi, 2; North Dakota, 1; South Dakota, 1; Utah, 1.
[2] Includes establishments distributed as follows: Arizona, 1; Iowa, 2; Kansas, 1; Nebraska, 2; South Dakota, 2.

The table shows that at the census of 1905 there were 5 states—Pennsylvania, Massachusetts, Wisconsin, New York, and New Jersey—that reported products valued at over $20,000,000 each, having a combined total of $171,764,248, or 68 per cent of the total for the United States. In 1900 the same states reported a combined total of $138,710,242, which formed the same percentage of the total for the United States as in 1905.

Pennsylvania was the leading state in the production of leather, both in 1900 and 1905. The number of establishments reported dropped from 254 to 205, but capital increased $15,651,887, or 27.3 per cent; number of wage-earners, 1,017, or 7.6 per cent; total wages, $960,232, or 17.6 per cent; cost of materials, $13,008,424, or 30.7 per cent; and value of products, $13,812,843, or 24.8 per cent. The value of products in 1900 formed 27.3, and in 1905, 27.5 per cent of the total for the United States. The state led in the production of sole leather, glazed kid, and rough leather. The chief tanning materials used were hemlock bark, quebracho, oak bark extract, and chemicals.

Massachusetts was second in importance at both censuses and was one of the few states that showed an increase in number of establishments—from 119 to 132. Capital increased $11,752,266, or 76.7 per cent; the number of wage-earners, 2,064, or 29.4 per cent; total wages, $1,176,629, or 34.8 per cent; and value of products, $7,285,285, or 27.9 per cent. The value of products in 1900 formed 12.8 and in 1905, 13.2 per cent of the total for the United States. The state led in the production of calf and kip skins and sheepskin leather, and produced goatskin, grain, and other upper leather in large quantities. All of the principal tanning materials were used.

Wisconsin ranked third. Although it lost 9 establishments in 1905 compared with 1900, it increased $12,125,573, or 66.3 per cent, in capital; 294, or 5.6 per cent, in number of wage-earners; $445,043, or 19.9 per cent, in wages; and $5,770,750, or 28.7 per cent, in value of products. In kinds of leather produced, calf and kip skins led; harness leather, of which Wisconsin produced more than any other state, was next, followed by grain and sole leather. Hemlock bark formed over 50 per cent of the cost of tanning materials; quebracho, gambier, and chemicals also were largely used.

New York and New Jersey were close rivals for fourth position. These states show results that make an interesting comparison. New Jersey with 73 establishments reported products valued at $21,495,329, which is but $147,616 less than that for New York, which had 118 establishments. To produce this almost equal value of products, New Jersey had a capital of $12,492,373 as against a capital in New York of $24,037,904, or $11,545,531 less; 4,953 wage-earners as against 5,444, or 491 less; but paid in wages $2,793,327 as against $2,485,162 for New York, or $308,165 more.

At the census of 1905, compared with that of 1900, New York gained $4,975,087 in capital, but lost 29 in number of establishments, 1,086 in number of wage-earners, $289,953 in total wages, and $1,563,046 in value of products. The principal tanning materials used were hemlock bark, quebracho, and chemicals, and the principal products were sole leather, upper leather, calf and kip skins, sheepskins, and harness leather. At the census of 1905 the state led in glove leather, with 36.4 per cent of the total value of this class of leather produced in the United States. New Jersey lost 4 establishments, but gained $2,586,254 in capital, 775 in number of wage-earners, $736,130 in wages, and $7,748,174 in value of products. The chief tanning materials used were oak bark, quebracho, and chemicals. In the manufacture of carriage, furniture, bookbinders', trunk, bag, and pocketbook leather, New Jersey led all other states. Goatskins, patent and enamel, and rough leather were also produced in large quantities.

Other states that reported a value of products of over $5,000,000 were Illinois, having large quantities of calfskin leather; Delaware, the chief product of which was goatskin, or glazed kid; and Michigan, California,

Ohio, West Virginia, and Virginia, ranking in the order named. Pennsylvania showed the largest amount of increase in the total value of products, namely, $13,812,-843, and Minnesota the largest proportionate increase, 585.4 per cent.

The value of products according to geographic divisions, given in the following tabular statement, shows an important concentration in Eastern states.

DIVISION.	1905	1900	Per cent of increase.
North Atlantic	$151,629,879	$125,302,040	21.0
South Atlantic	29,108,634	21,790,741	33.6
North Central[1]	54,708,282	41,545,721	31.8
South Central[2]	8,441,776	7,660,571	10.2
Western[3]	8,614,991	7,694,177	12.0

[1] Exclusive of Iowa, North Dakota, and South Dakota in 1905, and Iowa, Kansas, Nebraska, and South Dakota in 1900.
[2] Exclusive of Louisiana and Mississippi in 1905.
[3] Exclusive of Colorado and Utah in 1905, and Arizona in 1900.

The North Atlantic division, according to the statement, reported 61.4 per cent of the total value of products for the United States in 1900 and 60 per cent in 1905. The decrease in percentage of total is due to a larger proportionate increase in the South Atlantic and North Central divisions, but it is not sufficient to affect materially the leading position held by the North Atlantic states.

New York is the only state of prominence in the manufacture of leather having a decrease in value of products. A comparison of the reports for 1900 and 1905 shows that a number of manufacturers of goatskins and upper and glove leather reported in 1905 a largely reduced output, and others retired from business; but this decrease in New York state, which is only 6.7 per cent, was overcome by the increases in the neighboring states of Pennsylvania, New Jersey, and Massachusetts.

The next largest division was the North Central, with 20.4 per cent of the total value of products in 1900 and 21.7 per cent in 1905. Wisconsin was by far the leading state, its production being 47.2 per cent of the total. Illinois and Michigan were also prominent, the former producing considerable "upper" leather and the latter "sole" leather. The proximity to forests, from which is obtained most of the tanning materials used, is an important factor in the growth of the industry in these states.

The South Atlantic division reported 10.7 per cent of the total value of products for the United States in 1900 and 11.5 per cent in 1905, the proportionate increase between 1900 and 1905 being more than that of any other division. Delaware was the leading state, followed by West Virginia and Virginia. In West Virginia, in which nearly the entire product was sole leather, the increase over 1900 in the value of products was 88.8 per cent, the highest next to that of Georgia, which showed an increase of 100.6 per cent. Virginia produced sole and rough leather chiefly.

The South Central and Western divisions produced but 6.8 per cent of the total for the United States. California, the leading state in these divisions, produced nearly 50 per cent of the total for both divisions, and manufactured oak sole and harness leather chiefly. The two divisions reported about the same value of products at both censuses, the Western gaining slightly more both in amount and percentage than the South Central.

Massachusetts and other New England states and Virginia were the original tanning states, but New York, Pennsylvania, New Jersey, Delaware, and Maryland, formerly classified as the Middle states, have held, as a group, first place for over a half century, and their combined product reported in 1905 was nearly one-half of the value reported for the United States. The present subdivision known as the "Southern North Atlantic"—New York, New Jersey, and Pennsylvania—reported 44.6 per cent of the total value for the country. The manufacture of leather is still concentrated largely in the eastern part of the country, and the growth of the industry has been so consistent in that section that, despite large increases in production in some of the North Central states, the East still holds the leading position.

As noted in connection with Table 5, the 5 leading states were Pennsylvania, Massachusetts, Wisconsin, New York, and New Jersey. Pennsylvania ranked first in every item. Massachusetts was second in all but capital, in which item the state was fourth in 1900 and third in 1905. Wisconsin was third in capital in 1900, but fourth in the other items. In 1905 this state advanced to second place in capital, third in value of products and number of wage-earners, and remained fourth in amount of wages paid. New York in 1900 was second in capital and third in the other items, and in 1905 dropped to fifth place in amount of wages paid and fourth place in the other items. New Jersey ranked fifth in capital, number of wage-earners, wages, and value of products in 1900, but advanced to third place in amount of wages reported in 1905.

Table 8 shows the cities that reported leather to the value of over $5,000,000 in 1905, with their rank by value of products, with the per cent of increase, for 1900 and 1905.

TABLE 8.—*Cities reporting in 1905 products of over $5,000,000, ranked by value of products, with per cent of increase: 1905 and 1900.*

CITY.	1905		1900		Per cent of increase.
	Rank.	Value of products.	Rank.	Value of products.	
Philadelphia, Pa.	1	$23,903,239	1	$18,187,231	31.4
Milwaukee, Wis.	2	14,074,397	3	10,267,835	37.1
Newark, N. J.	3	13,577,719	2	10,857,192	25.1
Wilmington, Del.	4	10,250,842	4	9,379,504	9.3
Chicago, Ill.	5	9,420,420	5	6,979,289	35.0
Peabody, Mass.	6	7,010,370	6	4,460,738	77.5
Camden, N. J.	7	6,364,928	7	1,515,935	319.9

Philadelphia, which city ranked first at both censuses, reported products in 1900 that formed 8.9 per cent, and in 1905, 9.5 per cent, of the total value of products for the United States. The increase since 1900 was $5,716,008, or 31.4 per cent. Philadelphia is the center of the "chrome" or glazed kid branch of the leather industry and its manufacture first proved successful there. Of the value of products reported at the census of 1905, $19,070,981 was for goatskins. Milwaukee, Wis., ranked third in 1900 and second in 1905. An increase in value of products of $3,806,562, or 37.1 per cent, is shown, and the principal leather manufactured was calf and kip skins, upper leather in the side, and harness leather. Newark, N. J., which ranked second in 1900 and third in 1905, reported an increase of $2,720,527, or 25.1 per cent, and the chief products were carriage, furniture, patent, enameled, trunk, bag, and pocketbook leather. Wilmington, Del., the fourth in rank at both censuses, reported an increase in the value of products of only $871,338, or 9.3 per cent. The principal leather manufactured was glazed kid. These 4 cities, each having a production valued at over $10,000,000, reported $61,806,197 worth of leather in 1905, being 24.5 per cent of the value of all leather manufactured in the United States. If there is added to this the value of the products of the next 3 cities, given in the table according to rank, namely, Chicago, Ill., Peabody, Mass., and Camden, N. J., the total for the 7 leading cities is $85,510,921, or 33.8 per cent of the total for the United States. As these cities reported products valued at $61,647,724 in 1900, the increase during the semidecade was $23,863,197, or 38.7 per cent. Camden, N. J., the city seventh in rank, shows the remarkable gain in value of products of 319.9 per cent.

Power.—Table 9 is a summary of power used, 1900 and 1905.

TABLE 9.—*Number of establishments reporting power, and amount of each kind of power: 1905 and 1900.*

	1905	1900
Total number of establishments	1,049	1,306
Number of establishments reporting power	909	991
Total horsepower	129,975	91,917
Owned:		
Engines—		
Steam—		
Number	1,524	1,507
Horsepower	107,510	84,229
Gas or gasoline—		
Number	77	25
Horsepower	5,086	866
Water wheels—		
Number	62	109
Horsepower	1,935	2,231
Electric motors—		
Number	589	206
Horsepower	12,525	3,057
Other power, horsepower	60	3
Rented:		
Electric, horsepower	2,014	863
Other power, horsepower	845	668

Table 2 shows a large increase, 118.9 per cent, from 1900 to 1905 in the amount of capital invested in machinery, tools, and implements. The increase in the use of power shown in Table 9 is consistent with this increased use of machinery. The percentage of establishments reporting power increased from 75.9 in 1900 to 86.7 per cent in 1905. The total horsepower increased 38,058, or 41.4 per cent, and the average horsepower per establishment increased from 93 to 143. All kinds of power show gains except waterpower. In percentage of gain, gas or gasoline was first, electricity second, and steam third.

Exports and imports.—Table 10 gives the exports of the principal kinds of leather, 1891 to 1905.

TABLE 10.—*Exports of the principal kinds of leather: 1891 to 1905.*[1]

YEAR ENDING JUNE 30—	Total.	Sole.	Kid (glazed).	Patent or enameled.	Splits, buff, grain, and all other upper.	All other leather.
1905	$28,058,342	$9,444,873	$1,576,204	$166,320	$15,057,791	$1,813,154
1904	24,851,582	6,978,497	1,512,179	170,940	15,049,602	1,140,364
1903	23,514,199	6,920,467	1,995,200	122,782	13,493,409	982,251
1902	22,350,134	6,569,857	1,755,599	151,930	12,817,017	1,055,731
1901	21,320,646	6,577,732	1,561,352	82,868	11,841,610	1,257,084
1900	21,797,157	6,433,303	1,909,914	101,708	11,913,256	1,438,976
1899	19,725,473	6,280,904	694,265	82,908	11,576,822	1,090,574
1898	17,796,404	6,644,553	249,990	93,847	9,949,593	858,421
1897	16,431,255	6,510,404	(2)	313,151	8,793,902	813,798
1896	17,764,985	7,474,021	(2)	369,452	8,903,863	1,017,649
1895	13,640,553	6,919,372	(2)	285,662	5,753,278	682,241
1894	12,778,945	6,481,257	(2)	249,127	5,221,205	827,356
1893	10,695,284	5,192,063	(2)	245,288	4,440,524	517,409
1892	10,518,363	5,783,555	(2)	249,239	3,880,475	605,094
1891	12,023,445	6,168,362	(2)	364,770	5,161,211	329,102

[1] Bureau of Statistics, Department of Commerce and Labor, Statistical Abstract of the United States.
[2] Not enumerated separately.

It will be noticed from Table 10 that there was a marked increase in the total exports from 1904 to 1905, namely, $3,206,760, or 12.9 per cent, the largest increase in any one year except from 1895 to 1896, when it was $4,124,432, or 30.2 per cent. The largest increase in the former year was in sole leather, $2,466,376, or 35.3 per cent. In 1891 the total value of leather exported was $12,023,445; in 1905, $28,058,342, an increase of 133.4 per cent. "Splits, buff, grain, and all other upper leather" shows the largest increase, $9,896,580, or 191.7 per cent, and sole leather the next largest, an increase of $3,276,511, or 53.1 per cent. Glazed kid from 1898, the year it was first reported separately, to 1900 increased $1,659,924, or 664 per cent; since the latter year the amount has varied, and in 1905 it was somewhat less than in 1900.

Table 11 gives the imports of the principal kinds of leather, 1891 to 1905.

TABLE 11.—*Imports of the principal kinds of leather: 1891 to 1905.*[1]

YEAR ENDING JUNE—	Total.	Band or belting and sole leather.	Calfskins, tanned or tanned and dressed, and patent, enameled, and japanned.	Skins for morocco.	Upper leather, dressed, and skins, dressed and finished, not elsewhere specified
1905.....	$5,612,642	$92,079	$605,960	$2,446,481	$2,468,122
1904.....	4,999,231	46,275	772,610	1,889,015	2,201,331
1903.....	5,173,566	68,421	964,044	2,161,885	1,979,216
1902.....	5,021,846	73,914	170,963	1,860,965	2,916,004
1901.....	5,701,193	34,198	69,691	2,763,101	2,834,203
1900.....	6,519,172	47,218	132,674	3,134,657	3,204,623
1899.....	5,237,707	52,688	258,846	2,455,332	2,470,841
1898.....	5,625,145	155,860	176,578	3,081,770	2,210,937
1897.....	6,337,644	157,128	53,395	3,716,259	2,410,862
1896.....	6,098,005	71,702	406,051	3,145,989	2,384,263
1895.....	6,863,343	256,505	527,427	3,728,255	2,351,156
1894.....	4,508,330	16,459	384,796	2,484,740	1,622,335
1893.....	8,282,172	34,862	1,548,350	4,137,435	2,561,519
1892.....	6,812,607	24,101	1,199,954	3,497,879	2,090,673
1891.....	6,319,582	21,896	890,720	3,474,735	1,932,222

[1] Bureau of Statistics, Department of Commerce and Labor, Statistical Abstract of the United States.

The total value of imports of leather for the past fifteen years amounted to $89,022,185, an average of nearly $6,000,000 per annum. The imports were highest in 1893 and lowest in 1894. In 1891 they were $6,319,582 and in 1905, $5,612,642, a decrease of $706,940, or 11.2 per cent. Skins for morocco show the greatest loss. Except in calfskins 1905 imports were slightly larger than those for 1904. It is interesting to note that the value of exports for 1905 amounted to $28,058,342 and that of imports to $5,612,642, a difference of $22,445,700.

For the fifteen years covered by both tables the total value of exports was $273,266,767 and of imports, $89,022,185, a difference of $184,244,582. The nearest the value of imports and exports came to each other was in 1893, when the former amounted to $8,282,172 and the latter to $10,695,284. If to the value of leather exported in 1905 there is added the value of boots and shoes exported, $8,057,697, of harness and saddles, $502,660, and of all other manufactures of leather, $1,318,046, the total becomes $37,936,745; and if to the value of leather imported in 1905 is added the value of kid and other leather gloves imported, $4,727,489, and of all other manufactures of leather, $1,326,102, the total is increased to $11,666,233, a difference in favor of exports of $26,270,512.

A comparison of Tables 10 and 11 shows that while there has been an almost steady increase in the annual exports until in 1905 compared with 1891 the value had considerably more than doubled, the imports have been of a varying value, and in 1905 were less than in 1891. In fact, in nine of the fifteen years included in Table 11 the value of the imports was less than in 1891.

The following interesting article is reproduced from the "Daily Consular and Trade Reports" of the United States, August 20, 1906, No. 2645:

No industry in the United States can look back upon a better record than that made by the manufacturers of leather and by the manufacturers of boots and shoes, bags and trunks. Efforts made in recent years to secure foreign markets for our footwear and other leather productions have been attended with a large measure of success.

For a long time American sole leather found favor in certain parts of Europe and would doubtless still be sold there in large quantities but for the successful efforts of the Heyl, Doerr, and Reinhart people at Worms, on the Rhine, to secure the secrets of its production. By putting the chemist and the tanner side by side these men were able to produce a sole leather which they claimed was equal to that of the United States in appearance, if it did not surpass it in durability.

The claim was made by Massachusetts and Milwaukee tanners that the German product was by no means as durable as the product of the tanneries of Danvers, Beverly, and other places in this country. One thing is certain in this connection. Foreign competitors are sparing no effort to secure a knowledge of our best methods, those that have led to the successful production of excellent leathers of all kinds, and to make new discoveries by original research in the laboratories connected with many of their tanneries. Austria, celebrated for certain leathers, has an excellent tanning school in Vienna. Germany, our most vigilant and forceful rival, established a splendid tanning school in Freiberg, Saxony, 25 miles from Dresden, and supplied it with all the most modern machinery used in this country, and to preside over it as head director secured a man who had been fifteen years a manager of the Pfister and Vogel tanneries in Milwaukee.

On one occasion, anxious to learn how American tanners produced such excellent chrome leather, the Germans sent a commission, headed by the great patent-leather manufacturer, Cornelius Heyl, of Worms, to this country to study our methods. If correctly reported, this commission went back only fairly successful, but by pursuing the German method of research, laboratory experimentation, putting the chemist and the practical tanner side by side, they claim to have reached satisfactory results. For the last ten or fifteen years American shoes have been making good progress in every market into which they have been introduced. Their superior merit has commended them to popular approval.

Table 12 is a detailed summary of the statistics for the industry, by states, for 1905.

HISTORICAL AND DESCRIPTIVE.

The wonderful tanning, tawing, currying, and finishing processes of the present day are the slow growth of centuries, and the production of leathers of the modern quality and variety is the culmination of years of study by practical tanners and by chemists.

Information in relation to early processes for making hides and skins of practical use is meager. It is known, however, that from the earliest times the skins of animals have been utilized for man's necessities. The New International Encyclopaedia, Volume XI, page 87, says:

Probably the original process of curing skins was that of simply cleaning and drying. Then the use of smoke, sour milk, various oils, and the brains of the animals themselves was found to improve the texture of the leather. Later it was discovered that certain astringent barks and vegetables effected permanent changes in the texture of skins, and stopped decay. This knowledge was possessed by the ancient Egyptians, for engravings on their tombs depict the process of tanning. In China specimens of leather have been discovered in company with other relics that prove them to be over three thousand years old. The Romans used leather which they tanned with oil, alum, and bark.

The first tanners or dressers of skins in our own country were probably the Indians, for when discov-

ered by early explorers they wore the skins of animals. It was their custom, after an animal had been slain, to remove the skin with a sharp flint flake, cleanse it thoroughly with water, and then dress it for practical use. For a dressing they used anything that would prevent putrefaction, like the brains of the animal itself, smoke, buffalo dung, oil, or clay. Their implements were made of stone and bone; the process of dressing the skin was laborious, and the leather was crude, but answered their needs.

Tanning was introduced into the American colonies in a commercial way early in the seventeenth century. While there is some doubt as to whether the first tannery was located in the colony of Massachusetts or in that of Virginia, there is no doubt that tanneries multiplied much more rapidly in Massachusetts than in any other colony.

The knowledge of tanners in colonial days was limited and their facilities for making leather crude. Boxes made of plank were sunk in the ground and used for vats, and oak bark was the principal tanning material, which, instead of being ground, was crushed into fine particles by the rolling of a heavy stone on it. The hides and skins were soaked and rinsed in water, particles of flesh removed by a sharp instrument, and hair loosened by the use of lime. The process of tanning was to sprinkle the fine bark upon the bottom of the vat, lay a side or skin upon it, then another layer of bark, another side or skin, and so on, in alternate layers, until the vat was nearly filled. The hides were then covered with water and allowed to soak for six or more months, although they were taken up several times during this period and the bark renewed. When taken out finally they were tanned thoroughly. In the making of sole or upper leather the same general treatment was followed, though heavier and thicker hides were given longer time in the bark.

From a small beginning the manufacture of leather attained large proportions. Demand, especially from boot and shoe manufacturers, forced the growth, but improved methods were slow of adoption. The use of machinery was discouraged, new formulas and processes were frowned upon, old style methods and ideas prevailed, and, despite the fact that the art of tanning depends upon chemical action and reaction, the scientific knowledge of chemists was repulsed. However, a change finally came. Chemistry, which had done so much for the advancement of other industries, fought its way in against the combined opposition of prejudice and ignorance and revolutionized certain branches of the industry. Other branches were touched with the spirit of progress, and during the past few years advancement has been as rapid as it previously was slow.

It is difficult to describe in a limited article a modern plant for the production of leather, the kinds of materials used, the different processes necessary, and the final results. An effort has been made, however, to state in a general way the facilities requisite for the manufacture of leather.

Location of plants.—In establishing a plant for the tanning and currying of leather preference is given in Europe to a location on a river or stream, in order to have uniformity in the hardness or softness of the water which enters largely into the process. In the United States a similar position is preferred by some manufacturers, but not by many, as the frequent changes in the temperature of the water is a disadvantage. Some locate in the vicinity of forests from which oak and hemlock bark can be obtained in large quantities, and a few near packing house centers, but most manufacturers give preference to places to which materials can be easily sent and from which finished products can be readily shipped.

Water.—Water is very important in the manufacture of leather. It is used for washing, cleansing, and preparing the raw hides, as a solvent for tanning materials, and as a diluent for coloring and dyeing. Water from deep springs is preferable, largely because of its even temperature, and many plants are equipped with pumps to obtain it. A number of manufacturers use the water supplied from a common source by the cities or towns in which they are located, and others, the waters of rivers or streams. But from whatever source the water is obtained, it must be analyzed to determine its efficacy. Defects that may be found are overcome either by increasing or decreasing the quantity of tanning materials generally used for a given number of hides, or by using certain chemical agents. Borax, for example, is a good agent for softening and purifying hard water, thus making it suitable for the manufacture of upper leather.

Hides and skins.—The skins of larger animals, such as oxen, cows, horses, etc., are called hides to distinguish them from the skins of smaller animals, such as calves, goats, sheep, deer, hogs, seals, etc. Kip is the term applied to the skins of small beef or cattle. The quality and substance of the skin are affected by age, skins from younger animals being the finest in grain and taking dye better; by sex, leather made from the female being finer in texture than that made from the male; by breed, as the higher the breed the less thick the skin; by the care given the animal, animals raised in the open air having a coarser skin than those raised indoors; by state of health and food eaten; by the gadflies, known as wormils, warbles, or grubs, which deposit their eggs upon or in the skin, producing sores; by contact with barbed wire, which scratches the skin; by ticks and scabs, which infect sheepskins; and by the mode of preventing putrefaction of the skin after the animal has been slaughtered.

Animal skin.—An instructive description of the animal skin occurs in "The Manufacture of Leather,"

by Charles Thomas Davis, which is repeated in part in the following paragraphs:

The structure of animal skin consists of several readily distinguishable layers which behave differently in a chemical as well as in a physical respect.

The upper part of the skin in which the coat of hair, wool, or fur is rooted is termed the epidermis or cuticle. Next beneath this is the corium or true skin, and next to this the under skin.

The epidermis does not combine with tannin or other substances by the agency of which leather is produced. It is therefore useless to the tanner, and the first process to which hides and skins are subjected by him is that for removing the hair and epidermis. The portion of the skin thereby exposed is technically termed the "grain" side. The corium or true skin is the actual leather skin and is made up of interlaced bundles of connective tissue fibers, placed crosswise above each other and running parallel with the surface of the skin. It is more or less filled with fluid matter that serves to renew the cuticle and maintain the skin in a pliant and moist condition. On treating the skin with water these matters are removed, and there remains nothing but the fibrous portion saturated with water. In this state the skin appears semitransparent, and if the water be expelled by a gentle heat, it assumes the physical appearance of horn, and constitutes only about 32½ to 33 per cent of the raw hide.

The quality of leather which can be produced from a skin depends upon the thickness, flexibility, and strength of the corium, which exceeds the combined thickness of all the other layers of the skin.

A peculiar albuminoid substance (coriin) is stored between the separate fibers of the corium, which substance in a dry state connects and cements together the raw skin fibers. In a wet state, as after being immersed in limewater, this dissolves, the fiber becomes differentiated into finer fibrils, and the skin is said to open up.

The under skin consists of a loose connective tissue, in which the sweat and fat glands, the blood vessels, and the muscular fibers are embedded. It is previously removed in the "beam house" of the tannery, and takes no part in the tanning process.

The side upon which the connective tissue of the under skin is located is technically designated as the "flesh" side.

Hemlock and oak bark.—The presence of a tannic acid or tannic acid compound is necessary to make a vegetable substance suitable for use in tanning. Of vegetable tannage, hemlock and oak bark lead. A mixture of the two termed "union tannage" is also used largely and makes a durable leather. Hemlock bark is light, has a somewhat balsamic odor and a slightly astringent taste. Oak bark (rock chestnut oak and yellow barked oak) is considered the best vegetable substance in the United States for tanning purposes. Of the two varieties of oak bark the first named is the better. Prime quality is obtained from the Blue Ridge, the most easterly ridge of the Allegheny mountains. It is used principally by tanneries located in Virginia, North Carolina, Kentucky, and Tennessee, the bark in the latter state being obtained from the Cumberland mountains. In tanning it is used unmixed and gives a beautiful bloom, the sole leather produced with it being always in demand both for home consumption and for export. Very fine oak tan bark is also found in California. Hemlock bark is found in large quantities in Pennsylvania, New York, Wisconsin, and Michigan.

Gambier.—This is an extract from the leaves of *Uncaria gambier*. It comes in small pieces, of a light or dark rust or gray color, which float upon water and are friable. It dissolves slightly in cold water, readily in hot, and possesses a high percentage of tannin.

Sumac.—Sumac consists of powdered leaves, stems of blossoms, and branches of several *Rhus* species. There are a number of varieties, Sicilian, Italian, Spanish, Tyrolean, French, Tezera, Swedish, and American. American sumac is derived from *Rhus canadensis* and *Rhus glabra*. Sumac is used in tanning patent, enameled, and furniture leather, sheepskins, grain, split, and buffed leathers. As leather tanned with sumac has little capacity for resisting water, it is principally used for bookbinding, portfolios, pocketbooks, linings, bindings, skivers, etc.

Quebracho.—Quebracho is a Spanish word meaning axbreaker, and is applied to a kind of tree the wood of which is very tough. This tree grows only in El Gran Chaco, in the Argentine Republic. Its height is from 18 to 36 feet and its diameter 18 to 40 inches. The valuable tanning properties of this wood were discovered in 1867. The material, however, is too strong in tanning to yield well-nourished leather unless combined with agents which are stronger in nontanning substances. The great advantage of quebracho wood is its cheapness and the rapidity with which it effects a thorough tanning of certain kinds of leather. By using it mixed with oak or hemlock bark, gambier, or other tanning material, a splendid product is obtained much more quickly and at a reduced cost.

Canaigre.—For centuries in the rainless region of the southwest the Aztecs, Zunis, Pueblos, and later on the Mexicans have been tanning hides with the root of a sour dock or wild rhubarb called by the early missionaries "sour cane," "Cana agria," which was finally pronounced cah-na-ger, and spelled canaigre. Tannic acid is formed in all parts of the plant, but is most plentiful in the roots. This material is said to tan the heaviest sole and harness leather or the lightest calf and sheep skins with the best results.

Palmetto root.—This is found principally in the state of Florida and is especially suited to the tanning of light skins.

Valonia.—Valonia consists of the cups of the acorns of the common oak of Asia Minor, Turkey, and Greece, and is adapted to heavy skins or hides. It adds weight and firmness to sole leather, and sole leathers in which the earlier processes have been hastened by mechanical devices are increased in value by being laid away with valonia.

Myrobalan.—Myrobalan is the dried unripe fruit of various East Indian trees; it averages nearly 40 per cent of tannin contents, is of good color, and has to some extent the same valuable properties as valonia, although not to so great a degree. Both of these materials are new to the United States.

Other vegetable tanning materials.—Among other important vegetable tanning materials are the following: Gallnuts of different varieties; ratany root, imported from Peru; avens, tormentil, and sassafras roots; fir,

willow, walnut, elm, horse chestnut, larch, alder, beech, and snouba barks; ruteae and kino, inspissated vegetable juices from India, Africa, Malabar, and Ceylon; divi-divi, dry pods of a bush indigenous to South America; and algarrobilla, an improved form of divi-divi.

Mineral tanning materials.—Such great strides have been made in the use of inorganic chemicals for tanning purposes during the past twenty years that one almost forgets that their use dates back to very early times. The Saracens are credited with utilizing alum and aluminum salts for tanning skins, and for years these were the only inorganic chemical substances used. The principal ones now used are alum, aluminum sulphate, and aluminum acetate; chromates and chromic oxides; hyposulphite of soda; muriatic acid; sulphuric acid; ferric salt; and common salt.

Chrome tannage.—It is not possible in this article to discuss all the various processes used in tanning skins by means of chemicals. "Chrome" or mineral tannage is preeminent the world over and is of American origin. Davis, in "The Manufacture of Leather," states that there are two important methods in use, one known as the "two-bath" process and the other as the "one-bath." Of the former process he says:

> The skins, after being fully prepared for tanning, are immersed in a bath containing a solution of bichromate of potash and muriatic acid. This is called the "first bath," in which the skins remain until they have absorbed sufficient of the chromic acid. The skins are then placed in the "second bath," which is a solution of hyposulphite of soda, to which muriatic acid is added. The chemical reaction in the "second bath" sets free sulphurous acid, which acts as a reducing agent upon the chromic acid in the skin, forming chromic oxide, which unites with the fiber of the skin, converting it into leather.

Of the latter process he says:

> A dilute solution of a basic or oxy salt of chromium is used in which the chromic oxide is held in the solution. In fact, the skins absorb the chromic oxide from the solution in the same manner as the skins would absorb tannin from a bark liquor.

The "chrome" process has effected a revolution in the industry. Applied to goatskins it made a glazed kid that drove morocco leather and French kid out of the market. It has a tendency to make upper leather fireproof and impervious to water, lighter in weight than bark-tanned leather, as well as softer and more durable. Effective in the tanning of goatskins, the "chrome" process is now applied to sheep, calf, and kip skins and to upper leather in the side. The making of sole leather by this process is still experimental, but it is thought that it will eventually succeed. To cut down the time required to tan heavy hides is the goal of the tanners, and it is believed by many that the use of inorganic chemicals will accomplish this purpose without detracting from the quality of the leather. The quick tanning processes are likely to include stuffing and weighting with materials that cost little and do not enhance the quality of the leather.

Leaching.—Leaching is the process of extracting "tannin" from bark, wood, or other substances which contain it, for the purpose of obtaining a tanning liquor. It is done by tanners or by those who make a business of manufacturing or selling the extract. It is essential not only that the exhausted bark shall show a very small percentage of tannin but that the tannin taken out shall be secured economically. There are a number of methods of leaching, but the underlying principle is the same in all.

MANUFACTURE OF LEATHER.

Some of the processes of making leather are common to all kinds of leather, but other processes vary in accordance with the kind of leather to be produced. In manufacturing there are three great divisions of the work:

1. Beam house work, or that which is done before tanning.
2. Tanning or tawing.
3. Currying and finishing.

The work in the beam house consists chiefly in removing from one side of the skin the epidermis and hair, and from the other side the under skin of loose connective tissue and adhering flesh.

Tanning is the conversion of the gelatin, forming the fibrous tissue of the skin, into a compound of tannic acid or whatever tanning agent is used, by treatment with a solution of the tanning agent in water.

Tawing is a preservative method of converting skin into leather by using mineral substances. Tawed leather, it is claimed, is stronger, softer, and more elastic than tanned leather, and differs from it in that it is not a chemical compound.

Currying is one of the methods of finishing leather. It makes leather soft and pliable and gives the surface a finished appearance. Finishing processes vary according to the kind of leather desired.

Soaking and softening.—The first beam house work is soaking. The hides and skins are put to soak in pits, wheels, or drums, to remove the dirt, salt, blood, etc. Green or native and dried hides are treated alike, except that the latter need soaking a longer time. Skins require a much shorter period than hides. The addition of borax and alum to the water and the plentiful use of the latter with frequent changes produce the most satisfactory results. If the hides are not to go through the tanning process whole, they are divided into sides when they come from the soaks by being split down the backs. Then if sole or belting leather is to be made, the sides and skins, when dry, are next softened in a hide mill, ten to twenty minutes being allowed for a skin and one-quarter to three-quarters of an hour for a side. The mills are of different construction for the various branches of the leather manufacture.

Fleshing.—Fleshing, which comes next, consists in removing all fleshy and fatty matter that may adhere

to the inner side of the skin. This is often done by hand by means of a sharp blade, but much more effectively by knives fixed on the surface of a cylinder made to revolve rapidly by machinery.

Depilation or unhairing.—After fleshing, the skins are soaked in a solution of lime to loosen the hair and epidermis and to swell the skin preparatory to tanning. Lime has been used for unhairing since early times and is to-day the best agent known. Sulphide of sodium and sulphide of arsenic have been tried, but they are most effective when used in conjunction with lime. Among other things used are powdered charcoal and sulphide of barium. Dry hides for the manufacture of sole leather are unhaired by the "sweating" process. After the hair is loosened, it is pulled out, the hide being brought in contact with the edges of thin pieces of slate set in the surface of a revolving cylinder. The hides then are washed and refleshed to take off the flesh "puffed up" by liming or left on after the first fleshing, and the hide thus treated will more quickly take the tan liquor. The operation of the machine for refleshing is so clean that when it is used skiving is unnecessary.

In unhairing and fleshing by hand the workman spreads the hide or skin over what is known as the "beam," which is semicylindrical in shape, 3 or more feet long and about 2 feet wide, set up at an angle of about 95 degrees and covered with sheet zinc. Bending over the top of this beam he holds the hide in place by the pressure of his body, and scrapes the hair or flesh from the hide with a heavy two-handled knife, in the edge of which, in the case of unhairing, is set a piece of slate. From the "beam" on which the work is done came the term "beam house." The hand fleshing process is called "shaving," or "green shaving," and the hand unhairing process is called "beam slating." Machines do the work so well, however, that handwork is rapidly disappearing. There is a machine that can be used for fleshing, unhairing, and "working out," the latter operation being important, as it removes all the fleshy and parchment-like tissues and breaks the nerves of the hides. Washing is done several times in the beam house. One method is to throw the hides or skins into a large revolving drum or wash wheel, in which the water is kept clean and fresh. Hides intended for sole leather, after unhairing and fleshing, are thrown into vats of clean water and left overnight. In the morning they are removed and then "grained," which process consists in scraping the hide on the grain side in order to cleanse it more thoroughly from the lime remaining in the pores. After being grained the hides are again placed in clean water for several hours. They are then ready for tanning.

Bating.—Before hides and skins intended for upper and other pliable leathers are ready for tanning or tawing, they are put through an operation called "bating" or "puring." This is the immersing of the hides or skins in an alkaline solution consisting of the manure of chickens, pigeons, or dogs, in bran water, or in some substitute for these. The object of "bating" is to remove not only the lime or other alkaline depilatories from hides and skins previous to tanning, but also some of the tissue of the hide itself, in order to make it soft or—as in the case of chrome tanned leather—to prevent the tanning process from rendering the hide stiff and hard. All "chrome" tanned and many other upper leathers, especially the lighter weights, are generally bated. Bating is best done by placing the hides or skins in a vat having a circular and tight bottom; over the vat is arranged a revolving paddle wheel which dips into the solution, thereby agitating it, and maintaining the hides or skins in constant motion. After being properly bated the skins are removed and then "slated" by hand or machine to free them from short hairs. They are next worked out or scoured to remove lime and dirt, then placed in the interior of a wheel or drum and washed with clean water for a few minutes. They are now ready for tanning. While sole leather should be cleansed from lime, it is not advisable that it be bated with animal excrement, because that destroys too much of the gelatin.

Handling.—The actual tanning now begins, and "handling" is the term applied to transferring the hides or sides to and from the vats and to the agitation of them while remaining in the liquor. The object of this process is to equalize the action of the lime in unhairing, the bate in bating, and the weak liquor or ooze in the first stage of tanning. The old-style method was to haul up the sides by hand from the vat and pile them, allowing them to press each other and drain, then to throw them back again. One method still used considerably is to handle and transfer by a revolving device, such as a reel. Other devices are the rocker handler, the paddle wheel, and a large revolving drum divided into compartments. Still another method is to tack the sides on sticks, then when thrown into a pit full of tanning liquor, the ends of the sticks rest on the edge of the pit holding the hide suspended in the liquor. The hides are moved from pit to pit, from the weakest through all grades to the strongest liquor. When tanning is completed they are pulled off the sticks and hung on poles in the open air to dry.

Plumping.—"Plumping" is the immersion of the hides in an acid liquor which is gradually increased in strength. This action completes the swelling of the cells, distends the pores, and thus favors the absorption of the tannin. The process is applied only to heavier classes of sides.

Laying away.—Hides and skins intended for sole, upper leather, etc., are now ready for "laying away." For this purpose vats nine feet long, seven feet wide, and

eight feet deep are used in which the stock is placed, grain side up, in layers. Between each layer is sprinkled a slight thickness of ground bark, tan liquor is run into the vat, and then the whole is crowned with a layer of bark, which is called a "heading." The leather is usually laid away for several months, the bark being removed four or five times. Lighter grades take less time than heavier ones.

Stoning.—Tanning completed, the next process is splitting. But to prepare for splitting, leather is "stoned out." This is done by means of a "stoning jack," a machine with a long arm, in the end of which is placed a round piece of stone or steel that is drawn with a firm pressure over the surface of the leather, held in place by the operator with his hands or by his body pressed against the table edge. Each time the arm returns from a stroke the leather is moved so that every part comes under pressure. This process smooths out all wrinkles and stretches the leather.

Splitting.—Splitting, which was formerly done by hand and required great skill, is now nearly always done by a machine. In making upper leather from cowhides the thickness of the hide has to be reduced. This is accomplished and the area of the leather thus increased by passing a knife through the hide parallel with the surface, taking one or several splits from the side of leather. The outside part is the most valuable and is called the grain. Before splitting, the hides are soaked for a short time and then allowed to mellow twelve to twenty-four hours. After the grain is split from the side, the remaining split is retanned, and whenever the grain itself is insufficiently tanned in spots, it is thrown into a retanning mill or large revolving drum. The splitting of hides by machinery was a wonderful invention and has proved itself of untold value. Grain and buffed leather, so much used in this country and also exported, as well as splits of all kinds, used largely for shoes, owe their success mainly to splitting machines.

Scouring.—Little remains to be done to sole leather except drying and rolling, though some oak leather is scoured to remove the bloom, but a number of currying and finishing processes are necessary to prepare other kinds of leather for use. Scouring is one of these. It is done with a brush, stone, and slicker, frequently by hand, but much better results are obtained by using a machine that operates a cylinder in which have been placed short lengths of bluestone. Cylinder machines work out the dirt, put the leather in good shape, and make it dry, even, and smooth.

Stuffing.—After being scoured, the leather is hardened or thoroughly dried out, then dampened and tempered so as to facilitate the absorption of grease and oil, which is worked into the leather in a stuffing mill. This mill is a large hollow drum similar to other drums or so-called mills used in connection with a tannery. The operation of "stuffing" is an important one. It requires good judgment and knowledge of materials used, and the man who prepares the mixture with which the leather is stuffed must have considerable skill. The object of stuffing is to precipitate the fatty or oleaginous bodies in the fiber of the skin and to render the leather soft and pliable.

The materials used are cod liver oil, neat's-foot oil, degras, tallow, stearin, paraffin wax, glycerin, etc. Borax, sal soda, soaps, and other alkalies are used for cutting these oils and fats.

Setting out.—Setting out, also called "putting out," has for its object the stretching, straightening, and smoothing of the leather and the removal of superfluous stuffing. The process is begun in a machine but completed by hand. The leather is laid on a smooth surface, usually a slab of marble, and scraped over with a blunt steel blade, which stretches it out, and at the same time presses it close to the slab, to which it adheres. All wrinkles are thus removed. The leather is next dried.

Buffing.—There is a difference in the treatment of grains and splits from this point. The former, after drying and dampening, are buffed. This consists in shaving from the hair side a sheet of the epidermis as thin as tissue paper, which takes with it the dirt lodged in the skin and pores and the fine hairs which have escaped the unhairing process, thus leaving a clean uniform surface for the finish. Buffing is also done on an emery wheel.

Blacking.—The leather is next blacked or dressed with some other color by hand or by a machine with revolving brushes, after which it is staked.

Staking.—A staking machine is like a "jack," with the addition of a mechanical contrivance for gripping the leather at the edge of the table and holding it while the stroke is given, releasing it to be moved after each stroke. It does its work by an arm having a reciprocating motion by which a blunt steel blade is drawn across the surface of the leather, that part which is under the blade resting upon a flexible surface, formed by a belt of canvas, or upon two rollers, which follow the excursions of the arm, carrying the leather before it. Staking softens the leather and takes some of the stretch out of it.

Jacking.—The surface which is being finished now gets its final jacking. The machine with which this is given may be a "pebbling" or "printing" jack, in which case the tool is a roller having a pattern impressed on its surface which it embosses on the leather. Or the jack may have a smooth roller, to give a plain smooth finish; or a piece of agate or glass for glazing the surface.

Graining.—The leather is next grained or softboarded; the processes are the same. In either case the edge of the piece of leather is folded over and then rolled under the surface of a piece of board attached to the operator's forearm. In graining, the grain or

finished side of the leather is folded upon itself, the board being in contact with the unfinished side, which treatment results in the formation of small creases and ridges on the finished surface, and in breaking the sameness of any pattern which may have been impressed in jacking. In soft-boarding, the piece of leather is folded with the unfinished sides together. The result is to soften the leather and give it a smooth finished surface. A stain is sometimes put on the finished surface by hand. The leather is next oiled, passed through a finishing machine, which brushes into its surface a coat of wax, glue, or some other size, then through a measuring machine which records its exact area, finished a second time, oiled a second time, sorted, and tied up into bundles.

Splits.—Splits are finished as follows: After being set out and dried, they are put through a "whitening" machine, a machine like a jack, the arm of which is equipped with a small rapidly revolving cylinder, set with knives, which shave off a thin layer from the skin, thereby making a better surface for finishing. Whitening was formerly done by hand, in the way in which slicker buffing is done at present. The splits are next blacked, as the grains are; glassed, or put under a jack having a piece of glass or agate on its arm, which gives to the split a smooth surface; pasted, a dressing of pasty consistency given them by a machine like the blacking or finishing machine; colored, a stain painted onto the unfinished surface; reglassed, finished as the grains are; sorted, measured, and tied up into bundles, ready for the market.

Other processes.—There are additional processes through which some leathers are put. Some of the terms are peculiar to glazed-kid manufacturers.

Fine unhairing.—Fancy leathers in which the natural surface of the grain is to be preserved and finished, can not be buffed, and consequently receive a fine unhairing, which is the removing by a hand tool of the fine hairs that escape the unhairing machine.

Shaving.—Leathers which are not split are shaved—that is, the rough uneven surface of the flesh side is shaved off. This is done either by hand or by machine. Grains and splits are also sometimes shaved.

Crutching.—Crutching is a process similar to staking and is done by hand. Strong skins, which will stand a good deal of stretching, are crutched as follows: One edge of a skin is fixed in a clamp, the other grasped by the hand of the crutcher. His tool is a blunt steel blade mounted on the end of a short stick which fits under the shoulder like a crutch. The blade is held by the right hand. Holding it thus, and pressing it firmly against the outstretched skin, the crutcher pushes it across the leather, thereby stretching it and softening it. The same kind of leather is sometimes "knee-crutched"—held extended in both hands over a blade set upright in a post, and drawn over this blade by pressing one side down with the knee.

Perching.—There is another process called "perching," which accomplishes the same results as staking or crutching, though in a less degree, and which is used only on leathers that will bear comparatively little strain.

Clearing and sweetening.—This process removes iron stains and other dark spots from leathers which are to be finished in light colors. The skins are treated with a solution of sulphuric acid or other bleaching substance and are then rinsed in clear water until the acid is removed.

Seasoning.—This is coating the surface of the skin with a light dressing consisting of blood, logwood, potash, milk, albumen, glycerin, or some similar preparation to prevent the glazing agate from pinching or drawing the surface of the skin.

Glazing.—After the seasoning dries, the skins are glazed by machines constructed with a glass cylinder firmly clamped into a moving arm, which, touching the leather, causes a friction that puts on a gloss. In some machines the arm moves toward the operator, and in others, sidewise. The glazing is done two or three times.

Dyeing and coloring.—The dyeing and coloring of leather has become a much more important process than formerly. Colored leather is in great demand, and the adaptation of coal tar colors to the dyeing of leather has enabled manufacturers to put on the market leather that shows a wide range of shades and tones. Aniline colors are used largely, due to the beauty of their shades and the readiness with which leather absorbs them; when used, mordants, acids, or salts of some kind, the function of which is to make leather ready to absorb coloring matter, are seldom necessary, for the colors can be applied directly.

The ordinary method of dyeing is to place several dozen skins in a dye bath and then turn them over by hand, one pair at a time. Paddles or reels are often used, for, though dyestuff is wasted, time and labor are saved. Coloring is done by painting or brushing the solution over the skin.

Wood dyes and dyes made from other vegetable substances are also extensively used, the former producing a color that is very durable and lasting.

Uniformity of color is most desirable, but not easily obtained. Some of the most important points to be considered are the following: The kind of leather to be dyed, for some skins take dye much better than others; the making of the dyes; the strength of the solution; the quantity of dye the skin is allowed to absorb; the kind of mordant used, and treatment after the dye has been applied, etc.

Measuring machines.—Though heavy leathers are sold by weight, light leathers are sold by area. The yardstick and ordinary measuring frames are still in use, but nearly all manufacturers have measuring machines which are so constructed that they can be operated by either hand or power and are said to be absolutely accurate in their measurements.

TABLE 12.—LEATHER, TANNED, CURRIED, AND FINISHED—

		United States.	Alabama.	California.	Connecticut.	Delaware.	Georgia.
1	Number of establishments	1,049	4	49	9	20	29
	Capital:						
2	Total	$242,584,254	$946,282	$6,368,078	$894,079	$6,645,852	$2,406,238
3	Land	$9,842,911	$51,075	$460,254	$70,972	$350,983	$74,790
4	Buildings	$35,684,642	$105,075	$951,899	$117,489	$870,661	$284,110
5	Machinery, tools, and implements	$32,889,457	$153,826	$540,423	$82,829	$784,850	$358,144
6	Cash and sundries	$164,167,244	$636,306	$4,415,502	$622,789	$4,639,358	$1,689,194
7	Proprietors and firm members	1,112	3	39	7	18	38
	Salaried officials, clerks, etc.:						
8	Total number	3,251	7	116	21	192	24
9	Total salaries	$4,451,906	$8,896	$183,583	$28,270	$250,583	$29,446
	Officers of corporations—						
10	Number	460	2	39	11	30	5
11	Salaries	$1,467,920	$1,216	$83,035	$19,060	$99,233	$14,049
	General superintendents, managers, clerks, etc.—						
12	Total number	2,791	5	77	10	162	19
13	Total salaries	$2,983,986	$7,680	$100,548	$9,210	$151,350	$15,397
	Men—						
14	Number	2,551	5	66	8	141	19
15	Salaries	$2,862,897	$7,680	$94,008	$8,118	$139,678	$15,397
	Women—						
16	Number	240	.....	11	2	21	.....
17	Salaries	$121,089	.....	$6,540	$1,092	$11,672	.....
	Wage-earners, including pieceworkers, and total wages:						
18	Greatest number employed at any one time during the year	68,464	280	1,721	215	3,672	727
19	Least number employed at any one time during the year	46,740	237	1,364	164	1,853	486
20	Average number	57,239	261	1,515	169	2,836	533
21	Wages	$27,049,152	$77,026	$945,051	$81,633	$1,176,061	$153,956
	Men 16 years and over—						
22	Average number	54,517	258	1,512	154	1,925	526
23	Wages	$26,321,552	$76,466	$944,098	$77,201	$919,137	$153,060
	Women 16 years and over—						
24	Average number	1,814	.....	1	9	812	.....
25	Wages	$525,031	.....	$475	$3,512	$226,035	.....
	Children under 16 years—						
26	Average number	908	3	2	6	99	7
27	Wages	$202,569	$560	$478	$920	$30,889	$896
	Average number of wage-earners, including pieceworkers, employed during each month:						
	Men 16 years and over—						
28	January	53,566	261	1,516	148	1,786	497
29	February	54,454	255	1,534	149	1,872	509
30	March	55,016	256	1,519	149	1,938	512
31	April	54,767	259	1,512	150	1,975	515
32	May	54,571	260	1,493	150	1,889	542
33	June	54,694	249	1,500	147	1,852	531
34	July	54,891	254	1,506	163	1,626	554
35	August	54,998	257	1,525	161	1,702	609
36	September	54,759	257	1,516	159	1,938	536
37	October	54,378	258	1,519	163	2,110	528
38	November	53,463	266	1,506	154	2,263	497
39	December	54,647	264	1,498	155	2,149	482
	Women 16 years and over—						
40	January	1,719	.....	1	7	720	.....
41	February	1,775	.....	1	7	783	.....
42	March	1,829	.....	1	7	788	.....
43	April	1,823	.....	1	7	820	.....
44	May	1,820	.....	1	7	830	.....
45	June	1,748	.....	1	7	840	.....
46	July	1,738	.....	1	11	750	.....
47	August	1,695	.....	1	11	687	.....
48	September	1,841	.....	1	11	815	.....
49	October	1,961	.....	1	11	878	.....
50	November	1,941	.....	1	11	929	.....
51	December	1,878	.....	1	11	904	.....
	Children under 16 years—						
52	January	836	3	1	6	88	7
53	February	868	3	2	6	92	7
54	March	873	3	2	5	81	7
55	April	890	3	2	5	85	7
56	May	875	3	2	4	86	7
57	June	896	3	3	3	88	7
58	July	921	3	2	8	87	7
59	August	954	3	2	7	105	7
60	September	934	3	2	7	115	7
61	October	916	3	2	7	117	7
62	November	951	3	2	7	122	7
63	December	982	3	2	7	122	7
	Miscellaneous expenses:						
64	Total	$12,498,501	$79,878	$277,474	$44,739	$291,267	$41,183
65	Rent of works	$358,822	.....	$7,250	$2,800	$8,930	$190
66	Taxes	$670,441	$2,077	$17,792	$3,546	$14,764	$3,115
67	Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.	$10,588,070	$77,801	$252,432	$38,393	$258,823	$37,878
68	Contract work	$881,168	.....	.....	.....	$8,750	.....
	Materials used:						
69	Aggregate cost	$191,179,073	$606,402	$5,912,140	$542,660	$7,910,779	$1,887,156
	Hides and skins—						
70	Total cost	$145,467,925	$453,663	$4,592,459	$388,030	$6,899,431	$1,505,015
	Hides, all kinds—						
71	Number	17,581,613	69,832	634,417	31,324	19,698	284,503
72	Cost	$89,126,503	$453,653	$3,528,424	$247,398	$111,550	$1,490,015
	Calf and kip skins—						
73	Number	12,481,221	.....	107,834	.....	110	10,015
74	Cost	$15,725,616	.....	$138,172	.....	$94	$13,615
	Coltskins—						
75	Number	1,336,848	.....	.....	.....	.....	.....
76	Cost	$2,007,160	.....	.....	.....	.....	.....
	Goatskins—						
77	Number	47,665,603	25	20,022	.....	11,013,895	1,375
78	Cost	$26,756,012	$10	$13,814	.....	$6,599,415	$1,092
	Sheepskins—						
79	Number	27,492,359	.....	1,510,067	334,668	463,404	762
80	Cost	$10,547,883	.....	$829,275	$131,762	$188,372	$293
	All other skins—						
81	Number	1,649,033	.....	112,720	7,803	.....	.....
82	Cost	$1,304,661	.....	$82,774	$8,870	.....	.....

DETAILED SUMMARY, BY STATES: 1905.

Illinois.	Indiana.	Kentucky.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	New Hampshire.	
28	13	20	27	17	132	25	9	9	8	1
$11,640,246	$1,247,656	$4,428,693	$1,464,735	$2,018,666	$27,070,206	$6,860,797	$82,260	$1,345,163	$1,516,497	2
$451,307	$26,700	$268,158	$42,716	$33,734	$793,720	$231,823	$7,950	$140,520	$196,095	3
$2,620,305	$151,250	$559,244	$214,500	$191,036	$5,760,727	$871,604	$24,850	$164,781	$216,376	4
$3,762,064	$68,247	$549,651	$192,450	$186,680	$6,967,758	$672,228	$22,440	$102,598	$164,806	5
$4,806,570	$1,001,459	$3,041,360	$1,015,089	$1,606,316	$13,548,001	$5,085,142	$27,020	$937,264	$939,220	6
20	18	12	28	28	152	13	8	4	15	7
97	18	62	39	24	526	92	2	21	51	8
$134,674	$20,384	$89,611	$31,232	$36,587	$680,334	$146,745	$2,400	$37,344	$66,103	9
9	3	19	6	2	55	20	.....	12	.....	10
$30,600	$2,500	$47,749	$10,200	$10,349	$193,778	$74,100	.....	$29,250	.....	11
88	15	43	23	22	471	72	2	9	51	12
$104,074	$17,884	$41,862	$21,032	$26,258	$492,550	$72,645	$2,400	$8,094	$66,103	13
83	12	42	20	22	413	63	2	8	44	14
$100,983	$16,020	$41,262	$20,332	$26,238	$463,210	$67,871	$2,400	$7,494	$62,571	15
5	3	1	3	.....	58	9	.....	1	7	16
$3,091	$1,864	$600	$670	.....	$20,346	$4,774	.....	$600	$3,532	17
3,449	314	919	653	609	10,000	2,013	65	235	616	18
1,601	235	618	300	466	7,315	1,525	46	196	345	19
2,770	265	728	515	531	9,074	1,747	40	217	492	20
$1,326,440	$133,701	$326,696	$236,987	$217,579	$4,556,327	$865,673	$19,350	$131,212	$215,101	21
2,762	265	726	514	525	8,950	1,710	40	217	479	22
$1,324,164	$133,701	$326,280	$236,887	$216,019	$4,522,378	$855,952	$19,350	$131,212	$211,321	23
2	.....	.....	.....	6	76	4	.....	.....	13	24
$600	.....	.....	.....	$1,500	$25,695	$2,782	.....	.....	$3,780	25
6	.....	2	1	.....	48	33	.....	.....	.....	26
$1,676	.....	$416	$100	.....	$8,254	$6,039	.....	.....	.....	27
2,764	157	705	528	511	8,881	1,715	44	210	464	28
2,824	260	693	562	516	8,986	1,730	44	212	500	29
2,800	263	685	569	524	9,150	1,727	44	210	530	30
2,728	259	704	573	519	9,059	1,734	43	219	506	31
2,709	271	727	532	525	8,778	1,709	42	223	468	32
2,822	271	763	475	549	8,698	1,758	28	231	418	33
3,039	281	766	413	574	8,893	1,751	19	233	411	34
3,162	279	739	424	529	8,830	1,747	41	227	452	35
2,867	279	720	511	535	8,706	1,709	41	222	475	36
2,559	278	734	519	519	9,002	1,667	44	206	516	37
2,085	289	721	525	485	9,069	1,645	45	204	495	38
2,785	293	755	537	514	9,348	1,619	45	207	495	39
2	.....	.....	.....	6	92	.....	.....	.....	16	40
3	.....	.....	.....	6	86	.....	.....	.....	10	41
3	.....	.....	.....	6	80	.....	.....	.....	15	42
3	.....	.....	.....	6	74	.....	.....	.....	15	43
3	.....	.....	.....	6	72	.....	.....	.....	17	44
3	.....	.....	.....	6	64	2	.....	.....	12	45
3	.....	.....	.....	6	67	2	.....	.....	12	46
.....	.....	.....	.....	6	62	5	.....	.....	11	47
.....	.....	.....	.....	6	61	8	.....	.....	11	48
.....	.....	.....	.....	6	87	9	.....	.....	11	49
2	.....	.....	.....	6	90	11	.....	.....	11	50
2	.....	.....	.....	6	77	11	.....	.....	15	51
6	.....	2	.....	.....	45	47	.....	.....	.....	52
7	.....	2	.....	.....	52	38	.....	.....	.....	53
5	.....	2	.....	.....	50	42	.....	.....	.....	54
5	.....	2	.....	.....	47	35	.....	.....	.....	55
6	.....	2	4	.....	43	24	.....	.....	.....	56
5	.....	2	3	.....	41	27	.....	.....	.....	57
7	.....	2	3	.....	44	28	.....	.....	.....	58
6	.....	2	2	.....	48	27	.....	.....	.....	59
8	.....	2	.....	.....	43	26	.....	.....	.....	60
5	.....	2	.....	.....	51	32	.....	.....	.....	61
7	.....	2	.....	.....	58	33	.....	.....	.....	62
5	.....	2	.....	.....	54	37	.....	.....	.....	63
$427,901	$45,655	$206,140	$65,473	$66,919	$1,942,733	$449,649	$3,016	$75,530	$109,454	64
$19,240	$2,530	$2,100	$1,047	$3,751	$62,430	$80	$360	$1,440	$1,900	65
$28,817	$3,787	$17,055	$5,699	$4,092	$103,956	$55,586	$473	$3,951	$6,243	66
$379,904	$39,338	$246,085	$57,307	$58,176	$1,737,839	$393,504	$1,983	$70,139	$92,311	67
.....	.....	.....	$400	.....	$38,508	$470	.....	.....	.....	68
$3,173,788	$764,318	$2,807,259	$1,073,701	$1,482,080	$23,040,807	$7,271,023	$88,016	$734,478	$1,326,376	69
$7,109,142	$628,368	$2,151,197	$1,580,501	$992,750	$16,676,365	$5,805,403	$66,278	$564,627	$524,999	70
707,441	119,754	325,826	270,401	163,734	1,126,634	1,126,456	11,726	95,875	73,959	71
$2,537,379	$605,800	$2,099,282	$1,216,341	$887,602	$4,789,002	$5,292,740	$66,075	$564,374	$280,303	72
2,291,546	4,942	1,676	1,271	41,610	4,095,400	312,951	40	77	3,612	73
$3,378,153	$13,697	$1,426	$1,502	$45,469	$4,673,907	$287,889	$20	$115	$4,750	74
2,556	.....	24	.....	.....	6,890	.....	10	.....	.....	75
$5,172	.....	$24	.....	.....	$9,225	.....	$4	.....	.....	76
.....	.....	636	.....	30,000	7,493,129	.....	22	60	420,000	77
.....	.....	$183	.....	$7,500	$3,987,947	.....	$4	$60	$130,000	78
2,005,943	50	72,496	2,032,800	117,750	8,429,140	593,089	300	52	105,884	79
$1,075,737	$25	$50,282	$302,008	$52,100	$3,188,877	$224,754	$175	$78	$109,946	80
136,811	20,500	.....	400	204	50,000	25	.....	.....	.....	81
$112,701	$8,840	.....	$650	$70	$27,407	$20	.....	.....	.....	82

TABLE 12.—LEATHER, TANNED, CURRIED, AND FINISHED—

		United States.	Alabama.	California.	Connecticut.	Delaware.	Georgia.
	Material used—Continued.						
	Tanning materials—						
83	Total cost	$25,029,994	$111,067	$921,106	$58,142	$614,899	$295,855
	Hemlock bark—						
84	Cords	1,000,328			900		26
85	Cost	$8,471,292			$6,300		$180
	Oak bark—						
86	Cords	422,269	1,142	35,690	134		15,262
87	Cost	$3,765,509	$9,424	$695,692	$1,206		$110,186
	Gambier—						
88	Bales	80,610		7,735	124		
89	Cost	$752,347		$70,079	$1,098		
	Hemlock bark extract—						
90	Barrels	21,766		122	373	1,008	150
91	Cost	$265,665		$2,204	$4,792	$10,275	$2,094
	Oak bark extract—						
92	Barrels	214,391	700	3,276	2,561	190	3,890
93	Cost	$2,300,395	$4,123	$50,563	$27,039	$2,680	$39,302
94	Quebracho, cost	$2,490,487	$14,719	$5,575	$5,141		$98,567
	Sumac—						
95	Tons	7,958		184	102	20	1
96	Cost	$338,614		$12,496	$4,209	$900	$64
97	Chemicals, cost	$2,847,441	$1,430	$41,464	$5,158	$349,848	$11,108
98	All other materials used in tanning, cost	$3,798,244	$81,371	$43,033	$3,199	$251,196	$34,354
	Currying materials—						
99	Total cost	$14,659,841	$1,505	$249,610	$73,032	$138,201	$23,970
	Purchased rough—						
100	Total cost	$10,852,655		$113,160	$62,854	$126,207	
	Rough leather—						
101	Sides	2,414,102		21,372	7,483	19,250	
102	Cost	$8,136,661		$112,200	$10,416	$73,536	
	Rough grains—						
103	Sides	342,332			5,568		
104	Cost	$980,260			$15,197		
	Rough splits—						
105	Sides	1,365,720		1,200	730		
106	Cost	$1,108,243		$960	$1,011		
107	All other rough leather, cost	$627,491			$36,230	$52,671	
108	Oil, stearin, degras, tallow, and all other materials used in currying.	$3,807,186	$1,505	$136,450	$10,178	$11,994	$23,970
109	Fuel	$2,056,075	$11,676	$48,525	$9,387	$66,926	$18,354
110	Rent of power and heat	$58,610		$9,184	$1,948	$900	$1,000
111	Mill supplies	$281,613	$416	$5,135	$830	$11,889	$1,091
112	All other materials	$2,376,740	$26,325	$63,673	$7,408	$95,594	$11,752
113	Freight	$1,248,275	$1,750	$22,448	$3,883	$82,939	$30,119
	Products:						
114	Aggregate value	$252,620,986	$844,403	$8,072,257	$748,038	$10,250,842	$2,382,127
	Sold in the rough—						
	Total—						
115	Sides	4,678,292		140,655	14,417		20,848
116	Value	$10,180,949		$352,799	$5,055		$41,051
	Rough leather—						
117	Sides	2,054,281		79,405			20,848
118	Value	$7,801,249		$337,694			$41,051
	Rough grains—						
119	Sides	258,624					
120	Value	$584,418					
	Rough splits—						
121	Sides	2,365,387		61,250	14,417		
122	Value	$1,795,282		$15,105	$5,055		
	Sole leather—						
	Total—						
123	Sides	[1] 17,937,938	128,898	575,393		44,020	314,435
124	Value	[1] $69,205,600	$800,384	$2,971,579		$77,238	$1,493,979
	Oak—						
125	Sides	[1] 3,607,963	128,898	575,393			314,435
126	Value	[1] $19,157,805	$800,384	$2,971,579			$1,493,979
	Union—						
127	Sides	4,400,011					
128	Value	$17,371,780					
	Hemlock—						
129	Sides	9,929,964				44,020	
130	Value	$32,676,015				$77,238	
	Upper leather (other than calf, kip, or colt skins)—						
131	Total value	$25,705,315		$114,903	$3,120	$119,695	$3,782
	Grain, satin, kangaroo, etc. (side leather)—						
132	Sides	6,850,469		22,780			3,450
133	Value	$15,487,252		$69,680			$5,550
	Finished splits—						
134	Number	6,205,050		83,832			3,000
135	Value	$5,993,231		$32,623			$3,232
	Patent and enameled shoe leather—						
136	Sides	1,356,777			841	30,802	
137	Value	$3,335,352			$3,120	$119,695	
	Horsehide—						
138	Sides	412,367		7,200			
139	Value	$889,480		$12,600			
	Coltskins—						
140	Number	1,323,211					
141	Value	$3,706,585					
	Calf and kip skins, tanned and finished—						
	Total—						
142	Number	12,355,765		106,571		110	2,525
143	Value	$23,372,365		$241,728		$285	$6,158
	Flesh finished—						
144	Number	1,802,338		68,688			2,525
145	Value	$3,511,784		$142,749			$6,158
	Grain finished—						
146	Number	10,211,885		37,883		110	
147	Value	$18,996,551		$98,979		$285	
	Patent and enameled—						
148	Number	341,542					
149	Value	$864,030					

[1] Includes 432,714 sides of oak sole leather, valued at $2,290,869, manufactured by single establishments in the states of Illinois, Massachusetts, Minnesota, New York, and Ohio.

DETAILED SUMMARY, BY STATES: 1905—Continued.

Illinois.	Indiana.	Kentucky.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	New Hampshire.	
$689,239	$92,181	$494,718	$298,619	$224,430	$2,621,527	$1,100,942	$11,898	$80,521	$77,202	83
17,679	170	575	25,695	1,869	47,246	101,305	450	1,140	2,713	84
$169,630	$1,800	$4,987	$178,143	$16,105	$495,303	$820,080	$3,400	$12,471	$24,890	85
.....	4,310	27,747	40	14,366	1,196	.....	.....	3,070	.....	86
.....	$44,547	$257,817	$300	$134,322	$19,305	.....	.....	$43,847	.....	87
15,693	.....	.....	301	.....	11,317	799	66	15	197	88
$149,871	.....	.....	$2,852	.....	$114,707	$6,319	$640	$121	$1,845	89
417	690	279	408	.....	9,108	2,314	9	9	160	90
$4,180	$7,470	$3,412	$4,483	.....	$122,879	$27,192	$138	$140	$2,161	91
185	2,720	17,412	4,460	1,802	16,166	3,749	26	5	.....	92
$1,850	$25,678	$169,225	$44,810	$16,132	$180,076	$36,923	$403	$51	.....	93
$58,618	$8,540	$41,404	$33,208	$27,332	$156,413	$39,527	$6,012	$20,511	$8,817	94
269	51	64	48	92	3,637	86	.....	1	22	95
$11,990	$2,050	$1,761	$2,946	$3,852	$159,419	$3,248	.....	$38	$872	96
$68,944	.....	$7,272	$8,546	$5,000	$672,246	$85,148	$950	$650	$6,804	97
$224,156	$2,096	$8,840	$23,331	$21,597	$701,089	$81,905	$355	$2,092	$31,723	98
$199,113	$29,802	$68,398	$16,570	$149,449	$2,531,744	$192,201	$1,063	$72,130	$684,108	99
$59,364	.....	.....	$3,790	$147,094	$1,893,843	.....	.....	$3,055	$617,019	100
.....	.....	.....	1,200	8,935	301,589	.....	.....	.....	102,726	101
.....	.....	.....	$2,990	$37,094	$951,620	.....	.....	.....	$287,697	102
11,000	.....	.....	.....	10,400	22,607	.....	.....	.....	99,044	103
$30,000	.....	.....	.....	$30,000	$86,758	.....	.....	.....	$329,322	104
8,000	.....	.....	300	.....	813,640	.....	.....	.....	.....	105
$17,000	.....	.....	$500	.....	$723,847	.....	.....	.....	.....	106
$12,364	.....	.....	$300	$80,000	$131,618	.....	.....	$3,055	.....	107
$139,740	$20,802	$68,398	$12,780	$1,455	$637,901	$192,201	$1,063	$69,075	$67,089	108
$72,264	$10,357	$29,454	$22,949	$14,585	$325,830	$76,264	$4,040	$11,989	$11,941	109
$4,400	.....	.....	$54	.....	$16,348	$2,150	$135	.....	$18	110
$9,596	$1,350	$2,745	$4,597	$1,032	$51,407	$7,483	$155	$1,189	$990	111
$43,125	$2,010	$42,245	$7,113	$84,023	$729,312	$20,132	$3,099	$3,893	$11,078	112
$46,039	$250	$18,502	$43,298	$16,411	$88,304	$66,448	$448	$129	$16,040	113
$10,758,196	$1,050,945	$3,952,277	$2,500,146	$1,911,348	$33,352,999	$9,340,349	$132,533	$1,128,382	$1,773,611	114
128,100	15,000	54,160	5,000	11,350	136,808	202,402	68	.....	.....	115
$59,400	$12,000	$261,930	$5,025	$49,164	$179,152	$72,447	$340	.....	.....	116
.....	.....	54,160	.....	11,350	19,479	4,125	68	.....	.....	117
.....	.....	$261,930	.....	$49,164	$71,173	$16,708	$340	.....	.....	118
.....	.....	.....	.....	.....	.....	2,800	.....	.....	.....	119
.....	.....	.....	.....	.....	.....	$5,000	.....	.....	.....	120
128,100	15,000	.....	5,000	.....	117,329	195,477	.....	.....	.....	121
$59,400	$12,000	.....	$5,025	.....	$107,979	$56,730	.....	.....	.....	122
103,198	10,600	393,808	484,600	126,034	75,200	1,353,203	.....	.....	.....	123
$460,000	$61,800	$2,117,495	$1,493,440	$622,360	$229,236	$4,954,749	.....	.....	.....	124
.....	10,600	393,808	.....	126,034	.....	.....	.....	.....	.....	125
(1)	$61,800	$2,117,495	.....	$622,360	(1)	.....	(1)	.....	.....	126
.....	.....	.....	.....	.....	60,000	.....	.....	.....	.....	127
.....	.....	.....	.....	.....	$208,655	.....	.....	.....	.....	128
103,198	.....	.....	484,600	.....	15,200	1,353,203	.....	.....	.....	129
$460,000	.....	.....	$1,493,440	.....	$20,581	$4,954,749	.....	.....	.....	130
$1,676,307	.....	$48	$138,670	$205,267	$7,843,165	$1,426,455	$14,120	.....	$350,040	131
364,950	.....	.....	49,863	2,100	1,881,547	466,235	4,000	.....	91,841	132
$828,000	.....	.....	$108,590	$8,217	$4,180,031	$871,573	$12,000	.....	$185,368	133
160,800	.....	.....	20,000	170,000	2,357,182	532,757	4,000	.....	139,646	134
$123,000	.....	.....	$27,689	$159,500	$2,667,982	$554,882	$2,000	.....	$90,572	135
51,671	.....	.....	.....	10,400	506,450	.....	.....	.....	34,546	136
$107,643	.....	.....	.....	$37,550	$981,551	.....	.....	.....	$105,000	137
269,786	.....	24	600	.....	12,822	.....	20	.....	.....	138
$617,604	.....	$48	$2,400	.....	$13,601	.....	$120	.....	.....	139
.....	.....	24	.....	.....	6,890	.....	10	.....	.....	140
.....	.....	$35	.....	.....	$15,083	.....	$10	.....	.....	141
2,293,950	250	5,033	1,271	41,760	4,041,330	312,501	40	.....	3,112	142
$4,741,324	$1,150	$12,850	$3,072	$64,530	$7,463,088	$512,333	$32	.....	$8,540	143
176,735	250	200	160	36,500	88,377	301,991	40	.....	.....	144
$444,307	$1,150	$600	$320	$46,550	$186,104	$489,198	$32	.....	.....	145
2,117,215	.....	4,833	1,111	5,000	3,705,070	10,600	.....	.....	3,112	146
$4,297,017	.....	$12,250	$2,752	$17,010	$6,569,889	$23,135	.....	.....	$8,540	147
.....	.....	.....	.....	200	247,883	.....	.....	.....	.....	148
.....	.....	.....	.....	$870	$707,095	.....	.....	.....	.....	149

[1] Value of oak sole leather included in "all other products, including by-products, glue stock, etc.," to avoid disclosing individual operations.

TABLE 12.—LEATHER, TANNED, CURRIED, AND FINISHED—

		United States.	Alabama.	California.	Connecticut.	Delaware.	Georgia.
	Products—Continued.						
	Goatskins, tanned and finished—						
	Total—						
150	Number	45,691,492	25	3,000		10,928,313	825
151	Value	$37,887,349	$12	$12,000		$9,102,297	$1,314
	Black—						
152	Number	40,019,614	25	2,000		9,396,211	825
153	Value	$32,822,282	$12	$8,000		$7,640,780	$1,314
	Colored—						
154	Number	5,671,878		1,000		1,532,102	
155	Value	$5,065,067		$4,000		$1,461,517	
	Sheepskins, tanned and finished—						
156	Number	20,597,598		1,012,816	48,000	463,404	212
157	Value	$11,168,829		$341,262	$40,000	$281,754	$64
	Belting leather—						
158	Sides	859,564			37,913	27,844	2,000
159	Value	$4,754,456			$292,056	$123,165	$12,400
	Harness leather—						
160	Sides	4,369,561	10,766	339,041	4,378		253,575
161	Value	$20,274,188	$33,570	$1,904,647	$16,648		$700,040
	Carriage leather—						
162	Number of hides	622,836			7,830		
163	Value	$5,453,157			$42,130		
164	Trunk, bag, and pocketbook leather	$4,920,750		$46,800	$21,450	$35,000	
165	Bookbinders' leather	$2,283,761			$157,200	$85,200	
166	Leather for manufacture of gloves	$3,344,614		$530,480			
	Furniture leather—						
167	Number of hides	204,268			1,118		
168	Value	$2,327,647			$7,559		
169	All other leather, including offal leather	$12,180,238	$4,980	$680,318	$156,809	$44,202	$12,625
170	All other products, including by-products, glue stock, etc.	[1] $7,665,223	$5,457	$867,855	$6,006	$331,638	$32,700
171	Amount charged for tanning, currying, or finishing for others.	$8,189,960		$7,886	$5	$50,368	$73,014
	Custom work, stock tanned or finished for others:						
	For tanners, curriers, and finishers—						
	Hides tanned—						
172	Number	860,918		2,020			
173	Estimated value	$6,109,481		$14,605			
	Skins tanned—						
174	Number	2,646,632				180,000	
175	Estimated value	$1,658,168				$126,000	
	Sides curried—						
176	Number	331,385		2,330			
177	Estimated value	$1,046,675		$17,330			
	Splits curried—						
178	Number	390,366					
179	Estimated value	$412,366					
	Skins curried or finished—						
180	Number	3,672,590		200			
181	Estimated value	$3,405,291		$600			
	For others, not tanners, curriers, or finishers—						
	Hides tanned—						
182	Number	426,096					36,293
183	Estimated value	$2,922,995					$499,372
	Skins tanned—						
184	Number	13,279,613		350	9		
185	Estimated value	$8,587,529		$11,000	$25		
	Sides curried—						
186	Number	1,070,669					
187	Estimated value	$2,702,039					
	Splits curried—						
188	Number	341,753					
189	Estimated value	$402,813					
	Skins curried or finished—						
190	Number	12,208,534		86		35,951	
191	Estimated value	$8,821,397		$258		$107,850	
	Power:						
192	Number of establishments reporting	909	2	46	9	20	20
193	Total horsepower	129,975	1,315	3,829	391	5,585	1,161
	Owned—						
	Engines—						
	Steam—						
194	Number	1,524	9	53	12	33	23
195	Horsepower	107,510	1,040	2,936	271	5,357	1,081
	Gas or gasoline—						
196	Number	77		1	1		
197	Horsepower	5,086		10	10		
	Water wheels—						
198	Number	62			2		
199	Horsepower	1,935			40		
	Water motors—						
200	Number	2					2
201	Horsepower	20					20
	Electric motors—						
202	Number	589	8	50	1	11	
203	Horsepower	12,525	275	538	20	208	
204	Other power, horsepower	40					
	Rented—						
	Electric motors—						
205	Number	142		16		2	2
206	Horsepower	2,014		305		20	60
207	Other kind, horsepower	845		40	50		
208	Furnished to other establishments, horsepower	248		18			

[1] Includes $2,290,869, the value of oak sole leather manufactured by single establishments located in the states of Illinois, Massachusetts, Minnesota, New York, and Ohio.

DETAILED SUMMARY, BY STATES: 1905—Continued.

Illinois.	Indiana.	Kentucky.	Maine.	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	New Hampshire.	
.....	.....	636	.....	30,000	6,878,955	.....	22	.....	420,000	150
.....	.....	$303	.....	$24,000	$5,277,991	.....	$11	.....	$225,000	151
.....	.....	636	.....	30,000	4,972,847	.....	22	.....	348,000	152
.....	.....	$303	.....	$24,000	$3,922,335	.....	$11	.....	$150,000	153
.....	.....	.....	.....	.....	1,000,108	.....	.....	.....	72,000	154
.....	.....	.....	.....	.....	$1,355,056	.....	.....	.....	$75,000	155
1,696,713	50	42,734	2,032,800	112,750	6,802,980	503,964	300	52	136,836	156
$964,099	$50	$23,951	$587,416	$84,200	$3,000,146	$218,634	$350	$78	$59,922	157
.....	7,300	9,506	.....	5,000	230,870	.....	.....	64,800	37,747	158
.....	$45,800	$69,120	.....	$11,250	$1,350,481	.....	.....	$284,481	$226,507	159
53,074	231,102	187,632	.....	11,765	.....	195,695	6,310	124,219	70,984	160
$267,800	$877,353	$1,075,228	.....	$98,249	.....	$854,690	$25,310	$675,019	$186,470	161
.....	.....	.....	.....	22,100	11,996	5,200	.....	.....	.....	162
.....	.....	.....	.....	$110,450	$76,813	$23,900	.....	.....	.....	163
$527,754	$27,414	.....	.....	$470,500	$372,896	$788,535	.....	.....	$1,000	164
$27,820	.....	.....	.....	.....	$4,530	$93,600	.....	.....	.....	165
$707,419	.....	.....	.....	.....	.....	$50	.....	.....	.....	166
.....	.....	.....	.....	.....	1,536	1,200	.....	.....	.....	167
.....	.....	.....	.....	.....	$2,304	$10,200	.....	.....	.....	168
$573,641	$8,000	$212,951	$89,528	$52,455	$1,057,975	$78,842	$1,040	$37,874	$489,202	169
[2] $748,703	$15,205	$90,094	$13,562	$74,952	[2] $2,851,199	$153,650	[2] $62,800	$125,070	$109,546	170
$3,779	$2,173	$88,173	$169,424	$73,902	$2,728,340	$152,264	$28,520	$5,860	$116,484	171
247	2,000	.....	2,000	.....	111,550	100,015	.....	.....	.....	172
$1,232	$12,000	.....	$20,000	.....	$650,627	$1,403,660	.....	.....	.....	173
.....	4,500	.....	1,352,784	.....	509,550	.....	.....	.....	.....	174
.....	$4,500	.....	$431,022	.....	$524,500	.....	.....	.....	.....	175
.....	.....	.....	6,000	40	129,633	.....	.....	9,400	.....	176
.....	.....	.....	$30,000	$270	$194,060	.....	.....	$27,026	.....	177
.....	.....	.....	.....	.....	137,784	.....	.....	.....	.....	178
.....	.....	.....	.....	.....	$134,442	.....	.....	.....	.....	179
.....	.....	.....	.....	.....	1,191,580	.....	.....	.....	.....	180
.....	.....	.....	.....	.....	$908,323	.....	.....	.....	.....	181
1,131	30	32,765	2,382	32,200	218,377	9,730	6,215	600	6,928	182
$9,886	$180	$327,538	$15,700	$210,222	$1,332,870	$61,386	$55,420	$3,500	$30,613	183
608	.....	.....	1,212,560	.....	3,450,516	50	5,000	.....	1,000	184
$560	.....	.....	$294,848	.....	$1,808,814	$150	$5,200	.....	$1,500	185
.....	.....	.....	.....	.....	1,070,387	.....	20	.....	.....	186
.....	.....	.....	.....	.....	$2,701,270	.....	$100	.....	.....	187
.....	.....	.....	.....	.....	336,088	.....	.....	.....	.....	188
.....	.....	.....	.....	.....	$394,666	.....	.....	.....	.....	189
33,064	.....	.....	.....	4,500	6,200,135	.....	300	.....	670,988	190
$13,860	.....	.....	.....	$928	$3,853,407	.....	$500	.....	$350,385	191
26	10	18	24	13	124	22	5	8	8	192
5,520	642	1,824	2,352	1,130	15,460	4,430	281	576	1,280	193
45	17	41	20	24	157	46	3	9	8	194
5,080	614	1,766	1,591	982	14,444	3,896	170	546	1,185	195
.....	1	.....	1	.....	2	2	.....	.....	.....	196
.....	10	.....	6	.....	50	100	.....	.....	.....	197
.....	.....	.....	8	.....	7	.....	.....	.....	3	198
.....	.....	.....	180	.....	204	.....	.....	.....	62	199
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	201
19	2	3	14	9	8	10	9	1	3	202
200	18	58	565	148	106	48	100	30	25	203
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	204
2	.....	.....	1	.....	13	16	2	.....	1	205
30	.....	.....	10	.....	317	365	11	.....	8	206
150	.....	.....	.....	.....	288	30	.....	.....	.....	207
50	.....	.....	2	.....	2	30	.....	10	.....	208

[2] Includes the value of oak sole leather, to avoid disclosing individual operations.

TABLE 12.—LEATHER, TANNED, CURRIED, AND FINISHED—

		New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	Pennsylvania.
1	Number of establishments	73	118	34	40	11	205
	Capital:						
2	Total	$12,492,373	$24,037,904	$2,568,965	$6,915,341	$272,048	$72,972,114
3	Land	$1,105,340	$792,399	$90,476	$264,452	$19,150	$2,256,526
4	Buildings	$1,522,644	$3,660,768	$320,773	$1,245,710	$44,600	$9,128,618
5	Machinery, tools, and implements	$1,175,103	$4,080,233	$191,577	$425,793	$29,700	$5,535,476
6	Cash and sundries	$8,689,286	$15,504,504	$1,966,139	$4,979,386	$178,598	$56,051,494
7	Proprietors and firm members	63	158	45	34	15	216
	Salaried officials, clerks, etc.:						
8	Total number	342	241	37	94	.....	754
9	Total salaries	$500,917	$340,309	$61,265	$142,455	.....	$927,434
	Officers of corporations—						
10	Number	60	25	10	28	.....	64
11	Salaries	$214,720	$107,400	$26,500	$53,680	.....	$190,961
	General superintendents, managers, clerks, etc.—						
12	Total number	282	216	27	66	.....	690
13	Total salaries	$286,197	$232,909	$34,765	$88,775	.....	$736,473
	Men—						
14	Number	256	201	24	55	.....	654
15	Salaries	$273,659	$226,786	$33,460	$82,009	.....	$719,488
	Women—						
16	Number	26	15	3	11	.....	36
17	Salaries	$12,538	$6,123	$1,305	$6,766	.....	$16,985
	Wage-earners, including pieceworkers, and total wages:						
18	Greatest number employed at any one time during the year	5,980	6,579	723	1,794	112	16,963
19	Least number employed at any one time during the year	4,237	4,472	389	1,448	88	11,881
20	Average number	4,953	5,444	534	1,610	94	14,413
21	Total wages	$2,793,327	$2,485,162	$149,258	$839,171	$67,365	$6,417,750
	Men 16 years and over—						
22	Average number	4,817	5,296	532	1,600	94	13,328
23	Wages	$2,763,791	$2,445,240	$149,008	$836,810	$67,365	$6,133,957
	Women 16 years and over—						
24	Average number	38	146	.....	1	.....	573
25	Wages	$9,107	$39,587	.....	$355	.....	$171,728
	Children under 16 years—						
26	Average number	98	2	2	9	.....	507
27	Wages	$20,429	$335	$250	$2,006	.....	$112,065
	Average number of wage-earners, including pieceworkers, employed during each month:						
	Men 16 years and over—						
28	January	4,623	5,252	504	1,570	92	13,030
29	February	4,643	5,408	526	1,580	95	13,229
30	March	4,716	5,282	526	1,595	91	13,578
31	April	4,734	5,200	519	1,591	87	13,578
32	May	4,862	5,259	553	1,639	90	13,514
33	June	4,961	5,232	624	1,623	91	13,463
34	July	4,883	5,312	578	1,603	93	13,459
35	August	4,840	5,276	554	1,570	97	13,546
36	September	4,800	5,322	555	1,564	94	13,692
37	October	4,764	5,408	492	1,597	101	13,355
38	November	5,016	5,311	487	1,635	98	12,677
39	December	4,962	5,290	466	1,633	99	12,815
	Women 16 years and over—						
40	January	32	165	.....	1	.....	560
41	February	32	177	.....	1	.....	555
42	March	30	177	.....	1	.....	601
43	April	30	162	.....	1	.....	595
44	May	31	143	.....	1	.....	599
45	June	32	139	.....	1	.....	534
46	July	33	139	.....	1	.....	584
47	August	34	136	.....	1	.....	605
48	September	50	129	.....	1	.....	598
49	October	51	140	.....	1	.....	621
50	November	48	121	.....	1	.....	563
51	December	53	124	.....	1	.....	521
	Children under 16 years—						
52	January	91	3	3	9	.....	455
53	February	91	3	3	9	.....	477
54	March	90	2	3	9	.....	497
55	April	95	1	3	9	.....	515
56	May	102	1	3	9	.....	499
57	June	104	1	3	9	.....	517
58	July	103	2	1	9	.....	522
59	August	104	2	1	9	.....	530
60	September	101	2	1	9	.....	516
61	October	86	1	1	9	.....	506
62	November	102	3	1	9	.....	511
63	December	107	3	1	9	.....	539
	Miscellaneous expenses:						
64	Total	$873,542	$980,851	$93,209	$336,888	$11,115	$4,049,820
65	Rent of works	$42,384	$41,812	.....	$2,745	.....	$141,374
66	Taxes	$44,526	$36,574	$9,527	$26,833	$1,163	$135,771
67	Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.	$646,104	$885,679	$83,632	$264,901	$9,952	$3,139,477
68	Contract work	$140,528	$16,786	$50	$42,409	.....	$633,198
	Materials used:						
69	Aggregate cost	$15,272,124	$16,274,903	$2,038,036	$4,462,093	$366,757	$55,411,927
	Hides and skins—						
70	Total cost	$7,852,411	$12,774,019	$1,670,867	$3,524,131	$285,764	$43,129,248
	Hides, all kinds—						
71	Number	562,709	1,569,750	280,197	403,655	52,469	5,447,947
72	Cost	$4,724,062	$7,804,223	$1,667,468	$2,843,670	$282,394	$26,416,581
	Calf and kip skins—						
73	Number	109,436	1,135,591	2,850	503,787	3,530	292,500
74	Cost	$91,529	$1,083,158	$2,740	$642,503	$3,070	$501,930
	Coltskins—						
75	Number	25,828	59,246	.....	4,000	.....	1,234,680
76	Cost	$48,074	$88,525	.....	$2,000	.....	$1,849,392
	Goatskins—						
77	Number	3,411,843	1,047,414	1,167	3,500	100	24,220,530
78	Cost	$1,707,241	$659,312	$286	$2,000	$100	$13,646,179
	Sheepskins—						
79	Number	1,715,076	7,124,420	1,420	24,360	200	2,402,204
80	Cost	$674,412	$2,708,110	$318	$21,853	$50	$715,166
	All other skins—						
81	Number	667,310	595,788	50	40,300	300	.....
82	Cost	$607,093	$430,691	$55	$12,105	$150	.....

DETAILED SUMMARY, BY STATES: 1905—Continued.

Rhode Island.	South Carolina.	Tennessee.	Texas.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.[1]	
6	3	20	5	4	44	3	33	33	9	1
$252,072	$17,080	$4,013,289	$23,400	$201,466	$4,635,224	$37,050	$8,750,696	$30,409,164	$30,820	2
$27,000	$800	$111,052	$3,800	$7,000	$169,008	$10,000	$300,631	$1,480,300	$3,700	3
$19,981	$1,850	$577,678	$3,000	$24,200	$510,992	$7,800	$837,973	$4,631,548	$12,800	4
$34,910	$5,140	$596,224	$3,200	$13,600	$269,640	$8,200	$603,736	$5,290,402	$8,470	5
$171,081	$9,200	$2,728,335	$12,500	$156,666	$3,676,575	$11,050	$7,008,356	$18,997,734	$14,850	6
7	2	28	5	2	43	5	40	27	10	7
8	1	40	2	7	71	.....	48	322	2	8
$14,080	$200	$63,736	$1,100	$6,040	$95,032	.....	$88,514	$457,702	$930	9
3	.....	6	.....	3	16	.....	6	25	1	10
$9,000	.....	$27,598	.....	$4,500	$39,048	.....	$42,527	$136,267	$600	11
5	1	34	2	4	55	.....	42	297	1	12
$5,080	$200	$36,138	$1,100	$1,540	$55,984	.....	$45,087	$321,435	$330	13
4	1	33	2	.....	53	.....	40	279	1	14
$4,000	$200	$35,738	$1,100	.....	$55,259	.....	$45,017	$311,659	$330	15
1	.....	1	.....	4	2	.....	2	18	.....	16
$180	.....	$400	.....	$1,540	$725	.....	$970	$9,776	.....	17
105	13	878	24	68	1,320	8	1,208	6,184	39	18
68	11	618	21	49	927	8	776	4,885	21	19
87	4	736	22	60	1,055	8	946	5,556	24	20
$48,275	$1,280	$251,665	$8,242	$27,066	$357,690	$5,752	$434,263	$2,080,904	$13,174	21
81	4	736	22	60	1,022	8	946	5,386	22	22
$46,268	$1,280	$251,665	$8,242	$27,066	$353,751	$5,752	$434,263	$2,037,406	$12,456	23
6	.....	.....	.....	.....	1	.....	.....	110	2	24
$2,007	.....	.....	.....	.....	$230	.....	.....	$36,860	$718	25
.....	.....	.....	.....	.....	32	.....	.....	51	.....	26
.....	.....	.....	.....	.....	$3,718	.....	.....	$12,638	.....	27
81	1	732	24	60	921	8	892	5,560	29	28
84	2	757	24	64	917	8	911	5,512	30	29
89	3	739	22	89	959	8	941	5,466	27	30
87	3	725	22	62	940	8	935	5,487	25	31
84	1	731	22	55	996	8	960	5,459	20	32
78	.....	763	22	53	1,102	8	1,028	5,335	19	33
75	.....	750	21	53	1,121	8	1,040	5,385	18	34
77	.....	742	21	58	1,097	8	1,050	5,360	18	35
75	8	745	21	55	1,090	8	1,010	5,225	18	36
75	9	725	21	53	1,071	8	912	5,146	19	37
81	11	712	22	60	1,020	8	816	5,232	19	38
86	10	711	22	58	1,006	8	848	5,465	22	39
1	.....	.....	.....	.....	.....	.....	.....	115	1	40
1	.....	.....	.....	.....	.....	.....	.....	112	1	41
5	.....	.....	.....	.....	.....	.....	.....	108	7	42
5	.....	.....	.....	.....	.....	.....	.....	97	7	43
6	.....	.....	.....	.....	.....	.....	.....	103	1	44
6	.....	.....	.....	.....	.....	.....	.....	100	1	45
8	.....	.....	.....	.....	6	.....	.....	114	1	46
8	.....	.....	.....	.....	.....	.....	.....	127	1	47
8	.....	.....	.....	.....	.....	.....	.....	141	1	48
8	.....	.....	.....	.....	.....	.....	.....	136	1	49
8	.....	.....	.....	.....	.....	.....	.....	138	1	50
8	.....	.....	.....	.....	6	.....	.....	137	1	51
.....	.....	.....	.....	.....	30	.....	.....	40	.....	52
.....	.....	.....	.....	.....	30	.....	.....	46	.....	53
.....	.....	.....	.....	.....	30	.....	.....	45	.....	54
.....	.....	.....	.....	.....	31	.....	.....	45	.....	55
.....	.....	.....	.....	.....	34	.....	.....	46	.....	56
.....	.....	.....	.....	.....	36	.....	.....	44	.....	57
.....	.....	.....	.....	.....	37	.....	.....	56	.....	58
.....	.....	.....	.....	.....	35	.....	.....	64	.....	59
.....	.....	.....	.....	.....	33	.....	.....	59	.....	60
.....	.....	.....	.....	.....	30	.....	.....	57	.....	61
.....	.....	.....	.....	.....	29	.....	.....	55	.....	62
.....	.....	.....	.....	.....	29	.....	.....	55	.....	63
$13,320	$99	$140,511	$1,250	$25,136	$253,094	$1,041	$246,136	$1,201,921	$1,888	64
$1,050	.....	$1,035	$300	.....	$5,010	.....	$85	$7,740	$139	65
$1,045	$4	$8,428	$80	$367	$14,349	$235	$16,088	$102,762	$227	66
$11,225	$95	$131,048	$870	$24,769	$233,735	$1,406	$229,303	$1,181,419	$1,522	67
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	68
$228,471	$6,342	$2,851,259	$34,986	$277,286	$4,719,206	$41,108	$4,769,123	$19,870,887	$32,892	69
$103,867	$4,800	$2,226,410	$28,600	$229,644	$3,890,761	$32,544	$3,696,392	$15,063,620	$26,610	70
20,300	2,250	355,798	5,900	42,788	588,397	5,400	711,378	2,457,195	4,750	71
$101,595	$4,680	$2,223,205	$18,550	$220,009	$3,872,597	$25,600	$3,694,843	$11,027,774	$20,504	72
2,667	150	1,274	5,000	60	1,599	2,872	770	3,633,271	780	73
$4,000	$120	$1,248	$10,000	$35	$1,657	$4,944	$1,038	$4,816,826	$2,000	74
.....	.....	.....	.....	.....	20	.....	75	3,510	.....	75
.....	.....	.....	.....	.....	$15	.....	$200	$4,520	.....	76
.....	.....	943	100	.....	.....	.....	.....	2	840	77
.....	.....	$242	$50	.....	.....	.....	.....	$1	$576	78
231,400	.....	6,394	.....	1,000	55,763	4,200	830	130,037	7,750	79
$88,272	.....	$1,715	.....	$600	$16,390	$2,100	$280	$101,502	$3,371	80
.....	.....	.....	.....	.....	201	.....	211	16,250	100	81
.....	.....	.....	.....	.....	$102	.....	$31	$12,937	$150	82

[1] Includes establishments distributed as follows: Colorado, 1; Iowa, 2; Louisiana, 1; Mississippi, 2; North Dakota, 1; South Dakota, 1; Utah, 1.

TABLE 12.—LEATHER, TANNED, CURRIED, AND FINISHED—

		New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	Pennsylvania.
	Materials used—Continued.						
	Tanning materials—						
83	Total cost	$1,094,884	$2,151,808	$283,725	$590,549	$54,374	$8,765,151
	Hemlock bark—						
84	Cords	2,992	110,117	300	4,869	1,845	439,151
85	Cost	$27,124	$978,935	$2,100	$47,295	$21,802	$3,916,030
	Oak bark—						
86	Cords	15,940	2,008	33,878	17,079	1,330	81,414
87	Cost	$179,384	$18,996	$256,950	$181,334	$27,018	$492,258
	Gambier—						
88	Bales	10,043	7,310	40	452	62	1,677
89	Cost	$89,359	$65,608	$200	$4,796	$692	$19,440
	Hemlock bark extract—						
90	Barrels	1,423	875	9	280	.....	1,157
91	Cost	$15,854	$11,595	$140	$3,154	.....	$14,097
	Oak bark extract—						
92	Barrels	8,573	7,605	1,985	25,391	71	98,055
93	Cost	$82,676	$65,952	$17,932	$252,277	$1,268	$1,158,749
94	Quebracho, cost	$167,496	$270,650	$5,075	$79,975	$1,620	$1,182,708
	Sumac—						
95	Tons	1,262	1,696	.....	142	4	142
96	Cost	$48,853	$67,724	.....	$5,473	$160	$6,438
97	Chemicals, cost	$181,635	$193,135	$30	$6,755	$930	$1,023,380
98	All other materials used in tanning, cost	$302,503	$479,213	$1,298	$9,490	$884	$952,051
	Currying materials—						
99	Total cost	$5,733,357	$746,159	$26,844	$126,508	$11,661	$2,318,709
	Purchased rough—						
100	Total cost	$5,456,993	$282,738	$3,125	$23,871	.....	$1,573,689
	Rough leather—						
101	Sides	1,408,668	52,172	1,250	6,900	.....	306,680
102	Cost	$4,521,995	$180,147	$3,125	$23,871	.....	$1,464,027
	Rough grains—						
103	Sides	174,713	9,000	.....	.....	.....	10,000
104	Cost	$430,283	$26,300	.....	.....	.....	$32,400
	Rough splits—						
105	Sides	535,750	6,050	.....	.....	.....	.....
106	Cost	$360,215	$4,650	.....	.....	.....	.....
107	All other rough leather, cost	$144,500	$71,641	.....	.....	.....	$77,262
108	Oil, stearin, degras, tallow, and all other materials used in currying.	$276,364	$463,421	$23,719	$102,637	$11,661	$745,020
109	Fuel	$159,871	$235,390	$13,813	$62,426	$4,170	$522,739
110	Rent of power and heat	$10,845	$7,153	.....	.....	.....	$1,146
111	Mill supplies	$23,687	$27,852	$4,355	$5,708	$323	$80,484
112	All other materials	$344,325	$164,276	$2,114	$142,704	$10,365	$372,617
113	Freight	$52,744	$168,246	$36,318	$10,067	$100	$221,833
	Products:						
114	Aggregate value	$21,495,329	$21,642,945	$2,602,174	$6,512,754	$484,673	$69,427,852
	Sold in the rough—						
	Total—						
115	Sides	798,673	567,019	356,700	150,393	15,250	822,608
116	Value	$873,093	$836,408	$1,451,455	$181,347	$42,670	$2,298,589
	Rough leather—						
117	Sides	28,029	111,556	356,700	453	8,600	499,893
118	Value	$127,501	$395,247	$1,451,455	$1,728	$41,340	$1,709,046
	Rough grains—						
119	Sides	100,000	.....	.....	.....	.....	155,724
120	Value	$210,113	.....	.....	.....	.....	$369,143
	Rough splits—						
121	Sides	670,644	455,463	.....	149,940	6,650	166,991
122	Value	$535,479	$441,161	.....	$179,619	$1,330	$220,400
	Sole leather—						
	Total—						
123	Sides	.....	1,195,986	74,883	.....	60	9,476,139
124	Value	.....	$4,027,072	$398,396	.....	$300	$33,553,676
	Oak—						
125	Sides	.....	.....	74,883	.....	.....	331,766
126	Value	.....	(1)	$398,396	(1)	.....	$1,867,731
	Union—						
127	Sides	.....	465,207	.....	.....	60	3,472,046
128	Value	.....	$1,634,803	.....	.....	$300	$13,856,381
	Hemlock—						
129	Sides	.....	730,779	.....	.....	.....	5,672,327
130	Value	.....	$2,392,269	.....	.....	.....	$17,829,564
	Upper leather (other than calf, kip, or colt skins)—						
131	Total value	$2,151,292	$4,901,639	$32,595	$9,990	$240	$655,107
	Grain, satin, kangaroo, etc. (side leather)—						
132	Sides	348,698	1,622,303	18,578	2,500	.....	70,461
133	Value	$428,848	$3,722,279	$32,595	$9,700	.....	$158,721
	Finished splits—						
134	Number	70,883	1,166,615	.....	.....	200	64,413
135	Value	$222,001	$1,108,477	.....	.....	$240	$83,472
	Patent and enameled shoe leather—						
136	Sides	318,182	8,192	.....	.....	.....	392,000
137	Value	$1,497,893	$70,883	.....	.....	.....	$400,000
	Horsehide—						
138	Sides	1,600	.....	.....	106	.....	5,718
139	Value	$2,550	.....	.....	$290	.....	$12,914
	Coltskins—						
140	Number	25,828	50,019	.....	4,000	.....	1,231,260
141	Value	$80,214	$159,998	.....	$2,500	.....	$3,438,036
	Calf and kip skins, tanned and finished—						
	Total—						
142	Number	96,992	1,122,832	3,395	503,687	3,430	243,956
143	Value	$172,550	$1,662,513	$5,519	$883,379	$5,700	$621,863
	Flesh finished—						
144	Number	.....	200	3,045	503,587	2,230	7,843
145	Value	.....	$400	$4,864	$883,079	$3,300	$21,645
	Grain finished—						
146	Number	26,607	1,121,432	350	100	1,200	236,113
147	Value	$64,850	$1,659,713	$655	$300	$2,400	$600,218
	Patent and enameled—						
148	Number	70,385	1,200	.....	.....	.....	.....
149	Value	$107,700	$2,400	.....	.....	.....	.....

1 Value of oak sole leather included in "all other products, including by-products, glue stock, etc.," to avoid disclosing individual operations.

DETAILED SUMMARY, BY STATES: 1905—Continued.

Rhode Island.	South Carolina.	Tennessee.	Texas.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.	
$5,081	$1,236	$478,374	$4,914	$38,612	$700,714	$5,753	$872,833	$2,287,103	$2,537	83
30		8,081		4,357	1,519		43,247	184,042	10	84
$360		$59,594		$34,202	$8,224		$300,032	$1,334,775	$30	85
	39	39,430	200		78,080	144	48,894	120	60	86
	$236	$307,630	$1,230		$614,272	$3,816	$363,672	$1,612	$455	87
4			120		75	63	1	24,541	5	88
$44			$1,500		$551	$800	$10	$221,668	$57	89
2		4		300	1,056			1,703		90
$40		$60		$3,000	$8,821			$17,484		91
		3,920	42	37	7,291		1,151	3,068	60	92
		$30,822	$650	$840	$40,020		$12,895	$27,059	$800	93
$28	$1,000	$15,457	$1,150		$5,900		$39,285	$105,180	$573	94
3					6			125	1	95
$102					$216			$5,753	$50	96
$1,253		$971	$225	$100	$7,373	$348	$12,758	$153,788	$12	97
$3,254		$63,840	$150	$470	$6,337	$780	$137,281	$320,178	$560	98
$24,472	$118	$18,599	$692	$8,000	$35,115	$1,481	$32,148	$1,144,461	$621	99
$17,850							$1,130	$465,013	$60	100
							350	175,527		101
							$1,130	$465,013		102
										103
										104
									50	105
									$60	106
$17,850										107
$6,622	$118	$18,599	$692	$8,000	$35,115	$1,481	$31,018	$678,548	$561	108
$3,020	$108	$15,292	$515	$200	$15,600	$528	$33,101	$252,740	$1,115	109
$1,157		$36			$1,012			$1,100	$24	110
$92	$5	$6,180	$15	$450	$4,538	$10	$3,214	$24,620	$145	111
$85	$75	$14,284	$250	$380	$15,125		$46,420	$111,211	$1,718	112
$691		$92,084			$56,341	$792	$85,006	$86,023	$122	113
$346,047	$10,822	$3,583,871	$61,225	$342,312	$5,820,812	$58,061	$6,061,509	$25,845,123	$57,424	114
		169,748	3,334	55,552	345,278		83,880	573,434	7,600	115
		$656,918	$10,000	$182,202	$1,590,818		$311,022	$687,114	$20,800	116
		169,748		55,552	345,178		83,880	201,642	3,600	117
		$656,918		$182,202	$1,590,650		$311,022	$541,584	$14,400	118
					100					119
					$162					120
			3,334					371,792	4,000	121
			$10,000					$145,530	$6,400	122
	60	229,568	400		503,907		1,262,538	1,001,531	673	123
	$250	$1,219,860	$1,200		$2,926,054		$5,270,545	$4,231,785	$3,333	124
	60	229,568	400		503,907		424,824		673	125
	$250	$1,219,860	$1,200		$2,926,054		$2,382,515		$3,333	126
							349,348	53,350		127
							$1,413,872	$257,769		128
							488,366	1,038,181		129
							$1,474,158	$3,074,016		130
	$350	$139,552			$2,879		$1,198	$5,908,992		131
	250	35,705			970		512	1,923,636		132
	$350	$110,045			$2,095		$1,180	$4,751,770		133
		25,336						1,406,386		134
		$29,507						$918,054		135
								3,693		136
								$12,017		137
					81		12	114,398		138
					$184		$18	$227,151		139
					20		75	5,085		140
					$30		$625	$9,454		141
2,467		1,014		60	1,494	1,872	770	3,564,723	530	142
$8,600		$2,225		$75	$3,430	$7,488	$1,795	$6,940,331	$1,789	143
		774		60	1,394		720	606,719	300	144
		$1,085		$75	$3,230		$1,720	$1,273,234	$1,275	145
2,467		240			100	1,872	50	2,936,130	230	146
$8,600		$540			$200	$7,488	$75	$5,621,132	$514	147
								21,874		148
								$45,965		149

TABLE 12.—LEATHER, TANNED, CURRIED, AND FINISHED—

		New Jersey.	New York.	North Carolina.	Ohio.	Oregon.	Pennsylvania.
	Products—Continued.						
	Goatskins, tanned and finished—						
	Total—						
150	Number	3,481,123	1,033,155	1,166	3,500	80	22,909,407
151	Value	$3,161,780	$922,035	$856	$2,500	$200	$19,156,181
	Black—						
152	Number	3,466,523	873,155	654	3,500	.....	20,923,993
153	Value	$3,141,830	$796,516	$647	$2,500	.....	$17,133,227
	Colored—						
154	Number	14,600	160,000	512	.....	80	1,985,414
155	Value	$19,950	$125,519	$209	.....	$200	$2,022,954
	Sheepskins, tanned and finished—						
156	Number	1,228,500	4,768,772	1,295	24,360	200	1,090,180
157	Value	$743,802	$3,049,763	$430	$10,224	$100	$567,879
	Belting leather—						
158	Sides	28,520	5,000	73,000	31,642	.....	690
159	Value	$123,230	$30,000	$364,815	$211,342	.....	$3,488
	Harness leather—						
160	Sides	75,242	184,182	50,699	309,434	47,080	518,178
161	Value	$405,219	$995,947	$188,139	$1,860,772	$235,215	$2,989,450
	Carriage leather—						
162	Number of hides	342,897	18,606	.....	167,702	7,000	39,505
163	Value	$3,458,402	$90,413	.....	$1,366,913	$35,000	$249,136
164	Trunk, bag, and pocketbook leather	$1,669,360	$109,834	.....	$78,200	.....	$751,772
165	Bookbinders' leather	$1,235,594	$553,816	.....	$125,633	.....	.....
166	Leather for manufacture of gloves	$3,150	$1,218,868	.....	.....	$300	$12,701
	Furniture leather—						
167	Number of hides	141,655	13,031	.....	37,815	.....	7,913
168	Value	$1,684,893	$132,612	.....	$431,937	.....	$58,142
169	All other leather, including offal leather	$4,290,645	$574,290	$183,321	$282,584	$158,818	$1,936,054
170	All other products, including by-products, glue stock, etc.	$190,576	[1] $1,320,483	$21,108	[1] $1,065,397	$6,030	$1,166,686
171	Amount charged for tanning, currying, or finishing for others.	$1,251,529	$1,057,254	$15,540	$36	$100	$1,969,092
	Custom work, stock tanned or finished for others:						
	For tanners, curriers, and finishers—						
	Hides tanned—						
172	Number	324,161	5,000	5,327	.....	100	179,337
173	Estimated value	$1,582,033	$43,000	$45,718	.....	$200	$1,365,313
	Skins tanned—						
174	Number	365,404	194,200	.....	.....	.....	16,185
175	Estimated value	$327,177	$124,650	.....	.....	.....	$72,319
	Sides curried—						
176	Number	183,982	.....	.....	.....	.....	.....
177	Estimated value	$777,989	.....	.....	.....	.....	.....
	Splits curried—						
178	Number	252,582	.....	.....	.....	.....	.....
179	Estimated value	$277,924	.....	.....	.....	.....	.....
	Skins curried or finished—						
180	Number	84,491	502,005	.....	.....	.....	1,894,155
181	Estimated value	$100,236	$345,251	.....	.....	.....	$2,050,806
	For others, not tanners, curriers, or finishers—						
	Hides tanned—						
182	Number	1,000	25,652	136	4	.....	29,460
183	Estimated value	$6,500	$40,836	$584	$35	.....	$195,627
	Skins tanned—						
184	Number	.....	4,130,992	125	20	.....	4,460,002
185	Estimated value	.....	$2,438,050	$550	$50	.....	$4,007,596
	Sides curried—						
186	Number	.....	.....	.....	.....	.....	12
187	Estimated value	.....	.....	.....	.....	.....	$24
	Splits curried—						
188	Number	1,000	3,765	.....	.....	.....	.....
189	Estimated value	$2,500	$5,647	.....	.....	.....	.....
	Skins curried or finished—						
190	Number	251,481	4,346,862	.....	.....	.....	574,957
191	Estimated value	$922,494	$3,155,915	.....	.....	.....	$435,080
	Power:						
192	Number of establishments reporting	67	112	17	33	10	185
193	Total horsepower	8,596	13,822	1,521	2,953	314	34,938
	Owned—						
	Engines—						
	Steam—						
194	Number	83	161	29	47	10	424
195	Horsepower	7,129	11,111	1,488	2,682	309	27,083
	Gas or gasoline—						
196	Number	.....	18	.....	3	.....	43
197	Horsepower	.....	946	.....	88	.....	3,794
	Water wheels—						
198	Number	.....	15	2	.....	1	10
199	Horsepower	.....	595	33	.....	5	111
	Water motors—						
200	Number	.....	.....	.....	.....	.....	.....
201	Horsepower	.....	.....	.....	.....	.....	.....
	Electric motors—						
202	Number	85	52	.....	14	.....	137
203	Horsepower	1,101	591	.....	188	.....	3,863
204	Other power, horsepower	.....	.....	.....	.....	.....	40
	Rented—						
	Electric motors—						
205	Number	35	34	.....	.....	.....	2
206	Horsepower	335	477	.....	.....	.....	12
207	Other kind, horsepower	31	102	.....	.....	.....	35
208	Furnished to other establishments, horsepower	28	108	.....	.....	.....	.....

[1] Includes the value of oak sole leather, to avoid disclosing individual operations.

DETAILED SUMMARY, BY STATES: 1905—Continued.

Rhode Island.	South Carolina.	Tennessee.	Texas.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states.	
		943						2	340	150
		$500						$7	$263	151
		881						2	340	152
		$447						$7	$263	153
		62								154
		$62								155
230,400		6,094		1,000	55,051	2,400	830	146,755	7,250	156
$140,200		$3,183		$1,200	$28,108	$1,500	$458	$116,406	$3,050	157
3,400		174,260			103,870		16,000		112	158
$30,000		$1,036,276			$459,496		$79,920		$620	159
	4,250	49,111	8,000	25,337	35,235	7,800	57,011	1,504,944	2,027	160
	$10,100	$124,070	$33,750	$150,264	$130,563	$34,750	$322,249	$6,097,651	$10,935	161
										162
										163
$2,500								$17,560	$175	164
$368										165
					$25			$870,321	$1,300	166
										167
										168
$144,240	$100	$54,024	$15,000	$1,425	$588,054	$14,253	$17,112	$412,867	$6,100	169
$4,000	$22	$40,303	$375	$7,056	$46,840	$70	$56,250	$537,010	$5,440	170
$16,730		$306,951			$53,497		$335	$15,625	$3,010	171
		104,500			17,701			6,000		172
		$748,050			$190,043			$24,000		173
								24,000		174
								$48,000		175
										176
										177
										178
										179
		150								180
		$75								181
10,000		155			5,116	200	87	1,410	275	182
$91,500		$595			$32,147	$1,000	$250	$7,875	$2,350	183
					90		35	7,500	1,700	184
					$76		$610	$16,000	$2,500	185
					114		24		112	186
					$235		$72		$200	187
										188
										189
							10	200		190
							$20	$700		191
6	2	21	2	3	29	3	25	33	6	192
308	41	1,831	35	180	2,523	70	3,023	13,974	47	193
3	1	37	2	4	50	3	51	107	3	194
275	35	1,710	35	135	2,305	66	2,067	0,196	25	195
					2		1	1	1	196
					10		6	50	6	197
	1	2		2	4	1		4		198
	6	11		45	84	4		555		199
										200
										201
		4			1		1	147		202
		100			15		50	4,158		203
										204
13								1	2	205
33								15	16	206
		10			100					207
										208

LEATHER GLOVES AND MITTENS

LEATHER GLOVES AND MITTENS.

The manufacture of leather gloves was first reported as an industry at the census of 1810. In 1850 the classification was "gloves;" in 1860, "gloves and mittens." Until the census of 1905 this classification prevailed, although in 1900, for the purposes of the special report, a separation was made of the returns for leather gloves and mittens. Under the general classification was included every variety of gloves and mittens manufactured, whether of leather or other material, except fur and knit gloves and mittens. It is impossible, therefore, to present exact comparative statistics for establishments engaged exclusively in the manufacture of leather gloves and mittens for any census prior to that of 1900. At each census, however, the manufacture of gloves and mittens of materials other than leather has formed but a small part of the glove and mitten industry. The statistics as reported at each census from 1850 to 1905, inclusive, are summarized in Table 1.

TABLE 1.—COMPARATIVE SUMMARY, WITH PER CENT OF INCREASE: 1850 TO 1905.

	CENSUS.							PER CENT OF INCREASE.					
	1905 [1]	1900 [2]	1890 [3]	1880 [3]	1870 [3]	1860 [3]	1850 [3]	1900 to 1905	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments	339	381	324	300	221	126	110	[4] 11.0	17.6	8.0	35.7	75.4	14.5
Capital	$10,705,599	$9,004,427	$5,977,820	$3,370,648	$2,340,550	$594,825	$181,200	18.9	50.6	76.9	44.4	293.5	228.3
Salaried officials, clerks, etc., number	640	637	[5] 482	(6)	(6)	(6)	(6)	0.5	32.2	.....	.....	.....	.....
Salaries	$584,573	$544,170	[5] $438,664	(6)	(6)	(6)	(6)	7.4	24.1	.....	.....	.....	.....
Wage-earners, average number	10,645	14,180	8,187	7,097	4,058	1,420	1,038	[4] 24.9	73.2	6.4	80.7	184.0	[4] 26.3
Total wages	$3,846,253	$4,151,126	$2,670,344	$1,655,695	$980,540	$330,419	$233,496	[4] 7.5	55.5	61.3	68.9	196.8	41.5
Men 16 years and over	4,174	4,304	2,998	2,102	1,127	453	320	[4] 4.4	45.0	42.6	86.5	148.8	37.7
Wages	$2,005,890	$2,014,134	$1,500,385	(6)	(6)	(6)	(6)	[4] 0.4	33.7	.....	.....	.....	.....
Women 16 years and over	6,245	9,542	5,091	5,240	2,894	976	1,009	[4] 34.6	87.4	[4] 3.0	81.4	196.5	[4] 30.3
Wages	$1,795,988	$2,101,044	$1,150,043	(6)	(6)	(6)	(6)	[4] 14.5	82.5	.....	.....	.....	.....
Children under 16 years	226	274	98	346	37	(6)	(6)	[4] 17.5	179.6	[4] 71.7	835.1	.....	.....
Wages	$38,375	$35,048	$13,016	(6)	(6)	(6)	(6)	6.8	170.2	.....	.....	.....	.....
Miscellaneous expenses	$1,507,693	$502,870	$426,937	(7)	(7)	(7)	(7)	167.9	31.8	.....	.....	.....	.....
Cost of materials used	$10,000,889	$9,382,102	$5,021,144	$4,351,469	$1,884,146	$537,589	$322,837	6.6	86.9	15.4	131.0	250.5	66.5
Value of products, including custom work and repairing	$17,740,385	$16,721,234	$10,103,821	$7,379,605	$3,998,521	$1,176,795	$708,184	6.1	65.5	36.9	84.6	239.8	66.2

[1] Exclusive of the statistics of 9 establishments engaged primarily in the manufacture of other products. These establishments made leather gloves and mittens to the value of $166,164.
[2] The figures reported for 1900 represent leather gloves and mittens only, and therefore do not agree with the totals for "gloves and mittens" in the general Report on Manufactures, Parts I and II.
[3] The statistics for censuses prior to 1900 are for gloves and mittens, whether of leather or other material, except fur and knit gloves and mittens.
[4] Decrease.
[5] Includes proprietors and firm members, with their salaries; number only reported in 1900 and 1905, but not included in this table.
[6] Not reported separately.
[7] Not reported.

Table 1 shows that the industry has made marked progress at each succeeding census since 1850, except at that of 1905, when the value of products as compared with that reported in 1900 increased only 6.1 per cent. The decrease from 1900 to 1905 of 42, or 11 per cent, in the number of establishments is due to the consolidation of some of the smaller plants and to the discontinuance of others. The diminution during the same period in the average number of wage-earners and in the total wages may be attributed, in part, to a protracted contest between capital and labor in Fulton county, N. Y., and, in part, to an increased tendency to have work done by contract. As shown in Table 3, contract work cost $393,723 in 1905, as compared with $93,795 in 1900. The labor troubles in Fulton county, N. Y., where about half the value of products for the industry in the United States is produced, probably account also for the fact that the value of products did not show such a large rate of increase at the census of 1905 as at prior censuses.

To obtain the total value of leather gloves and mittens in 1905, the value of products shown in the table should be increased by $166,164, the value of leather gloves and mittens manufactured by establishments engaged primarily in some other industry. This value is not included in any of the tables of this report. In 1900 these minor products of other industries were valued at $217,157.

Table 2 is a comparison of the various items of miscellaneous expenses for 1900 and 1905, with the percentage each item is of the total, and the percentage of increase during the period.

TABLE 2.—*Miscellaneous expenses, with per cent each item is of total, and per cent of increase: 1905 and 1900.*

	1905		1900		Per cent of increase.
	Amount.	Per cent of total.	Amount.	Per cent of total.	
Total	$1,507,693	100.0	$562,870	100.0	167.9
Rent of works	84,021	5.6	85,888	15.2	[1] 2.2
Taxes	22,330	1.5	23,466	4.2	[1] 4.8
Rent of offices, interest, insurance, repairs, advertising, and other sundries	1,007,619	66.8	359,721	63.9	180.1
Contract work	393,723	26.1	93,795	16.7	319.8

[1] Decrease.

The large increase in the total is due in part to the increase of 319.8 per cent in the amount paid for "contract work," which consists principally of amounts paid to home workers. The amounts paid for rent of works and for taxes decreased; but expenditures for rent of offices, insurance, advertising, etc., constitute the largest part of the miscellaneous expenses, and increased 180.1 per cent.

Table 3 is a comparative statement of materials used, by kind and cost, for 1900 and 1905.

The slight increase at the census of 1905 compared with that of 1900 in the total cost of materials used—6.6 per cent—is consistent with the advance of 6.1 per cent in the total value of products.

TABLE 3.—*Cost of materials used, with per cent each item is of total, and per cent of increase: 1905 and 1900.*

	1905		1900		Per cent of increase.
	Cost.	Per cent of total.	Cost.	Per cent of total.	
Total	$10,000,889	100.0	$9,382,102	100.0	6.6
Hides and skins	8,109,523	81.1	7,356,433	78.4	10.2
Fuel	44,293	0.4	42,230	0.5	4.9
Rent of power and heat	27,018	0.3	19,919	0.2	35.6
Mill supplies	7,531	0.1	12,619	0.1	[1] 40.3
All other materials	1,761,225	17.6	1,904,778	20.3	[1] 7.5
Freight	51,299	0.5	46,123	0.5	11.2

[1] Decrease.

Hides and skins were the chief materials used. The cost of these constituted 81.1 per cent of the cost of all materials in 1905 and 78.4 per cent in 1900. The actual increase in their cost between 1900 and 1905 was $753,090, or 10.2 per cent. "All other materials" decreased $143,553, or 7.5 per cent. The increase in the cost of rented power and heat—$7,099, or 35.6 per cent—was caused by a large increase in the use of rented electric power, the amount of which was double that employed in 1900.

In Table 4 is presented the kind, quantity, and cost of hides and skins reported in 1900 and 1905. The table also shows the percentage which the cost of each item formed of the total cost at each census and the percentage of increase.

TABLE 4.—MATERIALS USED—HIDES AND SKINS, BY KIND, QUANTITY, AND COST: 1905 AND 1900.

	1905			1900			Per cent of increase in cost.
	Quantity (dozens).	Cost.		Quantity (dozens).	Cost.		
		Total.	Per cent of total.		Total.	Per cent of total.	
Total	999,235	$8,109,523	100.0	826,416	$7,356,433	100.0	10.2
Deerskins	66,280	888,210	11.0	89,596	1,146,808	15.6	[1] 22.5
Sheepskins, imported	88,881	845,214	10.4	111,804	1,119,035	15.2	[1] 24.5
Sheepskins, domestic	342,764	1,648,857	20.3	422,481	2,256,511	30.7	[1] 26.9
Kid and suede, imported	110,282	1,117,817	13.8	70,824	740,170	10.1	51.0
Kid and suede, domestic	140,502	938,091	11.6	97,245	708,800	9.6	32.3
Hogskins, imported	35,013	25,292	0.3	(3)	.....	.....	.....
Hogskins, domestic	170,633	105,481	1.3	(3)	.....	.....	.....
Horse and cow hides	44,880	2,140,836	26.4	30,180	1,352,148	18.4	58.3
All other varieties	(2)	399,725	4.9	4,286	32,961	0.4	.....

[1] Decrease. [2] Included in "all other varieties." [3] Not reported.

Horse and cow hides were reported by sides on the schedule for 1905, and to make the figures comparable with those for 1900 they have been reduced to dozens by computing 24 sides to be the equivalent of a dozen whole hides.

The decrease in total quantity and total cost of deerskins and sheepskins, both domestic and imported, may be attributed to the increasing use of horse and cow hides and of hogskins for making gloves. According to a growing belief, gloves made from these varieties of leather are not only cheaper but possess better wearing qualities.

Between 1900 and 1905 the percentage of the total cost of materials expended for deerskins fell from 15.6 to 11, that for imported sheepskins from 15.2 to 10.4, and that for domestic sheepskins from 30.7 to 20.3; whereas during the same period the percentage of the total cost expended for horse and cow hides rose from 18.4 to 26.4. As shown in Table 10, New York ranked first in quantity of deerskins, sheepskins, kid and suede, and hogskins used, and second in horse and cow hides. Wisconsin was first in horse and cow hides and second in deer and sheep skins combined. Illinois ranked second in hogskins and third in deer and sheep skins combined and in horse and cow hides.

Table 5 shows the products, by kind, quantity, and value, for 1900 and 1905.

TABLE 5.—*Products, by kind, quantity, and value: 1905 and 1900.*

	1905	1900
Products, aggregate value	$17,740,385	$16,721,234
Gloves, mittens, and gauntlets:		
Total dozen pairs	3,370,146	2,895,661
Total value	$17,122,772	$16,039,168
Men's—		
Lined—		
Dozen pairs	1,317,083	952,820
Value	$6,333,081	$4,959,902
Unlined—		
Dozen pairs	1,598,332	1,314,567
Value	$8,182,689	$7,458,356
Women's—		
Lined—		
Dozen pairs	79,688	78,783
Value	$498,325	$538,362
Unlined—		
Dozen pairs	174,102	221,039
Value	$1,420,807	$1,772,746
Gauntlets—		
Dozen pairs	(1)	24,004
Value	(1)	$150,652
Children's—		
Lined—		
Dozen pairs	161,673	188,366
Value	$532,518	$709,554
Unlined—		
Dozen pairs	30,268	116,142
Value	$155,352	$449,596
All other products, including custom work and repairing	$617,613	$682,066

[1] Not reported separately.

During the year covered by the census of 1905, as shown in Table 5, there were made in the United States in establishments engaged primarily in this industry 3,370,146 dozen pairs of leather gloves and mittens of all varieties, valued at $17,122,772. The total value of products of establishments making a specialty of manufacturing leather gloves and mittens was $17,740,385. If to this amount is added $166,164, the value of leather gloves and mittens manufactured in establishments engaged in industries in which the making of these articles was merely incidental, the total value of products for the census year 1905 would be $17,906,549. The corresponding total for 1900 would be $16,938,391.

As shown in the preceding table, the value of the products increased from $16,721,234 in 1900 to $17,740,385 in 1905, or 6.1 per cent. The total number of dozen pairs of gloves, mittens, and gauntlets increased from 2,895,661 to 3,370,146, or 16.4 per cent, although their value increased from $16,039,168 to $17,122,772, or only 6.8 per cent.

The disproportionate increase in quantity and value is probably accounted for by the larger use of horse and cow hides, materials which are cheaper and more durable than deerskin and sheepskin for rough gloves.

Table 6 shows the quantity of dress and working gloves reported in 1905.

TABLE 6.—*Dress and working gloves, mittens, and gauntlets, by quantity, with per cent each kind is of total: 1905.*

	AGGREGATE.		MEN'S.		WOMEN'S.		CHILDREN'S.	
	Dozen pairs.	Per cent of total.	Dozen pairs.	Per cent of total.	Dozen pairs.	Per cent of total.	Dozen pairs.	Per cent of total.
Aggregate	3,370,146	100.0	2,915,415	100.0	253,790	100.0	200,941	100.0
Dress:								
Total	977,594	29.0	715,949	24.6	183,333	72.2	78,312	39.0
Lined	431,897	.....	314,150	.....	49,364	.....	68,383	.....
Unlined	545,697	.....	401,799	.....	133,969	.....	9,929	.....
Working:								
Total	2,392,552	71.0	2,199,466	75.4	70,457	27.8	122,629	61.0
Lined	1,126,547	.....	1,002,933	.....	30,324	.....	93,290	.....
Unlined	1,266,005	.....	1,196,533	.....	40,133	.....	29,339	.....

As shown in the foregoing table, men's dress and working gloves and mittens were the leading products, comprising 86.5 per cent of the total output of gloves and mittens. Working gloves and mittens for men constituted 75.4 per cent of the total men's gloves and mittens made and 65.3 per cent of all gloves and mittens. Women's and children's gloves and mittens were not extensively made, owing to scarcity of suitable skins and the cost of labor. For the former class 72.2 per cent of those manufactured were for dress purposes, while for the latter class 61 per cent were working gloves and mittens. No comparison of these figures can be made with similar figures for 1900, as these details were not reported at that census.

Table 7 is a comparative summary, by states, for 1900 and 1905.

TABLE 7.—COMPARATIVE SUMMARY, BY STATES: 1905 AND 1900.

STATE.	Census.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS AND WAGES.								Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Total.		Men 16 years and over.		Women 16 years and over.		Children under 16 years.				
						Average number.	Wages.	Average number.	Wages.	Average number.	Wages.	Average number.	Wages.			
United States	1905	339	$10,705,599	640	$584,573	10,645	$3,840,253	4,174	$2,005,890	6,245	$1,795,988	226	$38,375	$1,507,693	$10,000,889	$17,740,355
	1900	381	9,004,427	637	544,170	14,180	4,151,126	4,364	2,014,134	9,542	2,101,044	274	35,948	562,870	9,382,102	16,721,234
California	1905	22	604,070	51	46,878	516	222,688	165	110,565	337	109,029	14	3,094	68,100	458,573	910,596
	1900	23	432,996	65	52,962	622	224,953	176	94,924	422	126,729	24	3,300	68,189	436,512	920,624
Illinois	1905	24	554,789	65	63,442	1,134	424,934	382	186,702	708	230,056	44	8,176	181,583	852,347	1,690,804
	1900	24	781,719	108	93,782	1,752	653,237	741	342,478	920	298,930	91	11,829	69,432	1,224,339	2,454,252
Indiana	1905	5	177,665	21	23,215	321	86,621	90	35,997	218	48,474	13	2,150	20,789	342,985	514,188
	1900	3	148,994	7	10,300	226	49,627	40	18,047	163	28,172	23	3,408	12,456	173,195	264,271
Iowa	1905	8	479,320	47	41,209	263	101,339	129	59,454	134	41,885	.....	.....	133,874	358,244	698,400
	1900	6	266,708	42	30,948	152	53,348	47	28,110	98	24,788	7	450	14,611	118,963	273,000
Maryland [1]	1900	3	50,541	8	6,175	89	14,276	23	5,300	63	8,751	3	225	3,936	54,098	86,675
Massachusetts	1905	5	266,600	7	5,700	165	70,848	53	31,634	112	39,214	.....	.....	10,119	135,299	264,811
	1900	8	109,150	7	3,960	194	85,410	61	42,913	127	41,597	6	900	6,938	123,135	286,210
Michigan	1905	8	84,620	9	7,792	106	35,359	38	18,170	53	14,305	15	2,884	22,202	113,379	191,693
	1900	5	29,241	3	700	38	12,206	9	4,148	27	7,746	2	312	1,762	27,980	54,850
Minnesota	1905	7	69,056	9	6,431	65	21,646	16	9,593	48	11,883	1	170	4,740	52,377	98,133
	1900	8	13,437	2	550	23	4,497	5	1,470	16	2,922	2	105	2,130	11,677	24,328
New Hampshire	1905	3	304,134	8	9,248	208	74,898	148	58,317	60	16,581	.....	.....	18,649	173,368	297,157
	1900	6	351,492	7	9,150	243	82,080	140	55,329	89	24,959	14	1,792	10,728	171,302	296,557
New Jersey	1905	5	111,106	18	10,443	211	77,796	57	35,342	149	41,672	5	782	8,666	115,296	223,726
	1900	[2] 5	65,894	.....	.....	179	67,002	55	35,873	121	30,129	3	1,000	1,971	79,975	171,065
New York	1905	194	6,348,407	296	262,873	5,613	2,131,053	2,485	1,204,255	3,056	915,722	72	11,076	861,142	5,696,256	9,946,443
	1900	[2] 243	6,219,647	328	294,574	9,907	2,723,702	2,843	1,299,595	7,001	1,415,156	63	8,951	341,486	6,328,036	10,854,221
Ohio	1905	8	93,539	9	5,244	93	28,607	32	12,100	61	16,507	.....	.....	8,080	65,319	117,654
	1900	[2] 5	113,791	3	3,600	69	22,030	28	10,080	41	11,950	.....	.....	2,332	66,590	111,050
Oregon [3]	1905	4	24,136	1	300	16	6,264	8	4,114	8	2,150	.....	.....	5,411	19,077	39,530
Pennsylvania	1905	4	66,239	3	1,768	45	10,794	14	4,575	28	5,960	3	250	949	33,145	48,755
	1900	4	28,950	3	1,800	43	9,759	16	4,800	27	4,959	.....	.....	883	20,737	42,236
Virginia	1905	3	135,100	10	3,592	273	39,144	28	7,620	245	31,524	.....	.....	9,263	57,150	127,816
	1900	3	136,300	23	13,700	255	43,900	40	14,700	188	26,700	27	2,500	11,600	174,190	265,925
Washington	1905	7	36,191	1	900	53	22,655	19	11,000	34	11,655	.....	.....	9,500	55,095	108,150
	1900	3	8,250	3	720	15	6,300	8	4,000	7	2,300	.....	.....	629	9,735	24,685
Wisconsin	1905	21	1,206,584	72	81,663	1,396	437,327	449	191,450	897	236,984	50	8,893	130,842	1,338,968	2,208,705
	1900	19	219,789	24	17,939	319	78,473	112	41,997	199	35,500	8	976	9,474	319,167	507,495
All other states	[4] 1905	11	144,043	13	13,875	167	48,280	61	25,002	97	22,378	9	900	13,715	134,011	253,824
	[5] 1900	13	27,528	4	3,310	54	20,326	20	10,370	33	9,756	1	200	4,313	42,471	83,790

[1] Included in "all other states" in 1905.
[2] Includes 1 establishment, the schedule for which was received too late to be included in the general report as presented in Manufactures, Parts I and II.
[3] Included in "all other states" in 1900.
[4] Includes establishments distributed as follows: Colorado, 1; Connecticut, 1; Kansas, 1; Kentucky, 1; Maine, 1; Maryland, 1; Missouri, 2; Nebraska, 1; West Virginia, 1; Wyoming, 1.
[5] Includes establishments distributed as follows: Colorado, 1; Connecticut, 1; Maine, 1; Missouri, 2; Montana, 1; Nebraska, 1; Oklahoma, 1; Oregon, 2; Rhode Island, 1; Utah, 1; West Virginia, 1.

The leading states in this industry in 1905, according to their value of products, were New York, Wisconsin, Illinois, and California. In 1900 the same states were the most important, although their rank was not the same. Illinois, by decreasing $763,448, or 31.1 per cent, in its value of products between 1900 and 1905, gave place to Wisconsin, which showed the remarkable increase during the census period of $1,701,210, or over 300 per cent. New York showed a decrease of $907,778, or 8.4 per cent, but retained first place, reporting 56.1 per cent of the total value of products for the industry. That the industry is making rapid progress in the West (for purposes of comparison classing all states west of Ohio as belonging to this group) is evident from the fact that for the 8 Western states, for which comparative totals are shown in Table 7, the value of products increased $1,897,164, or 41.9 per cent.

At the census of 1850 New York led, as in 1905, in number of establishments, having 82 of the 110 reported. Pennsylvania was second with 8; Maryland and Ohio followed, with 5 each; New Hampshire with 3; Illinois and Virginia, with 2 each; while Michigan, Missouri, and Wisconsin had 1 each. In 1850 the glove and mitten industry was carried on in 10 states only; in 1905 reports were secured from 26 states.

The manufacture of leather gloves and mittens was first undertaken in the United States in Fulton county,

N. Y., and the locality has maintained its preeminence. The reasons for the localization of the industry and the history and methods of the manufacture were discussed at the census of 1900.[1]

[1] Twelfth Census, Manufactures, Part III, pages 793 ff.

Table 8 is a comparative summary showing the statistics for Gloversville and Johnstown, N. Y., in connection with those of Fulton county for 1900 and 1905, with percentages that each total is of the corresponding total for the United States.

TABLE 8.—COMPARATIVE SUMMARY—FULTON COUNTY, GLOVERSVILLE, AND JOHNSTOWN, N. Y.: 1905 AND 1900.

	FULTON COUNTY.				GLOVERSVILLE.				JOHNSTOWN.			
	1905		1900		1905		1900		1905		1900	
	Total.	Per cent of total for United States.	Total.	Per cent of total for United States.	Total.	Per cent of total for United States.	Total.	Per cent of total for United States.	Total.	Per cent of total for United States.	Total.	Per cent of total for United States.
Number of establishments	145	42.8	166	43.6	86	25.4	101	26.5	48	14.2	49	12.9
Capital	$5,650,580	52.8	$5,517,850	61.3	$3,393,634	31.7	$3,660,383	40.7	$1,920,107	18.0	$1,686,604	18.7
Salaried officials, clerks, etc., number	266	41.6	250	39.2	161	25.2	171	26.8	89	13.9	72	11.3
Salaries	$242,918	41.6	$244,522	44.9	$157,050	26.9	$177,551	32.6	$72,531	12.4	$64,114	11.8
Wage-earners, average number	4,787	45.0	7,931	55.9	2,997	28.2	5,183	36.6	1,478	13.9	2,316	16.3
Total wages	$1,804,699	47.0	$2,381,160	57.4	$1,161,370	30.2	$1,695,035	40.8	$533,287	13.9	$580,146	14.0
Men 16 years and over	2,121	50.8	2,295	52.6	1,317	31.6	1,497	34.3	663	15.9	670	15.4
Wages	$1,030,067	51.4	$1,158,193	57.5	$660,070	33.4	$822,201	40.8	$301,183	15.0	$287,875	14.3
Women 16 years and over	2,598	41.6	5,601	58.7	1,635	26.2	3,674	38.5	704	12.7	1,625	17.0
Wages	$763,681	42.5	$1,214,993	57.8	$485,563	27.0	$808,422	41.3	$228,816	12.7	$288,097	13.8
Children under 16 years	68	30.1	35	12.8	45	19.9	12	4.4	21	9.3	21	7.7
Wages	$10,351	27.0	$7,074	22.2	$6,737	17.6	$4,412	12.3	$3,288	8.6	$3,274	9.1
Miscellaneous expenses	$776,336	51.5	$237,446	42.2	$492,547	32.7	$153,275	27.2	$222,616	14.8	$60,172	10.7
Cost of materials used	$4,898,609	49.0	$5,689,613	60.6	$3,033,071	30.3	$3,900,897	41.6	$1,453,106	14.5	$1,506,103	16.1
Products:												
Total value	$8,562,593	48.3	$9,548,603	57.1	$5,302,196	29.9	$6,487,227	38.8	$2,581,274	14.6	$2,576,048	15.4
Gloves and mittens—												
Dozen pairs	1,312,413	38.9	1,484,579	51.3	705,280	20.9	925,440	32.0	414,758	12.3	398,657	13.8
Value	$8,438,390	49.3	$9,379,560	58.5	$5,241,438	30.6	$6,350,809	39.6	$2,553,379	14.9	$2,554,717	15.9
All other products, including custom work and repairing	$124,203	20.1	$169,043	24.8	$60,758	9.8	$136,418	20.0	$27,895	4.5	$21,331	3.1

In 1905 for Fulton county there were reported 145, or 42.8 per cent, of all leather glove and mitten establishments in the United States; in 1900, 166, or 43.6 per cent. The decrease of 21 is attributable to consolidation of interests and abandonment of smaller plants. The decrease of $986,010 in the value of products in 1905 compared with 1900 was due principally to the protracted controversy between capital and labor, which, as estimated by a leading authority in the county, caused a decrease of about one-quarter of the year's output.

In 1905 for the two cities there were reported 134, or 92.4 per cent of all establishments in Fulton county, and 39.6 per cent of all in the United States. The capital invested amounted to $5,322,741, or 49.7 per cent of that for the United States, while the value of products amounted to $7,883,470, or 44.5 per cent of the total.

Table 9 presents the value of gloves, of kid or other leather, imported from 1900 to 1905.

TABLE 9.—*Value of gloves, of kid or other leather, imported: 1900 to 1905.*[1]

YEAR.	Value.	YEAR.	Value.
1905	$4,727,489	1902	$5,366,381
1904	5,095,337	1901	5,534,259
1903	5,029,278	1900	6,107,765

[1] Bureau of Statistics, Department of Commerce and Labor, Commerce and Navigation of the United States.

It is worthy of note that there was a decrease of $1,380,276, or 22.6 per cent, in the value of these imports between 1900 and 1905, while the decrease between 1904 and 1905 was $367,848, or 7.2 per cent. These continued decreases were probably caused in part by an increased use of knit gloves and cloth gloves, and in fact the imports of gloves other than kid or other leather increased between 1900 and 1905 from $665,259 to $1,326,102, or 99.3 per cent. But the decrease in imports of leather gloves may also be attributed to the increased importation of skins in "salt pickle"—materials for remanufacture—which are admitted free of duty. The dressing of these skins for home factories is increasing rapidly, especially in New York. It is significant, too, that the imports were almost exclusively of the finer grades of gloves; the greater proportion probably being ladies' gloves. Glove manufacturers in the United States have not, to any great extent, attempted the making of these gloves, primarily because of the scarcity of fine skins. The imports from France and Germany for 1905 aggregated $3,553,951, or 75.2 per cent of all importations of gloves of kid or other leather into the United States, the value being about equally divided between the two countries.

The detailed statistics for the industry, by states, for 1905 are presented in Table 10.

TABLE 10.—LEATHER GLOVES AND MITTENS—

		United States.	California.	Illinois.	Indiana.	Iowa.	Massachusetts.	Michigan.
1	Number of establishments	339	22	24	5	8	5	8
	Capital:							
2	Total	$10,705,599	$604,070	$554,789	$177,665	$479,320	$266,600	$84,620
3	Land	$245,233	$24,749	$22,400	$14,203	$19,200	$800	$3,240
4	Buildings	$741,891	$38,670	$107,000	$42,205	$71,460	$1,500	$13,594
5	Machinery, tools, and implements	$869,806	$69,108	$76,475	$32,645	$43,167	$20,050	$25,616
6	Cash and sundries	$8,848,669	$471,543	$348,914	$88,612	$345,493	$244,250	$42,164
7	Proprietors and firm members	427	21	30	5	10	5	6
	Salaried officials, clerks, etc.:							
8	Total number	640	51	65	21	47	7	9
9	Total salaries	$584,573	$46,878	$63,442	$23,215	$41,200	$5,700	$7,792
	Officers of corporations—							
10	Number	51	2	9	2	5	1	2
11	Salaries	$115,350	$4,100	$21,720	$4,500	$6,350	$2,500	$3,500
	General superintendents, managers, clerks, etc.—							
12	Total number	589	49	56	19	42	6	7
13	Total salaries	$469,223	$42,778	$41,722	$18,715	$34,850	$3,200	$4,292
	Men—							
14	Number	424	32	46	15	25	4	4
15	Salaries	$395,794	$34,538	$37,210	$17,430	$26,422	$2,575	$2,990
	Women—							
16	Number	165	17	10	4	17	2	3
17	Salaries	$73,429	$8,240	$4,512	$1,285	$8,437	$625	$1,302
	Wage-earners, including piecework ers, and total wages:							
18	Greatest number employed at any one time during the year	13,805	656	1,331	371	374	192	176
19	Least number employed at any one time during the year	8,426	446	956	259	169	140	122
20	Average number	10,645	516	1,134	321	263	165	166
21	Total wages	$3,840,253	$222,688	$424,934	$86,621	$101,330	$70,848	$35,359
	Men 16 years and over—							
22	Average number	4,174	165	382	90	129	53	38
23	Wages	$2,005,890	$110,565	$186,702	$35,997	$59,454	$31,634	$18,170
	Women 16 years and over—							
24	Average number	6,245	337	708	218	134	112	53
25	Wages	$1,795,988	$109,020	$230,056	$48,474	$41,885	$39,214	$14,305
	Children under 16 years—							
26	Average number	226	14	44	13	.....	.....	15
27	Wages	$38,375	$3,094	$8,176	$2,150	.....	.....	$2,884
	Average number of wage-earners, including piecework ers, employed during each month:							
	Men 16 years and over—							
28	January	3,655	162	356	94	108	52	27
29	February	3,695	166	354	93	110	48	27
30	March	3,704	166	371	93	116	50	28
31	April	3,852	158	381	92	123	52	29
32	May	3,915	165	393	93	125	53	28
33	June	4,188	163	389	91	133	51	27
34	July	4,459	165	399	90	142	51	53
35	August	4,556	161	407	91	100	54	58
36	September	4,561	167	387	83	149	56	59
37	October	4,520	170	381	82	150	57	57
38	November	4,503	169	393	90	120	57	31
39	December	4,390	168	373	88	112	55	32
	Women 16 years and over—							
40	January	5,582	328	685	212	108	116	41
41	February	5,556	345	684	212	117	111	42
42	March	5,791	341	706	215	134	113	42
43	April	5,876	336	707	220	146	115	40
44	May	5,885	341	713	220	127	109	43
45	June	6,108	330	708	208	130	111	43
46	July	6,585	333	706	217	164	111	67
47	August	6,767	329	722	222	163	107	72
48	September	6,815	336	706	216	145	113	73
49	October	6,812	342	704	217	140	111	73
50	November	6,702	347	725	229	134	114	49
51	December	6,461	336	730	228	100	113	51
	Children under 16 years—							
52	January	196	13	42	15	.....	.....	13
53	February	199	13	42	13	.....	.....	13
54	March	206	13	44	13	.....	.....	13
55	April	206	13	44	13	.....	.....	13
56	May	213	14	45	14	.....	.....	12
57	June	225	14	45	13	.....	.....	11
58	July	249	15	44	13	.....	.....	12
59	August	262	15	45	12	.....	.....	20
60	September	250	13	44	11	.....	.....	24
61	October	236	13	43	11	.....	.....	10
62	November	233	16	44	14	.....	.....	14
63	December	237	16	46	14	.....	.....	16
	Miscellaneous expenses:							
64	Total	$1,507,693	$68,169	$181,583	$20,789	$133,874	$10,119	$22,202
65	Rent of works	$84,021	$9,578	$6,136	$225	$940	$1,050	$592
66	Taxes	$22,330	$2,230	$2,917	$094	$1,324	$937	$535
67	Rent of offices, interest, insurance, and all other sundry expenses not hitherto included.	$1,007,619	$56,352	$172,530	$19,870	$121,130	$7,532	$21,075
68	Contract work	$393,723	.....	.....	.....	$10,480	.....	.....
	Materials used:							
69	Aggregate cost	$10,000,889	$458,573	$852,347	$342,985	$358,244	$135,209	$113,379
	Hides and skins—							
70	Total cost	$8,109,523	$414,372	$770,790	$240,402	$202,754	$106,502	$90,004
	Deerskins—							
71	Dozens	66,280	6,473	672	92	111	50	.....
72	Cost	$888,210	$115,411	$16,725	$1,050	$2,070	$1,500	.....
	Sheepskins—							
	Domestic—							
73	Dozens	342,764	11,316	37,715	20,476	10,224	2,425	6,031
74	Cost	$1,648,357	$57,491	$217,645	$109,880	$59,438	$17,170	$29,527
	Imported—							
75	Dozens	88,881	355	40	.....	100	3,069	.....
76	Cost	$845,214	$3,635	$407	.....	$1,250	$27,812	.....
	Kid and suede—							
	Domestic—							
77	Dozens	140,502	3,275	48	.....	1,745	.....	110
78	Cost	$938,091	$25,238	$550	.....	$15,705	.....	$700
	Imported—							
79	Dozens	110,282	.....	1,857	.....	220	2,575	28
80	Cost	$1,117,817	.....	$15,363	.....	$2,030	$27,080	$300

DETAILED SUMMARY, BY STATES: 1905.

Minnesota.	New Hampshire.	New Jersey.	New York.	Ohio.	Oregon.	Pennsylvania.	Virginia.	Washington.	Wisconsin.	All other states.[1]	
7	3	5	194	8	4	4	3	7	21	11	1
$69,056	$304,134	$111,106	$6,348,407	$93,539	$24,136	$66,239	$135,100	$36,191	$1,206,584	$144,043	2
.....	$10,000	$4,000	$123,335	$2,100	$150	$2,200	$9,500	.....	$8,100	$1,250	3
.....	$40,000	$20,147	$346,411	$5,000	$400	$6,050	$24,500	.....	$22,604	$2,350	4
$9,430	$6,008	$13,088	$411,396	$17,144	$3,384	$6,150	$3,800	$9,891	$110,406	$11,148	5
$59,626	$247,226	$73,871	$5,467,265	$69,295	$20,202	$51,839	$97,300	$26,300	$1,065,474	$120,295	6
12	2	10	276	7	5	4	3	8	12	11	7
9	8	18	296	9	1	3	10	1	72	18	8
$6,431	$9,248	$10,443	$262,873	$5,244	$300	$1,708	$3,592	$000	$81,063	$13,875	9
.....	1	.....	13	2	.....	.....	.....	.....	12	2	10
.....	$000	.....	$36,000	$2,270	.....	.....	.....	.....	$30,450	$2,400	11
9	7	18	283	7	1	3	10	1	60	11	12
$6,431	$8,288	$10,443	$226,273	$2,974	$300	$1,708	$3,592	$000	$51,213	$11,475	13
8	5	6	211	3	.....	3	6	1	45	10	14
$6,171	$7,040	$6,954	$192,105	$1,860	.....	$1,708	$2,500	$000	$44,156	$11,175	15
1	2	12	72	4	1	.....	4	.....	15	1	16
$200	$1,248	$3,489	$34,168	$1,114	$300	.....	$1,092	.....	$7,057	$300	17
80	214	247	7,782	135	16	56	349	71	1,571	184	18
52	201	179	4,169	89	16	49	194	51	1,165	169	19
65	208	211	5,613	93	16	45	273	53	1,396	167	20
$21,646	$74,898	$77,796	$2,131,053	$28,607	$6,264	$10,704	$39,144	$22,655	$437,327	$48,280	21
16	148	57	2,485	32	8	14	28	19	449	61	22
$9,593	$58,317	$35,342	$1,204,255	$12,100	$4,114	$4,575	$7,620	$11,000	$191,450	$25,002	23
48	60	149	3,056	61	8	28	245	34	897	97	24
$11,883	$16,581	$41,672	$915,722	$16,507	$2,150	$5,069	$31,524	$11,655	$236,984	$22,378	25
1	.....	5	72	.....	.....	3	.....	.....	50	9	26
$170	.....	$782	$11,076	.....	.....	$250	.....	.....	$8,893	$000	27
16	152	65	2,040	35	8	14	33	21	416	56	28
16	152	65	2,073	35	8	14	33	21	422	58	29
16	150	66	2,123	35	8	14	32	19	448	59	30
16	150	66	2,159	36	8	14	27	19	403	59	31
16	147	56	2,224	25	8	14	22	19	408	59	32
16	147	54	2,499	25	8	14	22	18	408	63	33
16	144	49	2,731	28	8	14	22	20	404	63	34
16	144	49	2,791	29	8	14	22	20	469	63	35
16	147	51	2,815	32	8	14	27	18	469	63	36
16	147	51	2,786	34	8	14	32	18	455	62	37
16	147	56	2,832	35	8	14	32	17	423	63	38
16	149	56	2,747	35	8	14	32	18	423	64	39
51	62	154	2,550	63	8	25	258	37	700	94	40
54	61	161	2,428	64	8	25	268	37	851	98	41
56	62	161	2,579	62	8	21	268	41	894	98	42
52	62	164	2,654	71	8	20	225	40	920	96	43
52	60	133	2,724	51	8	31	200	39	938	96	44
55	60	144	2,945	51	8	32	202	38	944	99	45
44	60	130	3,370	57	8	32	202	29	960	95	46
45	57	132	3,532	58	8	30	207	29	961	93	47
44	57	143	3,549	62	8	30	237	30	904	102	48
44	59	144	3,548	66	8	30	283	30	915	98	49
41	59	162	3,491	63	8	30	293	29	831	97	50
38	61	160	3,302	64	8	30	317	29	706	98	51
1	.....	5	50	.....	.....	3	.....	.....	45	9	52
1	.....	5	51	.....	.....	3	.....	.....	49	9	53
1	.....	5	53	.....	.....	3	.....	.....	52	9	54
1	.....	5	48	.....	.....	3	.....	.....	57	9	55
1	.....	5	54	.....	.....	3	.....	.....	56	9	56
1	.....	5	71	.....	.....	3	.....	.....	53	9	57
1	.....	5	95	.....	.....	3	.....	.....	52	9	58
1	.....	5	101	.....	.....	3	.....	.....	51	9	59
1	.....	5	89	.....	.....	3	.....	.....	51	9	60
1	.....	5	83	.....	.....	3	.....	.....	49	9	61
1	.....	5	83	.....	.....	3	.....	.....	44	9	62
1	.....	5	80	.....	.....	3	.....	.....	41	9	63
$4,740	$18,049	$8,666	$861,142	$8,080	$5,411	$949	$9,263	$9,500	$130,842	$13,715	64
$2,654	$170	$804	$41,479	$2,024	$660	$20	.....	$2,346	$11,990	$2,453	65
$280	$1,267	$202	$7,363	$440	$71	$108	$400	$194	$2,904	$607	66
$1,806	$17,212	$7,570	$432,607	$5,616	$4,080	$823	$6,363	$6,960	$115,882	$9,611	67
.....	.....	.....	$379,693	.....	.....	.....	$2,500	.....	$600	$984	68
$52,377	$173,368	$115,296	$5,696,256	$65,319	$19,077	$33,145	$57,150	$55,095	$1,338,968	$134,011	69
$46,694	$137,073	$101,235	$4,623,245	$54,948	$17,976	$26,350	$53,900	$51,028	$992,468	$89,872	70
382	7,230	.....	48,471	41	148	5	240	146	2,015	204	71
$8,525	$72,763	.....	$617,555	$1,000	$2,182	$89	$3,414	$3,500	$36,827	$4,000	72
458	7,204	3,150	127,942	3,678	1,000	2,383	2,670	750	102,584	2,698	73
$3,802	$30,114	$37,125	$730,640	$13,255	$4,457	$11,799	$21,810	$4,800	$281,349	$18,456	74
.....	.....	4,673	78,099	1,250	.....	.....	.....	.....	500	195	75
.....	.....	$46,150	$753,899	$5,100	.....	.....	.....	.....	$4,500	$2,461	76
180	167	200	133,169	.....	.....	5	897	.....	215	482	77
$1,764	$1,017	$1,800	$878,018	.....	.....	$50	$7,107	.....	$2,380	$3,702	78
204	.....	1,425	101,010	.....	.....	.....	50	.....	540	2,373	79
$1,610	.....	$16,160	$1,024,631	.....	.....	.....	$500	.....	$5,400	$24,143	80

[1] Includes establishments distributed as follows: Colorado, 1; Connecticut, 1; Kansas, 1; Kentucky, 1; Maine, 1; Maryland, 1; Missouri, 2; Nebraska, 1; West Virginia, 1; Wyoming, 1.

TABLE 10.—LEATHER GLOVES AND MITTENS—

		United States.	California.	Illinois.	Indiana.	Iowa.	Massachusetts.	Michigan.
	Materials used—Continued.							
	Hides and skins—Continued.							
	Hogskins—							
	Domestic—							
81	Dozens	170,633	3,772	57,348	.....	7,092	.....	650
82	Cost	$105,481	$2,728	$38,003	.....	$5,281	.....	$100
	Imported—							
83	Dozens	35,013	6,060	4,000	.....	4,752	.....	.....
84	Cost	$25,292	$4,964	$5,250	.....	$1,772	.....	.....
	Horse and cow hides—							
85	Number of sides	1,077,117	148,077	166,695	77,584	70,370	12,000	17,647
86	Cost	$2,140,836	$181,449	$421,979	$124,145	$186,041	$27,020	$51,866
87	All other leather	$399,725	$23,456	$54,868	$4,718	$19,167	$5,320	$7,511
88	Fuel	$44,293	$320	$6,337	$1,768	$2,299	$750	$1,385
89	Rent of power and heat	$27,018	$2,104	$2,730	$240	$1,212	$566	$339
90	Mill supplies	$7,531	$481	$439	$182	$345	$140	$81
91	All other materials	$1,761,225	$38,016	$71,561	$100,043	$56,234	$26,036	$20,255
92	Freight	$51,299	$3,280	$490	$350	$5,400	$1,305	$1,315
	Products:							
93	Aggregate value	$17,740,385	$910,596	$1,690,804	$514,188	$698,400	$264,811	$191,693
	All gloves, mittens, and gauntlets—							
94	Total dozen pairs	3,370,146	114,108	381,242	170,782	104,278	43,460	23,077
95	Total value	$17,122,772	$889,376	$1,682,624	$514,188	$601,350	$218,025	$132,434
	Dress gloves, mittens, and gauntlets—							
96	Total dozen pairs	977,504	12,685	19,885	.....	27,515	5,415	1,110
97	Total value	$7,235,725	$115,623	$136,403	.....	$192,650	$51,175	$17,500
	Men's—							
	Lined—							
98	Dozen pairs	314,150	1,734	7,572	.....	400	.....	350
99	Value	$2,027,900	$20,617	$45,894	.....	$4,200	.....	$7,000
	Unlined—							
100	Dozen pairs	401,799	3,524	8,746	.....	11,200	950	760
101	Value	$3,296,200	$39,773	$54,312	.....	$87,400	$9,025	$10,500
	Women's—							
	Lined—							
102	Dozen pairs	49,364	.....	53	.....	100	.....	.....
103	Value	$394,377	.....	$630	.....	$1,250	.....	.....
	Unlined—							
104	Dozen pairs	133,969	7,222	3,481	.....	15,765	4,465	.....
105	Value	$1,206,235	$53,173	$35,352	.....	$99,550	$42,150	.....
	Children's—							
	Lined—							
106	Dozen pairs	68,383	.....	5	.....	50	.....	.....
107	Value	$245,414	.....	$25	.....	$250	.....	.....
	Unlined—							
108	Dozen pairs	9,929	205	28	.....	.....	.....	.....
109	Value	$65,599	$2,060	$190	.....	.....	.....	.....
	Working gloves, mittens, and gauntlets—							
110	Total dozen pairs	2,392,552	101,423	361,357	170,782	76,763	38,045	21,967
111	Total value	$9,887,047	$773,753	$1,546,221	$514,188	$408,700	$166,850	$114,934
	Men's—							
	Lined—							
112	Dozen pairs	1,002,933	12,236	221,045	78,312	31,031	11,625	507
113	Value	$4,305,181	$99,500	$1,037,075	$258,937	$140,050	$52,600	$4,578
	Unlined—							
114	Dozen pairs	1,196,533	81,057	125,810	74,470	43,632	15,840	21,460
115	Value	$4,886,489	$615,035	$470,888	$193,251	$263,925	$45,500	$110,356
	Women's—							
	Lined—							
116	Dozen pairs	30,324	17	7,750	.....	.....	.....	.....
117	Value	$103,948	$205	$27,000	.....	.....	.....	.....
	Unlined—							
118	Dozen pairs	40,133	4,753	700	.....	.....	9,000	.....
119	Value	$214,572	$44,016	$1,050	.....	.....	$64,000	.....
	Children's—							
	Lined—							
120	Dozen pairs	93,290	244	2,600	18,000	2,100	.....	.....
121	Value	$287,104	$1,202	$4,795	$62,000	$4,725	.....	.....
	Unlined—							
122	Dozen pairs	29,339	3,116	3,452	.....	.....	1,580	.....
123	Value	$89,753	$13,795	$5,413	.....	.....	$4,750	.....
124	All other products	$573,991	$20,500	$7,050	.....	$83,800	$44,686	$59,259
125	Amount received for custom work and repairing	$43,622	$720	$1,130	.....	$13,250	$2,100	.....
	Power:							
126	Number of establishments reporting	227	19	17	5	7	5	7
127	Total horsepower	2,762	44	568	106	295	51	107
	Owned—							
	Engines—							
	Steam—							
128	Number	43	.....	3	2	4	1	1
129	Horsepower	1,676	.....	523	46	276	40	50
	Gas or gasoline—							
130	Number	41	2	4	2	.....	.....	4
131	Horsepower	283	8	15	40	.....	.....	45
	Water wheels—							
132	Number	4	.....	.....	.....	.....	.....	.....
133	Horsepower	242	.....	.....	.....	.....	.....	.....
	Water motors—							
134	Number	6	.....	.....	.....	.....	.....	.....
135	Horsepower	8	.....	.....	.....	.....	.....	.....
	Electric motors—							
136	Number	4	.....	2	1	.....	.....	.....
137	Horsepower	36	.....	8	10	.....	.....	.....
	Rented—							
	Electric motors—							
138	Number	172	17	11	1	5	3	4
139	Horsepower	436	35	18	10	19	8	12
140	Other kind, horsepower	80	.....	4	.....	.....	3	.....
141	Furnished to other establishments, horsepower	36	.....	.....	.....	.....	.....	.....

DETAILED SUMMARY, BY STATES: 1905—Continued.

Minnesota.	New Hampshire.	New Jersey.	New York.	Ohio.	Oregon.	Pennsylvania.	Virginia.	Washington.	Wisconsin.	All other states.	
467			87,408		480	564	3,600	750	8,010	432	81
$421			$45,800		$300	$519	$3,600	$1,000	$7,308	$421	82
	5,201		15,000								83
	$1,716		$11,500								84
11,803	21,726		177,224	15,784	6,596	5,942	8,052	14,040	307,009	10,568	85
$24,699	$30,563		$367,496	$32,095	$10,737	$11,734	$17,409	$33,981	$585,119	$34,503	86
$5,393	$900		$193,607	$3,498	$300	$2,150		$7,747	$09,585	$1,106	87
$304	$2,893	$218	$22,656	$309	$175	$429	$500	$25	$3,178	$057	88
$415		$627	$13,152	$227	$144			$439	$4,523	$300	89
$91	$50	$51	$3,053	$36	$47	$216	$150	$56	$2,052	$91	90
$4,084	$20,785	$13,015	$1,011,617	$8,475	$735	$6,024	$2,600	$2,947	$327,573	$42,225	91
$819	$3,567	$150	$22,533	$1,324		$126		$600	$9,174	$866	92
$98,133	$207,157	$223,726	$9,946,443	$117,054	$39,530	$48,755	$127,816	$108,150	$2,208,705	$253,824	93
10,173	46,155	26,201	1,881,194	50,440	4,106	10,602	21,232	13,853	443,842	25,401	94
$71,993	$204,607	$223,606	$9,794,075	$114,543	$38,050	$46,755	$127,816	$100,050	$2,027,451	$245,829	95
344		18,201	816,706				2,493	6,350	61,500	5,420	96
$6,262		$175,606	$6,221,345				$16,811	$32,900	$204,000	$65,450	97
250		842	264,622				680		35,500	2,200	98
$5,162		$7,265	$1,752,242				$5,420		$146,000	$34,100	99
83		16,256	343,982				1,728	6,350	5,000	3,220	100
$1,026		$158,844	$2,849,952				$11,118	$32,900	$10,000	$31,350	101
11			40,200								102
$74			$302,423								103
		872	102,114				50				104
		$7,703	$907,997				$250				105
			47,323				5		21,000		106
			$197,116				$23		$48,000		107
		231	9,465								108
		$1,734	$61,615								109
9,820	46,155	8,000	1,004,488	50,440	4,106	10,602	18,769	7,503	382,342	19,981	110
$65,731	$204,607	$48,000	$3,572,730	$114,543	$38,050	$46,755	$111,095	$67,150	$1,823,451	$180,370	111
3,537	6,940		400,402	16,105	200	6,970	5,900	1,000	196,156	1,778	112
$26,595	$35,504		$1,710,277	$38,315	$1,800	$32,671	$34,050	$10,000	$810,988	$12,241	113
3,167	38,630	8,000	545,270	19,345	3,806	2,623	12,869	6,503	176,238	17,813	114
$26,030	$257,303	$48,000	$1,498,500	$46,378	$35,350	$10,334	$76,955	$57,150	$965,805	$165,723	115
50			17,849						4,538	120	116
$425			$55,496						$19,622	$1,200	117
75			18,175	2,000	100				5,000	270	118
$675			$71,530	$5,000	$900				$26,186	$1,215	119
3,000	285		57,911	7,000		1,000			250		120
$12,000	$800		$181,857	$15,350		$3,750			$625		121
	300		15,701	5,000					100		122
	$1,000		$55,070	$9,500					$225		123
$24,720	$2,550		$131,035	$3,111	$980			$7,800	$181,104	$7,396	124
$1,426		$120	$21,333		$500	$2,000		$300	$150	$590	125
4	3	3	116	7	2	2	1	7	18	4	126
12	437	13	770	38	10	15	20	15	244	17	127
	1		24		1	2	2		1	1	128
	225		449		8	15	20		20	4	129
1	2		13	4					6	3	130
7	2		50	34					69	13	131
	2		2								132
	210		32								133
			6								134
			8								135
									1		136
									18		137
2		4	91	3	1			6	24		138
3		13	221	4	2			9	82		139
2			10					6	55		140
	35					1					141