

---

---

# SLAUGHTERING AND MEAT PACKING

---

---

(831)

This page was intentionally left blank.

# THE SLAUGHTERING AND MEAT PACKING INDUSTRY.

## GENERAL STATISTICS.

**Scope of the industry.**—The slaughtering and meat packing industry, according to the classification adopted for the presentation of the statistics at the census of 1909, includes wholesale slaughtering and meat packing establishments, public abattoirs, and establishments making a specialty of manufacturing sausage. It does not include the retail butchering establishments. It is impossible, however, to draw a hard and fast line between the wholesale and retail business. The operations of butchers, whose main business was slaughtering for the retail trade but who also disposed of considerable quantities of meat at wholesale, were intended to be included, and the reports for such establishments ordinarily covered both their retail and their wholesale business. Establishments properly included in the wholesale industry at one census might, on account of changes in the character of their business, properly be omitted at another census, although still in operation; and even at the same census establishments of identical characteristics may have been treated differently by the special agents in different sections of the country. The statistics for the industry, however, may be accepted as representing practically all important establishments engaged wholly, or chiefly, in slaughtering and meat packing, in slaughtering, and in the manufacture of sausage for the wholesale trade.

The present report distinguishes three classes of establishments: (1) Those whose chief products are cured and packed meats; (2) those whose chief products are fresh meats; and (3) those whose chief product is sausage. In compiling the statistics each establishment was assigned to one of the three groups according to its product of chief value. Many of the establishments engaged chiefly in meat packing also slaughter, and although all establishments classed as engaged in "slaughtering" are those that have fresh meat for their product of chief value, there are some of them that do a limited amount of meat packing also. So many establishments in the industry engage in two or even all three of these branches combined that the overlapping of products makes advisable the presentation in most of the tables of the totals for the combined industries only.

The figures regarding cost of materials and value of products in the various tables of this bulletin contain a considerable amount of duplication. Those establishments, for example, which are engaged in meat packing only, or in making sausage only, use as ma-

terials the fresh meat produced by the slaughtering branch of the industry. Dressed meat valued at \$93,409,286 was reported in 1909 as among the materials purchased by the establishments in the industry. This may be said to represent roughly the amount of duplication involved in cost of materials and in value of products as reported for the combined industry. In the statistics of "value added by manufacture" this duplication is almost entirely eliminated.

**Summary for the industry: 1909.**—Table 1 presents a summary of the statistics for the slaughtering and meat packing industry as a whole and for each of its branches for 1909.

**Table 1**

	Total for the industry.	ESTABLISHMENTS ENGAGED PRIMARILY IN—		
		Slaughtering and meat packing.	Slaughtering, not including meat packing.	The manufacture of sausage.
Number of establishments.....	1,641	656	565	420
Persons engaged in the industry.....	108,716	97,476	8,495	2,745
Proprietors and firm members.....	1,659	478	692	489
Salaried employees.....	17,329	15,603	1,885	341
Wage earners (average number).....	89,728	81,395	6,418	1,915
Primary horsepower.....	208,707	184,624	17,803	6,275
Capital.....	\$383,249,170	\$343,636,900	\$34,682,145	\$4,930,125
Expenses.....	1,317,306,878	1,160,119,922	143,730,165	13,516,784
Services.....	71,698,677	63,589,431	6,533,335	1,575,911
Salaries.....	29,053,957	17,849,895	1,868,417	1,335,645
Wages.....	51,644,720	45,739,536	4,664,918	1,240,266
Materials.....	1,202,827,784	1,059,236,121	132,201,955	11,389,708
Miscellaneous.....	42,840,417	37,294,377	4,994,875	551,165
Value of products.....	1,370,568,101	1,204,248,578	151,295,853	15,023,670
Value added by manufacture (value of products less cost of materials).....	167,740,317	145,012,457	19,093,898	3,633,962

In 1909 the establishments in the industry as a whole gave employment to an average of 108,716 persons, of whom 89,728 were wage earners, and paid out \$71,698,677 in salaries and wages. The cost of materials (\$1,202,827,784) was equal to 87.8 per cent of the total value of products (\$1,370,568,101), while the value added by manufacture (that is, the value of products less the cost of materials) was \$167,740,317.

Of the 1,641 establishments canvassed in 1909, 656, or 40 per cent, were engaged primarily in slaughtering and meat packing; these establishments employed 90.7 per cent of the total number of wage earners and contributed products to the value of \$1,204,248,578, or 87.9 per cent of the total for the industry as a whole. Although establishments engaged chiefly in slaughtering formed approximately one-third (34.4 per cent) of the total number, they

employed only 7.2 per cent of the total number of wage earners, and the value of their products represented but 11 per cent of the total for the entire industry. The 420 establishments engaged chiefly in the manufacture of sausage reported 2.1 per cent of the wage earners and contributed 1.1 per cent of the total value of products. In the case of establishments engaged primarily in meat packing, the cost of materials equaled 88 per cent of the value of products; in the case of those engaged primarily in slaughtering, 87.4 per cent; and of those making sausage, 75.8 per cent.

Of the 656 establishments in 1909 doing slaughtering and meat packing, 159 did no slaughtering, but were engaged exclusively in packing meats. Of the 565 establishments engaged chiefly in slaughtering, 31 were abattoirs in which animals were slaughtered for others, including both the wholesale and retail meat dealers; the value of products for the latter class of establishments represents chiefly the amount received for slaughtering. The conditions under which these two classes of establishments are operated differ so materially from those prevailing in the other establishments in this industry that it has seemed best to show the statistics for them in a separate table. These statistics are given in Table 2.

	Establishments engaged in meat packing only: 1909	Abattoirs: 1909
Number of establishments.....	159	31
Persons engaged in the industry.....	6,081	488
Proprietors and firm members.....	159	.....
Salariat employees.....	1,164	55
Wage earners (average number).....	4,758	433
Capital.....	\$18,290,959	\$1,190,346
Expenses.....	51,838,950	518,461
Services.....	4,123,834	275,887
Salaries.....	1,209,610	53,477
Wages.....	2,824,224	222,410
Materials.....	45,094,837	136,638
Miscellaneous.....	2,620,279	106,036
Value of products.....	56,212,973	1,653,042
Value added by manufacture (value of products less cost of materials).....	11,118,136	516,504

<sup>1</sup> Amount received for custom work.

Comparison with earlier censuses.—The statistics relative to the manufacture of sausage were not shown separately prior to 1889. Statistics for this branch of the industry may have been included with the figures for slaughtering and meat packing or may have been omitted from the census reports altogether. At the census of 1849 the industry as a whole was called "pork and beef packing," and in that of 1859 it was included under the designation of "provisions." In 1869 the statistics of the industry were collected under four headings, namely, "meat packed, beef," "meat packed, pork," "meat cured and packed, not specified," and "butchering," while the designation used in 1879 was "slaughtering and meat packing, not including retail butchering." In 1889, 1899, and 1904 separate figures were secured for "slaughtering and meat packing, wholesale," "slaughtering, wholesale, not including meat packing," and "sausage." The designation "slaughtering and meat packing," used in 1909, covers the three classes of establishments for which separate statistics were published in 1904 and at the two censuses preceding. Even a cursory examination of the titles applied to the industry at successive censuses makes evident the fact that different classes of establishments were included at different times, although the totals for the censuses from 1889 to 1909, inclusive, are fairly comparable.

The number of establishments in the industry as a whole increased 20 per cent from 1889 to 1909. The decrease shown for the period from 1889 to 1899 was due probably to the inclusion at the earlier census of some small establishments which were omitted from the reports for subsequent years. The number of wage earners more than doubled during the 20-year period, while the value of products increased 142.7 per cent and the cost of materials 149.1 per cent.

Table 3 summarizes the statistics of the slaughtering and meat packing industry as a whole for each census from 1889 to 1909, inclusive.

Table 3

	Number or amount.				Percent of increase. <sup>1</sup>			
	1909	1904	1899	1889	1899-1909	1904-1909	1899-1904	1889-1899
	Number of establishments.....	1,641	1,221	1,080	1,367	51.9	34.4	13.1	-21.0
Persons engaged in the industry.....	108,716	88,819	( <sup>2</sup> )	( <sup>2</sup> )	.....	22.4	.....	.....
Proprietors and firm members.....	1,659	1,324	( <sup>2</sup> )	( <sup>2</sup> )	.....	25.3	.....	.....
Salariat employees.....	17,329	12,096	10,317	( <sup>2</sup> )	68.0	43.3	17.2	.....
Wage earners (average number).....	80,728	75,399	60,264	44,812	20.5	19.0	8.9	( <sup>3</sup> )
Primary horsepower.....	208,707	119,311	87,060	48,244	139.7	74.9	37.0	80.5
Capital.....	\$383,249,170	\$240,418,936	\$190,209,078	\$118,016,060	101.5	59.4	26.4	61.2
Expenses.....	1,317,366,878	896,880,868	753,532,149	528,132,885	74.8	46.0	19.0	42.7
Services.....	71,698,677	54,519,995	44,056,388	29,403,249	62.7	31.5	23.8	49.8
Salaries.....	20,053,957	13,453,199	10,210,715	( <sup>2</sup> )	96.4	49.1	31.8	.....
Wages.....	51,644,720	41,066,796	33,845,673	( <sup>2</sup> )	52.6	25.8	21.3	.....
Materials.....	1,202,827,784	811,425,562	685,310,099	482,897,381	75.5	48.2	18.4	41.9
Miscellaneous.....	42,840,417	30,935,311	24,166,662	15,832,255	77.3	38.5	28.0	52.6
Value of products.....	1,370,568,101	922,037,528	788,367,647	564,667,035	73.8	48.0	17.0	39.6
Value added by manufacture (value of products less cost of materials).....	167,740,317	110,611,966	103,057,548	81,760,054	62.8	51.6	7.3	26.0

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Figures not strictly comparable.

## SLAUGHTERING AND MEAT PACKING.

335

Table 4 shows statistics for the slaughtering and meat-packing industry as a whole for the censuses from 1869 to 1909, inclusive.

CENSUS.	Number of establishments	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,641	80,728	\$51,044,720	\$1,202,827,784	\$1,370,568,101	\$167,740,317
1904.....	1,221	75,399	41,066,796	811,425,502	922,037,528	110,611,966
1899.....	1,080	69,264	33,845,073	685,310,099	788,367,647	103,057,548
1889.....	1,367	44,812	24,008,202	482,897,381	564,667,035	81,769,654
1879.....	872	27,297	10,508,530	267,738,002	303,562,413	35,823,511
1869.....	768	8,366	2,553,447	61,674,024	75,826,500	14,152,476

As already explained, the figures prior to 1889 are not strictly comparable with those for later years, but they will serve to show in a general way the great development of the industry. The financial statistics for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

Comparisons with earlier censuses for the three branches of the industry.—Table 5 shows the statistics for the three branches of the industry separately for 1909 and 1899 and the percentage of increase in each during the decade.

	ESTABLISHMENTS ENGAGED PRIMARILY IN—								
	Slaughtering and meat packing.			Slaughtering, not including meat packing.			The manufacture of sausage.		
	1909	1899	Per cent of increase.	1909	1899	Per cent of increase.	1909	1899	Per cent of increase.
Number of establishments.....	656	557	17.8	565	(1) 325	73.8	420	198	112.1
Persons engaged in the industry.....	97,476	(1)	.....	8,495	(1)	.....	2,745	(1)	.....
Proprietors and firm members.....	478	(1)	.....	692	(1)	.....	459	(1)	.....
Salaried employees.....	15,603	9,635	61.9	1,385	564	145.6	341	118	180.0
Wage earners (average number).....	81,395	64,681	25.8	6,418	3,705	73.2	1,945	876	118.1
Primary horsepower.....	184,624	80,532	129.3	17,508	4,476	297.9	6,275	2,052	205.8
Capital.....	\$343,636,900	\$173,866,377	97.6	\$34,082,145	\$14,033,804	132.2	\$4,930,125	\$1,408,897	249.9
Expenses.....	1,160,119,929	668,368,248	73.6	143,730,165	81,252,201	76.9	13,516,784	3,911,700	245.5
Services.....	63,589,431	40,486,583	57.1	6,533,335	3,007,317	117.2	1,575,911	562,488	180.2
Salaries.....	17,849,895	9,452,733	88.8	1,868,417	648,914	187.9	335,645	109,068	207.7
Wages.....	45,739,536	31,033,850	47.4	4,664,918	2,358,403	97.8	1,240,266	453,420	173.5
Materials.....	1,059,236,121	605,223,221	75.0	132,201,955	76,873,618	72.0	11,389,708	3,213,269	254.5
Miscellaneous.....	37,294,377	22,658,444	64.6	4,094,875	1,371,266	264.3	351,165	135,952	305.4
Value of products.....	1,204,248,578	697,056,065	72.8	151,295,853	86,729,126	74.5	15,023,670	4,588,456	227.4
Value added by manufacture (value of products less cost of materials).....	145,012,457	91,832,844	57.9	19,093,898	9,849,508	93.9	3,633,902	1,375,196	164.2

1 Comparable figures not available.

The slaughtering and meat packing branch of the industry so far overshadows the other branches that, although the percentages of increase from 1899 to 1909 were, on the whole, smaller, the actual amount of increase for this branch was much greater than for the other two branches combined.

**Summary, by states.**—Table 6 summarizes the more important statistics for the industry as a whole by states, the states being arranged according to the value of products reported for 1909. The states shown in this table are given their actual ranking among all states, the rank of certain states for which data can not be presented being higher than that of some named in the table. In considering the rank in value of products it should be borne in mind that there may be more duplication in value reported for some states than in that reported for others.

The slaughtering and meat packing industry is well distributed throughout the United States, establishments being reported in 1909 from 43 states and from the District of Columbia. Illinois is by far the most important state in the industry. It was surpassed in number of establishments, however, by New York, Pennsylvania, and Ohio, the establishments in Illinois being, in general, much larger than those in any other

state. The value of slaughtering and meat packing products in Illinois increased 35 per cent during the decade, but the relative importance of the state in the industry declined during this period, the proportion of the total value of products contributed by the state being 28.4 per cent in 1909, as compared with 34.5 per cent in 1904 and 36.6 per cent in 1899.

In value of products Kansas ranked second both in 1909 and 1904, New York third, Nebraska fourth, and Missouri fifth. In 1909 these five states reported 62.3 per cent of the total value of products in the industry, 60.3 per cent of the average number of wage earners, and 27.1 per cent of the establishments. Few changes took place during the five-year period in the ranking, as determined by value of products, of the more important states in the slaughtering and meat packing industry. Iowa, Ohio, and Texas advanced in rank, while Massachusetts, California, and Minnesota declined. The advances in the ranking of the more important states were due to the great increase in the meat-packing branch of the industry. In Iowa the wholesale slaughtering branch of the industry actually declined.

Of the 10 leading states, Ohio showed the most rapid increase in value of products during the period

MANUFACTURES.

from 1899 to 1909—144.6 per cent. Still higher percentages are shown, however, for some of the other states, notably Utah, New Jersey, West Virginia,

Delaware, and Michigan. Georgia was the only state shown in Table 6 which reported a smaller value of products in 1909 than in 1899.

Table 6

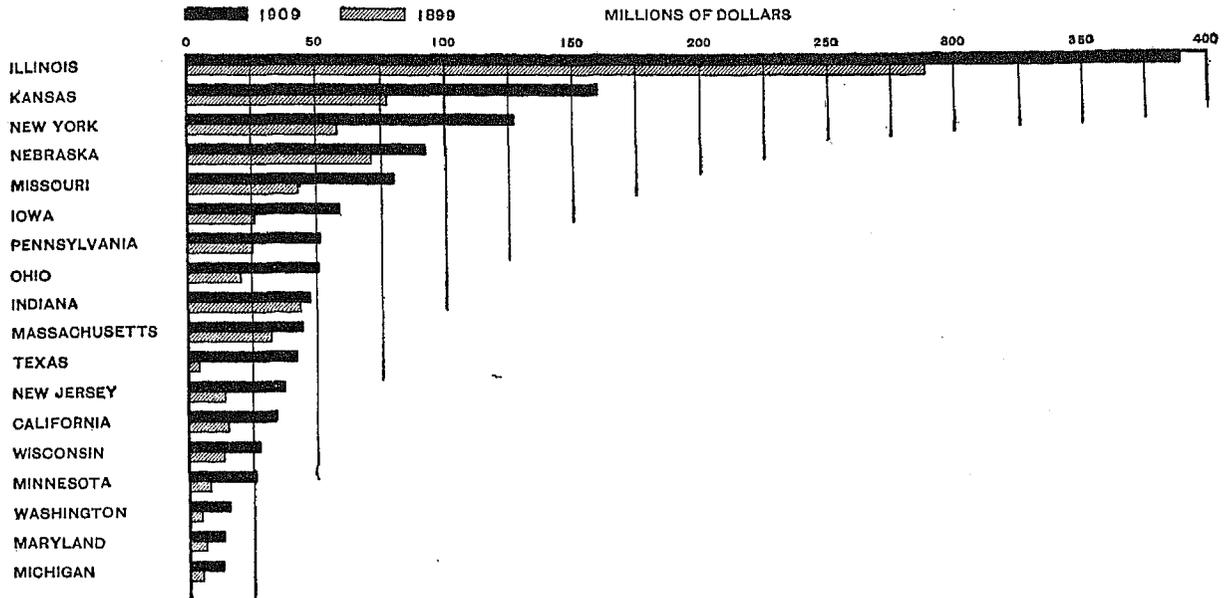
SLAUGHTERING AND MEAT PACKING—ALL BRANCHES COMBINED.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.		
											1909	1904	1899	1904	1899	1904	1899	1904	1899	1904	1899
				1909			1904			1899	1909	1904	1899	1909	1904	1899			
United States..	1,641	89,728	100.0	.....	\$1,370,568,101	100.0	.....	\$167,740,317	100.0	.....	29.5	19.0	8.9	73.8	48.6	17.0	62.8	51.6	7.3
Illinois.....	109	26,705	29.8	1	389,594,906	28.4	1	45,618,899	27.2	1	-4.6	-1.4	-3.1	35.0	22.4	10.2	10.0	21.3	-0.3
Kansas.....	35	10,591	11.8	2	165,360,516	12.1	2	17,714,526	10.6	2	30.5	.....	.....	113.6	.....	.....	86.4	.....	.....
New York.....	238	6,110	6.8	3	127,130,051	9.3	3	16,961,817	10.1	3	85.8	62.5	14.4	117.7	68.3	29.4	134.6	93.4	21.3
Nebraska.....	18	6,015	6.7	4	92,305,484	6.7	4	13,947,606	8.3	4	.....	7.6	.....	.....	33.1	.....	73.2	.....	.....
Missouri.....	45	4,674	5.2	5	79,581,294	5.8	5	7,383,030	4.4	5	49.6	10.3	35.6	84.4	32.4	39.3	85.5	22.8	51.0
Iowa.....	33	4,144	4.6	7	59,045,232	4.4	6	5,917,856	3.5	8	42.9	33.5	7.0	129.2	95.8	17.0	42.3	103.5	-30.1
Pennsylvania.....	180	3,050	3.4	11	51,850,936	3.8	7	7,005,889	4.2	6	77.0	20.0	46.7	103.0	56.6	29.6	87.8	47.2	27.6
Ohio.....	158	3,086	3.4	10	50,804,100	3.8	8	6,456,938	3.8	7	73.0	33.3	29.8	144.6	74.3	40.4	133.9	68.0	39.2
Indiana.....	61	4,423	4.9	6	47,289,469	3.5	9	5,303,495	3.2	11	22.7	40.2	-12.5	7.7	60.7	-32.9	0.8	66.4	-39.4
Massachusetts.....	94	3,325	3.7	9	44,402,972	3.2	10	5,616,833	3.3	10	15.7	9.8	5.3	37.3	16.9	17.5	47.0	33.6	10.1
Texas.....	14	3,639	4.1	8	42,529,746	3.1	11	5,119,961	3.1	12	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Jersey.....	84	1,817	2.0	14	37,583,395	2.8	12	3,843,811	2.3	13	207.4	143.9	26.1	164.4	111.7	24.9	207.4	128.3	34.6
California.....	94	1,641	1.8	15	34,280,003	2.5	13	5,831,946	3.5	9	74.8	27.5	37.1	116.7	55.7	39.2	165.0	78.8	48.2
Wisconsin.....	48	1,890	2.1	13	27,210,864	2.0	14	3,813,429	2.3	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
Minnesota.....	30	1,921	2.1	12	25,753,697	1.9	15	3,597,414	2.1	15	.....	39.6	.....	.....	46.4	.....	.....	44.8	.....
Washington.....	14	828	0.9	18	15,653,998	1.1	16	1,894,016	1.1	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland.....	54	1,034	1.2	16	13,682,951	1.0	17	2,180,335	1.3	16	122.4	84.0	20.9	114.1	99.8	7.2	220.8	127.1	45.2
Michigan.....	45	902	1.0	17	13,435,114	1.0	18	1,769,289	1.1	18	92.3	80.8	6.4	148.7	111.4	17.7	204.0	143.7	24.7
Colorado.....	13	659	0.7	19	9,650,810	0.7	19	1,362,031	0.8	19	152.5	166.8	-5.4	122.3	190.5	-23.5	119.0	151.3	-12.9
Kentucky.....	37	354	0.4	22	6,568,077	0.5	20	822,219	0.5	21	-30.7	-25.0	-7.6	26.9	15.3	10.0	12.3	-25.2	50.1
Oregon.....	14	366	0.4	21	5,879,615	0.4	21	864,769	0.5	20	.....	.....	.....	.....	.....	.....	.....	.....	.....
Virginia.....	24	342	0.4	23	4,600,630	0.3	22	548,477	0.3	23	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut.....	28	432	0.5	20	4,572,225	0.3	23	623,292	0.4	22	7.2	16.4	-7.9	19.2	42.1	-16.1	8.2	52.3	-29.0
West Virginia.....	6	167	0.2	27	3,763,888	0.3	24	379,061	0.2	26	.....	.....	.....	181.3	.....	.....	85.8	.....	.....
Rhode Island.....	21	214	0.2	25	3,156,308	0.2	25	361,952	0.2	28	.....	15.1	.....	.....	18.8	.....	.....	32.6	.....
Tennessee.....	27	280	0.3	24	2,056,719	0.2	26	446,609	0.3	24	68.7	.....	.....	20.2	.....	.....	92.7	.....	.....
Montana.....	9	105	0.1	30	2,053,609	0.1	27	272,574	0.2	29	.....	.....	.....	141.0	.....	.....	156.0	.....	.....
District of Columbia.....	5	135	0.2	28	1,880,575	0.1	28	419,867	0.3	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah.....	12	99	0.1	31	1,690,446	0.1	29	363,652	0.2	27	.....	.....	.....	273.1	158.8	44.2	.....	161.2	.....
Delaware.....	9	82	0.1	33	1,371,853	0.1	30	140,687	0.1	33	.....	.....	.....	150.4	.....	.....	.....	.....	.....
Maine.....	20	107	0.1	29	956,955	0.1	31	171,908	0.1	32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oklahoma.....	7	63	0.1	34	889,237	0.1	32	140,415	0.1	34	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho.....	4	39	0.1	37	531,702	( <sup>2</sup> )	34	81,142	( <sup>2</sup> )	38	.....	.....	.....	.....	.....	.....	.....	.....	.....
Georgia.....	8	90	0.1	32	509,346	( <sup>2</sup> )	35	107,831	0.1	36	.....	.....	.....	.....	.....	.....	.....	.....	.....
Florida.....	11	32	( <sup>2</sup> )	38	467,084	( <sup>2</sup> )	37	75,232	( <sup>2</sup> )	39	.....	.....	.....	-13.9	58.6	-45.7	( <sup>2</sup> )	4.9	-4.7
Alabama.....	4	47	0.1	36	320,451	( <sup>2</sup> )	38	121,953	0.1	35	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana.....	10	182	0.2	26	276,454	( <sup>2</sup> )	39	178,249	0.1	30	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire.....	8	24	( <sup>2</sup> )	39	199,221	( <sup>2</sup> )	40	34,709	( <sup>2</sup> )	41	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	10	114	0.1	.....	1,657,168	0.1	.....	351,598	0.2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

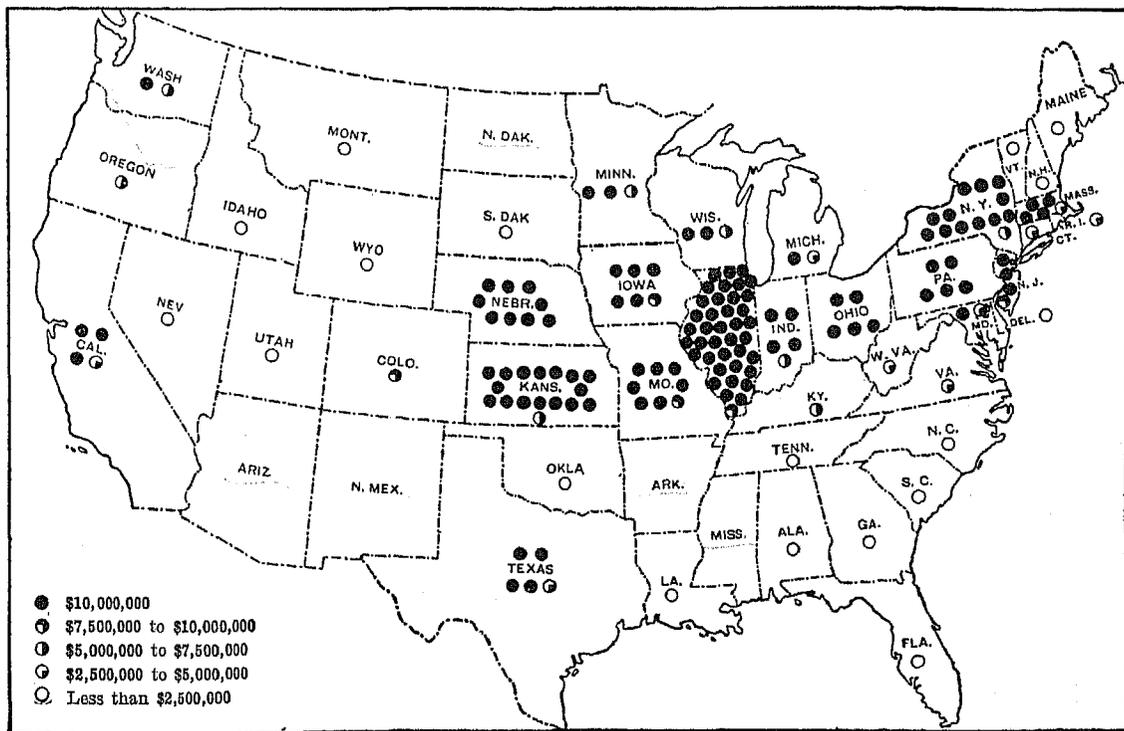
<sup>1</sup> Percentages are based on figures in Table 30. A minus sign (-) denotes decrease. Per cent not shown where base is less than 100 for wage earners or is less than \$100,000 for value of products or value added by manufacture, or where comparative figures can not be given without disclosing individual operations.  
<sup>2</sup> Less than one-tenth of 1 per cent.

# SLAUGHTERING AND MEAT PACKING.

THE SLAUGHTERING AND MEAT PACKING INDUSTRY—VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



THE SLAUGHTERING AND MEAT PACKING INDUSTRY—VALUE OF PRODUCTS, BY STATES: 1909.



## PERSONS ENGAGED IN THE INDUSTRY.

**Summary: 1909.**—Table 7 shows, for 1909, the number of persons engaged in the slaughtering and meat packing industry as a whole and in each of the three branches, classified according to occupational status and sex, and in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

BRANCH OF INDUSTRY AND CLASS OF PERSONS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
<b>Slaughtering and meat packing—All branches combined</b> .....	<b>108,716</b>	<b>101,303</b>	<b>7,413</b>
Proprietors and officials.....	3,514	3,400	54
Proprietors and firm members.....	1,659	1,624	35
Salaried officers of corporations.....	731	712	19
Superintendents and managers.....	1,124	1,124	.....
Clerks.....	15,474	13,794	1,680
Wage earners (average number).....	89,728	84,049	5,679
16 years of age and over.....	89,215	83,577	5,638
Under 16 years of age.....	513	472	41
<b>Slaughtering and meat packing</b> .....	<b>97,476</b>	<b>90,423</b>	<b>7,053</b>
Proprietors and officials.....	1,957	1,928	29
Proprietors and firm members.....	478	463	15
Salaried officers of corporations.....	576	562	14
Superintendents and managers.....	903	903	.....
Clerks.....	14,124	12,680	1,435
Wage earners (average number).....	81,395	75,806	5,589
16 years of age and over.....	80,911	75,363	5,548
Under 16 years of age.....	484	443	41
<b>Slaughtering, not including meat packing</b> .....	<b>8,495</b>	<b>8,300</b>	<b>195</b>
Proprietors and officials.....	988	979	9
Proprietors and firm members.....	692	688	4
Salaried officers of corporations.....	120	115	5
Superintendents and managers.....	176	176	.....
Clerks.....	1,089	925	164
Wage earners (average number).....	6,418	6,396	22
16 years of age and over.....	6,406	6,384	22
Under 16 years of age.....	12	12	.....
<b>Sausage</b> .....	<b>2,745</b>	<b>2,580</b>	<b>165</b>
Proprietors and officials.....	569	553	16
Proprietors and firm members.....	489	473	16
Salaried officers of corporations.....	35	35	.....
Superintendents and managers.....	45	45	.....
Clerks.....	261	180	81
Wage earners (average number).....	1,915	1,847	68
16 years of age and over.....	1,898	1,830	68
Under 16 years of age.....	17	17	.....

The average number of persons engaged in the industry as a whole during 1909 was 108,716, of whom 89,728, or 82.5 per cent, were wage earners; 3,514, or 3.2 per cent, proprietors and officials; and 15,474, or 14.2 per cent, clerks, this class including other subordinate salaried employees. The grouping of persons engaged according to occupational status differs widely in the different branches of the industry. In the slaughtering and meat packing branch 83.5 per

cent of the total were wage earners; 2 per cent, proprietors and officials; and 14.5 per cent, clerks. In the slaughtering branch 75.6 per cent were wage earners; 11.6 per cent, proprietors and officials; and 12.8 per cent, clerks; while of those engaged in sausage making only 69.8 per cent were wage earners and 9.5 per cent clerks, while 20.7 per cent were proprietors and officials.

Of the total number of persons engaged in the industry as a whole, 101,303, or 93.2 per cent, were males. Of the females, 76.6 per cent were wage earners, almost all of whom were in the meat packing branch of the industry, where they are employed in the packing and shipping of canned goods. Males constituted 99.7 per cent of the wage earners in the slaughtering branch, 96.4 per cent in sausage manufacture, and 93.1 per cent in meat packing.

The average number of wage earners in each state for 1909, 1904, and 1899 is given in Table 30. The average number distributed by sex and age is not shown for the individual states, but Table 31 gives, for 1909, such a distribution of the number employed on December 15, or the nearest representative day.

In order to compare the distribution of the persons engaged in the industry in 1909 according to occupational status with that in 1904 it is necessary to use the classification employed at the earlier census (see Introduction). Such a comparison is made in Table 8.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY—ALL BRANCHES COMBINED.				
	1909		1904		Per cent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
<b>Total</b> .....	<b>108,716</b>	<b>100.0</b>	<b>88,819</b>	<b>100.0</b>	<b>22.4</b>
Proprietors and firm members.....	1,659	1.5	1,324	1.5	25.3
Salaried employees.....	17,329	15.9	12,096	13.6	43.3
Wage earners (average number).....	89,728	82.5	75,399	84.9	19.0

Table 9 shows the average number of wage earners in the industry as a whole distributed according to age, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. The table shows practically no change from census to census in the proportion of men employed, but the proportion of women has increased and that of children has decreased.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY—ALL BRANCHES COMBINED.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
<b>Total</b> .....	<b>89,728</b>	<b>100.0</b>	<b>75,399</b>	<b>100.0</b>	<b>69,264</b>	<b>100.0</b>
16 years of age and over.....	89,215	99.4	74,419	98.7	67,595	97.6
Male.....	83,577	93.1	69,928	92.7	64,637	93.3
Female.....	5,638	6.3	4,491	6.0	2,958	4.3
Under 16 years of age.....	513	0.6	880	1.3	1,669	2.4

Wage earners employed, by months.—Table 10 gives the number of wage earners employed in the industry as a whole on the 15th (or the nearest representative day) of each month during the year 1909, for the 19 states in which more than 500 wage earners were employed during the year.

**Table 10** WAGE EARNERS EMPLOYED IN THE INDUSTRY—ALL BRANCHES COMBINED: 1909<sup>1</sup>

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States.....	89,728	94,752	92,266	87,958	84,558	84,676	86,761	86,619	86,391	89,416	92,564	94,527	96,234
California.....	1,641	1,643	1,620	1,626	1,618	1,632	<i>1,586</i>	1,621	1,644	1,671	1,656	1,671	1,709
Colorado.....	659	680	673	693	650	600	692	671	653	<i>654</i>	635	634	669
Illinois.....	26,705	28,508	27,022	25,790	24,358	24,293	25,094	25,027	25,719	27,047	28,271	29,070	29,652
Indiana.....	4,423	4,752	4,638	4,488	4,120	3,933	4,295	4,312	4,230	4,349	4,441	4,578	4,824
Iowa.....	4,144	5,125	4,694	4,261	3,924	3,866	4,126	4,017	3,870	3,827	3,769	3,984	4,270
Kansas.....	10,591	10,748	10,264	9,788	9,949	10,220	10,430	10,426	10,382	10,839	11,465	11,471	11,110
Maryland.....	1,034	1,042	1,028	1,017	1,024	1,019	990	1,009	1,003	1,018	1,066	1,083	1,107
Massachusetts.....	3,325	3,552	3,513	3,442	3,209	3,176	3,248	3,314	3,275	3,351	3,225	3,257	3,281
Michigan.....	902	929	934	874	878	864	878	875	882	896	914	951	862
Minnesota.....	1,921	2,313	2,071	1,809	1,665	1,669	1,722	1,680	1,628	1,744	2,232	2,300	2,225
Missouri.....	4,674	4,788	4,903	4,831	4,374	4,567	4,512	4,464	4,577	4,766	4,853	4,844	4,797
Nebraska.....	6,015	5,936	6,794	5,780	5,643	5,740	6,051	5,855	5,709	5,978	6,146	6,157	6,314
New Jersey.....	1,817	2,056	2,007	1,950	1,829	1,772	1,760	1,657	1,617	1,672	1,776	1,834	1,857
New York.....	6,110	6,305	6,305	6,152	6,145	6,033	5,989	5,930	5,833	5,950	6,082	6,229	6,313
Ohio.....	3,086	3,116	3,052	3,004	2,993	3,013	3,069	3,030	3,012	3,146	3,175	3,203	3,219
Pennsylvania.....	3,050	3,142	3,103	3,061	3,008	2,997	3,006	2,973	2,940	2,986	3,071	3,129	3,184
Texas.....	3,639	3,452	3,018	3,008	3,627	3,856	3,564	3,477	3,543	3,750	3,977	3,961	3,823
Washington.....	828	772	776	778	819	827	858	862	827	822	833	808	856
Wisconsin.....	1,890	2,800	2,050	1,939	1,722	1,720	1,890	1,787	1,705	1,612	1,732	1,853	2,065

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

The totals for the industry as a whole show that there was little seasonal variation in employment. The largest number of wage earners reported for any month in 1909 was 96,234 for December, and the smallest number 84,558 for April, the minimum number being equal to 87.9 per cent of the maximum. In 1904 the maximum number, 85,620, was shown for December, and the minimum number, 61,303, for July, the latter number being equal to 71.6 per cent of the former. In no state of importance in the industry do great fluctuations in employment appear. The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for a larger number of states in Table 31.

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

Nearly three-fourths (72.2 per cent) of the wage earners employed in the industry as a whole in 1909 worked in establishments where the prevailing number of hours of labor was 60 per week. Only 5.5 per cent were employed in establishments where the usual hours were 48 and under. In all the states for which separate figures are shown 60 hours per week constituted the most common time of employment.

**Table 11** AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY—ALL BRANCHES COMBINED: 1909

STATE.	Total.	In establishments with prevailing hours—						
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States.....	89,728	4,903	4,138	10,504	4,275	64,776	638	494
California.....	1,641	55	37	455	.....	1,029	47	18
Colorado.....	659	.....	.....	287	.....	372	.....	.....
Illinois.....	26,705	2,900	45	1,143	57	22,557	3	.....
Indiana.....	4,423	28	.....	.....	22	4,373	.....	.....
Iowa.....	4,144	324	.....	922	60	2,836	.....	2
Kansas.....	10,591	371	2,941	834	.....	6,442	.....	3
Maryland.....	1,034	22	4	21	7	973	1	6
Massachusetts.....	3,325	59	35	70	1,337	1,819	4	1
Michigan.....	902	14	.....	35	3	849	1	.....
Minnesota.....	1,921	1	13	22	2	1,881	2	.....
Missouri.....	4,674	4	.....	1,960	59	2,650	.....	1
Nebraska.....	6,015	.....	.....	734	1,484	3,786	2	9
New Jersey.....	1,817	116	261	44	136	1,090	16	154
New York.....	6,110	549	326	718	450	3,095	50	22
Ohio.....	3,086	26	6	484	90	2,333	67	80
Pennsylvania.....	3,050	63	125	44	271	2,331	160	56
Texas.....	3,639	9	.....	1,631	.....	1,949	.....	50
Washington.....	828	16	.....	31	.....	776	5	.....
Wisconsin.....	1,890	135	.....	734	.....	1,021	.....	.....

CHARACTER OF OWNERSHIP.

Table 12 presents statistics with respect to the character of ownership of establishments of the slaughtering and meat packing industry as a whole.

In 1909, of the total number of establishments, 29.7 per cent were under corporate ownership, as compared with 24.4 per cent in 1904. While corporations thus controlled approximately three-tenths of the total number of establishments in 1909, the value of the products of these establishments represented nearly nine-tenths of the total for the industry.

CHARACTER OF OWNERSHIP.	SLAUGHTERING AND MEAT PACKING—ALL BRANCHES COMBINED.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total .....	1,641	1,221	\$1,370,568,101	\$822,037,528
Individual .....	786	638	75,083,555	58,089,323
Firm <sup>1</sup> .....	367	285	79,456,531	69,976,859
Corporation .....	488	298	1,215,428,015	793,971,346
Per cent of total .....	100.0	100.0	100.0	100.0
Individual .....	47.9	52.3	5.5	6.3
Firm <sup>1</sup> .....	22.4	23.3	5.8	7.6
Corporation .....	29.7	24.4	88.7	86.1

<sup>1</sup> Includes 3 establishments under "other" ownership in 1909 and 1 in 1904, to avoid disclosure of individual operations.

Table 13 gives statistics for establishments classified according to form of ownership for the 19 states in which an average of 500 or more wage earners were employed during the year. The three establishments under unclassified forms of ownership have

in this table been included with those under firm ownership.

In 1909, 4,906 wage earners, or 5.5 per cent of the total, were employed in establishments under individual ownership; 4,483, or 5 per cent, in those under firm ownership (including those under "other" ownership); and 80,339, or 89.5 per cent, in those under corporate ownership. Considerable variation existed among the different states in the relative importance of establishments under the different forms of ownership. In Illinois, for example, establishments controlled by corporations constituted 49.5 per cent of the total number, gave employment to 96.1 per cent of the wage earners, and reported 96.2 per cent of the value of products. In Maryland, on the other hand, corporations controlled only 14.8 per cent of the establishments, and these establishments gave employment to 57.2 per cent of the wage earners and contributed 53.2 per cent of the value of products.

STATE.	SLAUGHTERING AND MEAT PACKING—ALL BRANCHES COMBINED: 1909											
	Number of establishments owned by—			Wage earners in establishments owned by—			Value of product of establishments owned by—			Value added by manufacture in establishments owned by—		
	Individu-als.	Firms.	Corporations.	Individu-als.	Firms.	Corporations.	Individu-als.	Firms.	Corporations.	Individu-als.	Firms.	Corporations.
United States.....	786	367	488	4,906	4,483	80,339	\$75,083,555	\$79,456,531	\$1,215,428,015	\$9,999,638	\$9,080,765	\$148,650,914
California.....	33	34	27	155	171	1,315	4,276,592	4,444,852	25,558,559	611,509	540,152	4,674,285
Colorado.....	1	2	10	.....	4	855	(X)	59,276	9,597,534	(X)	24,306	1,337,065
Illinois.....	36	19	54	688	350	25,667	9,844,597	4,982,255	374,705,054	857,279	742,958	44,018,662
Indiana.....	22	18	21	142	123	4,158	1,647,241	2,085,684	43,556,544	257,753	295,120	4,750,622
Iowa.....	12	7	14	94	1,107	2,943	931,307	11,135,080	46,978,335	133,513	865,977	4,918,366
Kansas.....	12	5	18	64	15	10,512	608,127	311,802	164,440,587	104,867	60,652	17,540,007
Maryland.....	36	10	8	319	124	591	4,740,752	1,660,429	7,281,770	935,885	205,330	1,039,120
Massachusetts.....	57	14	23	238	117	2,970	1,948,761	1,904,899	40,549,312	402,049	244,028	4,780,156
Michigan.....	28	12	7	103	72	727	1,199,986	1,171,597	11,063,531	242,016	198,940	1,328,333
Minnesota.....	12	7	11	37	60	1,824	431,504	641,363	24,680,830	80,339	115,859	3,401,216
Missouri.....	15	8	22	35	35	4,604	548,268	811,011	78,222,015	87,877	110,365	7,184,788
Nebraska.....	7	6	5	19	19	5,977	353,003	297,364	91,655,117	60,618	53,020	13,827,968
New Jersey.....	41	20	23	153	252	1,382	5,236,637	6,500,340	25,846,412	439,734	627,949	2,876,128
New York.....	146	50	42	949	937	4,224	17,134,693	25,164,429	84,830,929	2,191,463	2,510,493	12,250,861
Ohio.....	80	31	47	463	148	2,475	7,990,049	4,044,496	39,069,555	908,940	416,638	5,071,360
Pennsylvania.....	92	44	44	693	388	1,969	9,406,946	6,985,578	35,458,412	1,079,096	970,826	4,940,967
Texas.....	1	.....	13	(X)	.....	3,639	(X)	.....	42,526,746	(X)	.....	6,119,961
Washington.....	2	1	11	(X)	(X)	828	(X)	(X)	15,658,998	(X)	(X)	1,394,016
Wisconsin.....	24	14	10	122	92	1,676	1,260,368	897,587	25,058,909	254,723	185,202	3,373,504

NOTE.—In some states, in order to avoid disclosing the returns for individual establishments, the figures for one group have been consolidated with those for establishments under some other form of ownership. In such cases an (X) is placed in the column from which the figures have been omitted and the figures for the group with which they have been combined are printed in italics. The figures for establishments under firm ownership include those for the three comparatively unimportant establishments operated by cooperative associations or under other miscellaneous forms of ownership.

#### SIZE OF ESTABLISHMENTS.

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

In 1909, 10.1 per cent of the establishments manufactured products valued at \$1,000,000 or over, as against 9 per cent in 1904. While such establishments represented a comparatively small proportion of the total number at both censuses, they reported 85.8 per cent of the total value of products in 1909 and 83.9 per cent in 1904.

The average value of products per establishment increased from \$755,149 in 1904 to \$835,203 in 1909, and the average value added by manufacture, as computed from the figures in Table 3, from \$90,591 to \$102,218. The average number of wage earners

per establishment, however, decreased from 62 in 1904 to 55 in 1909.

VALUE OF PRODUCTS PER ESTABLISHMENT.	SLAUGHTERING AND MEAT PACKING—ALL BRANCHES COMBINED.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total .....	1,641	1,221	\$1,370,568,101	\$822,037,528
Less than \$5,000.....	108	84	297,915	222,201
\$5,000 and less than \$20,000.....	295	240	3,517,149	2,706,154
\$20,000 and less than \$100,000.....	575	391	28,201,726	18,361,018
\$100,000 and less than \$1,000,000.....	497	1,383	162,029,898	124,312,963
\$1,000,000 and over.....	166	110	1,176,461,413	773,222,035
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	6.6	6.9	( <sup>2</sup> )	( <sup>2</sup> )
\$5,000 and less than \$20,000.....	18.0	19.7	0.2	0.3
\$20,000 and less than \$100,000.....	35.0	32.0	2.1	2.0
\$100,000 and less than \$1,000,000.....	30.3	131.4	11.8	13.5
\$1,000,000 and over.....	10.1	9.0	85.8	83.9

<sup>1</sup> Figures for establishments manufacturing sausage have been omitted from this group to avoid disclosure of individual operations, but have been included in the total.

<sup>2</sup> Less than one-tenth of 1 per cent

Classification by number of wage earners.—Table 15 states according to the number of wage earners classifies the establishments in each of the leading employed.

Table 15

SLAUGHTERING AND MEAT PACKING—ALL BRANCHES COMBINED: 1909

STATE.	Establishments employing—																			
	Total.		No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.		
	Es-tab-lish-ments.	Wage earners (average number).	Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	
United States.	1,641	89,728	86	830	2,027	376	4,069	160	5,163	87	6,241	40	6,569	22	7,342	17	12,895	23	45,422	
California.....	94	1,641	5	51	128	25	277	6	157	4	306	1	111	2	662	.....	.....	.....	.....	
Colorado.....	13	659	2	3	10	3	49	1	23	2	120	1	184	1	282	.....	.....	.....	.....	
Illinois.....	109	26,705	5	32	90	22	265	21	724	12	891	5	954	1	1,617	2	1,617	9	21,910	
Indiana.....	61	4,423	.....	26	80	18	215	6	191	4	276	2	273	1	335	.....	.....	1	3,053	
Iowa.....	33	4,144	.....	12	21	9	101	1	36	5	359	2	318	.....	.....	5	2,234	1	1,075	
Kansas.....	35	10,501	1	16	37	3	21	5	198	.....	.....	2	297	1	365	3	2,400	4	7,267	
Maryland.....	54	1,034	1	31	72	11	113	4	141	6	470	1	238	.....	.....	.....	.....	.....	.....	
Massachusetts.....	94	3,325	2	52	132	30	274	3	83	2	145	1	196	2	598	1	912	1	1,015	
Michigan.....	45	3,002	5	26	63	6	56	5	149	.....	.....	2	347	1	297	.....	.....	.....	.....	
Minnesota.....	30	1,921	2	16	52	4	45	5	105	1	59	.....	.....	1	303	.....	.....	1	1,297	
Missouri.....	45	4,674	5	17	38	10	126	5	176	2	125	1	134	2	996	2	1,416	1	1,663	
Nebraska.....	18	6,015	1	10	25	2	13	.....	.....	.....	.....	1	180	.....	.....	1	734	3	5,063	
New Jersey.....	84	1,817	1	43	119	28	322	3	106	9	436	2	442	1	392	.....	.....	.....	.....	
New York.....	238	6,110	15	129	310	49	548	25	770	9	607	5	808	4	1,361	2	1,706	.....	.....	
Ohio.....	158	3,086	12	80	204	36	400	14	474	13	961	1	122	1	347	1	578	.....	.....	
Pennsylvania.....	180	3,050	15	88	222	41	443	20	585	10	678	5	766	1	356	.....	.....	.....	.....	
Texas.....	14	3,639	.....	3	5	3	26	3	96	1	78	2	355	.....	.....	.....	.....	2	3,079	
Washington.....	14	828	.....	4	7	5	69	1	40	1	61	2	392	1	259	.....	.....	.....	.....	
Wisconsin.....	48	1,890	2	30	67	4	37	6	197	3	187	1	110	.....	.....	2	1,292	.....	.....	

Of the 1,641 establishments reported in 1909, 5.2 per cent employed no wage earners; 50.6 per cent employed from 1 to 5; 22.9 per cent, from 6 to 20; 15.1 per cent, from 20 to 100; 3.8 per cent, from 101 to 500; and 2.4 per cent, over 500. Although almost three-fourths of the establishments employed 20 wage earners or less, only 6.8 per cent of the total number of wage earners were reported from such establishments; those establishments employing 21 to 100 wage earners reported 12.7 per cent of the total; those employing 101 to 500, 15.5 per cent; and those employing more than 500, 65 per cent. The 23 establishments employing over 1,000 wage earners each reported 50.6 per cent of the total for the industry.

EXPENSES.

As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses in 1909 to have been \$1,317,366,878, distributed as follows: Cost of materials, \$1,202,827,784, or 91.3 per cent; wages, \$51,644,720, or 3.9 per cent; salaries, \$20,053,957, or 1.5 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machin-

ery, insurance, traveling expenses, and other sundry expenses, \$42,840,417, or 3.3 per cent. The percentages of total expenses represented by the several classes of expense are shown for each of the three branches of the industry in Table 16.

Table 16

PER CENT OF TOTAL EXPENSES REPORTED: 1909

BRANCH.	PER CENT OF TOTAL EXPENSES REPORTED: 1909			
	Materials.	Salaries.	Wages.	Miscellaneous.
The industry as a whole.....	91.3	1.5	3.9	3.3
Slaughtering and meat packing.....	91.3	1.5	3.9	3.3
Slaughtering, not including meat packing.....	92.0	1.3	3.2	3.5
Sausage.....	84.3	2.5	9.2	4.1

The cost of materials constituted the principal item of expense in the slaughtering and meat packing industry, forming a very large proportion of the total in each of the three branches of the industry. Marked variations are shown in the proportions represented by the different classes of expense in the various states. (See Table 31.) Among 21 principal states, the proportion of the total expenses represented by salaries ranged from 1 per cent in Kentucky, to 2.3 per cent in Colorado; that represented by wages from 3.4 per cent in Missouri to 5 per cent in Oregon; that represented by cost of materials from 89 per cent in Oregon to 93 per cent in Kentucky; and that represented by miscellaneous expenses from 2 per cent in Kentucky to 4.5 per cent in Nebraska.

## ENGINES, POWER, AND FUEL.

Engines and power.—Table 17 shows, for the slaughtering and meat packing industry as a whole, statistics of power as reported at the censuses of 1909, 1904, and 1899.

POWER.	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
	<b>Primary power, total.....</b>	<b>3,275</b>	<b>1,388</b>	<b>1,369</b>	<b>208,707</b>	<b>110,311</b>	<b>87,060</b>	<b>100.0</b>	<b>100.0</b>	100.0
<b>Owned.....</b>	<b>1,862</b>	<b>1,388</b>	<b>1,369</b>	<b>102,920</b>	<b>115,091</b>	<b>85,817</b>	<b>92.4</b>	<b>97.0</b>	<b>98.6</b>
Steam.....	1,743	1,324	1,325	190,620	113,470	85,149	91.3	95.1	97.8
Gas.....	113	53	41	2,208	740	560	1.1	0.6	0.6
Water wheels.....	2	6	3	30	298	13	( <sup>1</sup> )	0.3	( <sup>1</sup> )
Water motors.....	4	5	( <sup>2</sup> )	16	13	( <sup>2</sup> )	( <sup>1</sup> )	( <sup>2</sup> )	( <sup>1</sup> )
Other.....				30	1,161	95	( <sup>1</sup> )	1.0	0.1
<b>Rented.....</b>	<b>1,413</b>	<b>(<sup>2</sup>)</b>	<b>(<sup>2</sup>)</b>	<b>15,787</b>	<b>3,020</b>	<b>1,243</b>	<b>7.6</b>	<b>3.0</b>	<b>1.4</b>
Electric.....	1,413	( <sup>2</sup> )	( <sup>2</sup> )	15,047	3,441	1,127	7.2	2.9	1.3
Other.....				740	179	116	0.4	0.1	0.1
<b>Electric motors.....</b>	<b>5,824</b>	<b>2,080</b>	<b>574</b>	<b>78,677</b>	<b>40,538</b>	<b>11,304</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Run by current generated by establishment.....	4,411	2,080	574	63,630	37,007	10,177	80.9	91.5	90.0
Run by rented power.....	1,413	( <sup>2</sup> )	( <sup>2</sup> )	15,047	3,441	1,127	19.1	8.5	10.0

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Not reported.

The total primary power used in the industry increased from 87,060 horsepower in 1899 to 208,707 horsepower in 1909, or 139.7 per cent. At each of the last three censuses steam engines produced over nine-tenths of the total primary power, but notwithstanding the increase of 105,487, or 123.9 per cent, in steam power during the decade, this power formed a smaller proportion of the total in 1909 than in 1899. The amount of rented electric power, on the other hand, was more than thirteen times as great in 1909 as in 1899, the proportion which it formed of the total advancing from 1.3 per cent to 7.2 per cent during the decade. The number and horsepower of electric motors used for distributing power by means of current generated in the same establishment also show a very great increase.

Table 18 shows, for 1909, the amount of the several kinds of power and of the different kinds of fuel used in 19 of the leading states.

In 1909 seven states—Illinois, Kansas, New York, Pennsylvania, Nebraska, Missouri, and Texas—together reported 142,224 horsepower, or 68.1 per cent of the aggregate for the industry. In every state shown in the table, except Washington, where rented electric power represented 61.4 per cent of the total, steam power was the most important kind of primary power.

Table 18

STATE.	Primary horsepower.		Electric horsepower.		Fuel used.												
	Number of establishments reporting.	Total horsepower.	Owned by establishments reporting.				Rented.		Total rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).	
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.			Other.	Anthracite (long tons).					Bituminous (short tons).
<b>United States.....</b>	<b>1,182</b>	<b>208,707</b>	<b>192,920</b>	<b>190,636</b>	<b>2,208</b>	<b>46</b>	<b>30</b>	<b>15,047</b>	<b>740</b>	<b>78,677</b>	<b>63,630</b>	<b>193,035</b>	<b>2,512,864</b>	<b>976</b>	<b>37,603</b>	<b>1,102,650</b>	<b>1,091,164</b>
California.....	67	3,867	2,492	2,441	51			1,375		1,606	231		204	32	1,501	153,290	990
Colorado.....	12	2,450	2,337	2,337				113		795	682	108	41,871		40		
Illinois.....	98	56,651	53,221	53,075	116	30		3,430		28,296	22,866	3,609	957,979	600	4,093	1,029	128,503
Indiana.....	40	5,973	5,786	5,648	138			145	42	2,472	2,327		151,800		1,852	3	3,002
Iowa.....	29	8,309	7,881	7,718	163			428		3,275	2,947	21	167,903		1,198	205	812
Kansas.....	15	24,560	24,420	24,405	15			140		10,758	10,618		203,730		631	517,451	395,895
Maryland.....	40	3,024	2,882	2,872	10			142		1,030	888	30	40,765		1,225	14	1,014
Massachusetts.....	66	4,844	3,411	3,350	61			1,399	34	1,554	155	34,007	12,584	103	2,320	13	1,583
Michigan.....	37	3,404	2,924	2,895	29			450		911	431	45	19,044		1,283	36	281
Minnesota.....	26	4,579	4,058					521		1,023	502	980	68,005		682		
Missouri.....	33	11,735	11,639	11,585	54			96		5,004	4,908	2,533	187,072		1,440	6,586	365,280
Nebraska.....	11	11,873	11,851	11,821	30			22		3,930	3,908		242,154		7	1,386	126
New Jersey.....	63	3,610	3,149	2,999	150			303	158	894	591	54,468	2,395		1,031	284	4,006
New York.....	170	13,936	11,458	11,168	290			2,328	150	3,865	1,537	71,124	83,556	152	1,328	566	13,473
Ohio.....	97	9,873	9,274	8,910	364			599		2,456	1,857		87,452	4	1,424	524	118,502
Pennsylvania.....	113	12,139	11,678	11,450	228			461		3,098	2,637	25,795	68,697		3,306	265	35,744
Texas.....	12	11,330	11,291	11,201				30		4,177	4,138		21,639		360	383,002	
Washington.....	12	1,883	726					1,157		1,160	8		11,805		8,786	50	12
Wisconsin.....	36	3,283	3,120	3,043	74	3		163		1,474	1,311	751	45,081		674	60	636
All other states.....	196	11,384	9,322	8,844	435	13	30	1,706	356	2,899	1,193	464	97,338	85	4,332	35,986	20,096

Fuel consumed.—Bituminous coal was the principal fuel used, 2,512,864 short tons being consumed during 1909. In Massachusetts and New Jersey, however,

much larger quantities of anthracite than of bituminous coal were consumed. In several of the states considerable quantities of gas were used.

SPECIAL STATISTICS RELATING TO MATERIALS AND PRODUCTS.

MATERIALS.

Summary for the United States.—Table 19 shows statistics of materials used in the industry as a whole for 1909, 1904, and 1899.

MATERIAL.	1909	1904	1899	Per cent of increase: 1899-1909
Total cost.....	\$1,202,827,784	\$811,425,582	\$685,310,099	75.5
Animals slaughtered.....	\$960,725,581	\$675,893,676	\$570,183,432	68.5
Beeves—				
Number.....	8,114,860	7,147,835	5,525,824	46.9
Cost.....	\$392,127,010	\$289,040,930	\$247,146,262	58.7
Calves—				
Number.....	2,504,728	1,568,130	883,857	183.4
Cost.....	\$25,030,014	\$12,065,557	\$7,252,545	245.1
Sheep and lambs—				
Number.....	12,255,501	10,875,339	9,110,172	34.5
Cost.....	\$59,924,931	\$44,359,804	\$30,859,832	62.6
Hogs—				
Number.....	33,870,616	30,977,639	30,595,522	10.7
Cost.....	\$483,383,848	\$329,765,480	\$278,370,494	73.6
Goats and kids—				
Number.....	33,224	( <sup>2</sup> )	( <sup>2</sup> )	.....
Cost.....	\$121,230	( <sup>2</sup> )	( <sup>2</sup> )	.....
All other animals.....	\$138,548	\$61,905	\$554,299	-75.0
Dressed meat, purchased..	\$93,409,286	\$53,114,957	\$54,247,986	72.2
All other materials.....	\$148,692,917	\$82,416,920	\$60,878,681	144.2

<sup>1</sup> A minus sign (-) denotes decrease.      <sup>2</sup> Figures not available.

In the slaughtering and meat packing industry the cost of materials forms a larger proportion (91.3 per cent) of the total expenses than in most other industries, owing to the fact that the processes of manufacture are comparatively simple and inexpensive.

No statistics were secured concerning the quantity of meat or other materials used by establishments engaged in the manufacture of sausage, and the cost of materials for this branch of the industry is included in the amount shown for "all other materials" in Table 19. This item for the industry as a whole, amounting to \$148,692,917 in 1909, includes also the cost of containers, or of materials used in their manufacture, of cottonseed oil for the manufacture of lard compounds and lard substitutes, of materials for ice making and refrigeration, and cost of fuel and rent of power.

The total cost of all materials increased \$517,517,685, or 75.5 per cent, from 1899 to 1909. Exclusive of goats and kids, for which there are no available figures for 1904 or 1899, and of "all other animals," for which the cost only was returned, 56,745,705 animals were slaughtered by establishments in the industry in 1909, as compared with 46,115,375 in 1899, an increase of 10,630,330, or 23.1 per cent. The total cost of all animals slaughtered, including goats and kids and "all other animals," was \$960,725,581 in 1909 as compared with \$570,183,432 in 1899, an increase of \$390,542,149, or 68.5 per cent.

The increase from 1899 to 1909 in the number of beeves slaughtered was 2,589,036, or 46.9 per cent; in number of calves, 1,620,871, or 183.4 per cent; of sheep and lambs, 3,145,329, or 34.5 per cent; and of

hogs, 3,275,094, or 10.7 per cent. The increase in cost of beeves on the hoof for the same period was \$144,980,748, or 58.7 per cent; of calves, \$17,777,469, or 245.1 per cent; of sheep and lambs, \$23,065,099, or 62.6 per cent; and of hogs, \$205,013,354, or 73.6 per cent. Thus hogs showed the greatest absolute, and calves the greatest relative, increase both in number and in cost during the 10 years.

In the cost of "all other" animals slaughtered is included a large expenditure for poultry, many of the establishments doing an extensive business in this line.

"Dressed meat, purchased" includes not only meat for curing, but also fats for the rendering of lard, and shows the very material increase of \$39,161,300, or 72.2 per cent, from 1899 to 1909.

The gross and net weight in pounds, on the hoof and dressed, with averages per head, of the principal kinds of animals slaughtered in 1909, 1904, and 1899, are shown in Table 20. The dressed weight is exclusive of edible offal.

	1909	1904	1899
BEEVES.			
Number.....	8,114,860	7,147,835	5,525,824
Weight on hoof, pounds.....	8,205,991,836	7,485,407,944	5,908,165,706
Average weight on hoof, pounds.....	1,019	1,047	1,069
Weight, dressed, pounds.....	4,409,718,923	4,066,204,877	3,222,733,617
Average weight, dressed, pounds.....	543	569	583
CALVES.			
Number.....	2,504,728	1,568,130	883,857
Weight on hoof, pounds.....	419,604,080	261,083,572	124,354,340
Average weight on hoof, pounds.....	168	167	141
Weight, dressed, pounds.....	262,315,076	161,049,593	79,498,483
Average weight, dressed, pounds.....	105	101	90
SHEEP AND LAMBS.			
Number.....	12,255,501	10,875,339	9,110,172
Weight on hoof, pounds.....	987,508,521	930,168,367	704,269,802
Average weight on hoof, pounds.....	81	86	84
Weight, dressed, pounds.....	406,040,869	464,872,621	389,132,646
Average weight, dressed, pounds.....	41	43	43
HOGS.			
Number.....	33,870,616	30,977,639	30,595,522
Weight on hoof, pounds.....	6,856,832,417	6,586,349,782	6,676,769,331
Average weight on hoof, pounds.....	202	213	218
Weight, dressed, pounds.....	5,201,902,778	5,048,832,850	5,203,280,487
Average weight, dressed, pounds.....	154	163	170

Table 20 shows a decrease for the 10-year period 1899-1909 in the average dressed weight of beeves, hogs, sheep, and lambs. The average weight of calves increased.

Total number of animals slaughtered for food.—The number of animals killed in wholesale slaughtering and meat packing establishments obviously represents only a portion of the total number of animals slaughtered for food. In order to secure this total, as required by a special amendment to the act providing for the Thirteenth Census, the enumerators obtained reports from retail slaughterhouses, and to these figures were added the statistics regarding the number of animals slaughtered on farms and ranges, secured through the census of agriculture. Table 21 shows the total number of animals reported as slaughtered for food in 1909.

**Table 21**

ALL ANIMALS SLAUGHTERED FOR FOOD: 1909

KIND.	NUMBER.			
	Total.	In slaughtering and meat packing establishments.	In retail slaughter-houses.	On farms. <sup>1</sup>
<b>Total</b> .....	88,358,815	56,778,929	13,012,614	18,567,272
Beeves.....	13,611,422	8,114,800	4,087,922	1,408,640
Calves.....	6,515,976	2,504,728	2,879,648	1,131,600
Sheep and lambs.....	14,724,699	12,255,501	1,939,672	529,526
Hogs.....	53,219,568	33,870,616	3,970,435	15,378,517
Goats and kids.....	285,553	33,224	133,340	118,989
All other animals.....	1,597	.....	1,597	.....

KIND.	PER CENT OF TOTAL.			
	Total.	In slaughtering and meat packing establishments.	In retail slaughter-houses.	On farms. <sup>1</sup>
<b>Total</b> .....	100.0	64.3	14.7	21.0
Beeves.....	100.0	59.6	30.0	10.3
Calves.....	100.0	38.4	44.2	17.4
Sheep and lambs.....	100.0	83.2	13.2	3.6
Hogs.....	100.0	63.6	7.5	28.9
Goats and kids.....	100.0	11.6	46.7	41.7
All other animals.....	100.0	.....	100.0	.....

<sup>1</sup> The inquiry concerning the animals slaughtered on farms called for the number of "sheep" and "goats" without expressly stating that lambs and kids were to be included. It is possible, therefore, that the number of sheep reported may not include all the lambs, or the number of goats include all the kids. The omissions, if any, were presumably few.

The total number of animals slaughtered for food in the United States in 1909 was 88,358,815. Of this number, the hogs slaughtered represented 60.2 per

cent; sheep and lambs, 16.7 per cent; beeves, 15.4 per cent; calves, 7.4 per cent; and goats and kids, three-tenths of 1 per cent.

The bulk of the slaughtering in 1909 was done by wholesale establishments, almost two-thirds of the animals being killed in such plants. The larger number of calves, however, were slaughtered by retail establishments. It is notable that a larger number of hogs than of other animals were slaughtered on farms and ranges. Such animals can be slaughtered in the open with very little preparation and very few implements, and the edible offal is easily handled. It should also be borne in mind that a great many farmers have their own smokehouses and make a practice of curing the pork produced on their farms. The number of hogs slaughtered on farms and ranges represented 82.8 per cent of all animals slaughtered on farms and 28.9 per cent of the total number of hogs slaughtered in the United States.

**Animals slaughtered, by states.**—Table 22 shows by states the number and cost of each of the several kinds of animals slaughtered in 1909, and the number only of the animals slaughtered in 1904 and 1899. The states included are those in which were slaughtered during 1909 at least 100,000 beeves, 50,000 calves, 100,000 sheep and lambs, and 200,000 hogs.

**Table 22**

CLASS AND STATE.	ANIMALS SLAUGHTERED.				CLASS AND STATE.	ANIMALS SLAUGHTERED.			
	1909		1904	1899		1909		1904	1899
	Cost.	Number.	Number.	Number.		Cost.	Number.	Number.	Number.
<b>Beeves, total</b> .....	\$392,127,010	8,114,860	7,147,835	5,525,824	<b>Sheep and lambs, total</b> .....	\$59,924,931	12,255,501	10,875,339	9,110,172
California.....	14,348,274	341,617	259,716	174,113	California.....	4,436,865	1,071,998	990,514	695,058
Illinois.....	109,990,873	2,181,199	2,643,028	2,057,059	Illinois.....	19,429,169	3,892,142	3,934,216	3,139,160
Indiana.....	10,702,274	252,697	178,678	358,585	Kansas.....	5,186,825	1,136,027	771,818	687,832
Iowa.....	11,256,445	252,821	91,564	77,846	Massachusetts.....	1,730,127	345,491	418,580	397,496
Kansas.....	69,452,976	1,362,572	1,019,553	927,339	Minnesota.....	692,993	132,244	180,995	93,717
Minnesota.....	4,195,238	128,852	108,820	52,700	Missouri.....	2,659,215	540,660	564,784	252,015
Missouri.....	24,332,919	530,356	573,887	346,827	Nebraska.....	5,429,148	1,127,962	1,042,810	723,520
Nebraska.....	32,069,207	651,258	627,129	531,032	New Jersey.....	2,283,669	423,724	502,942	380,406
New York.....	47,740,152	668,447	478,716	378,833	New York.....	10,437,800	1,918,721	1,537,937	1,487,157
Ohio.....	11,613,314	265,101	189,613	98,636	Ohio.....	872,959	229,985	148,418	70,739
Pennsylvania.....	14,997,080	253,897	197,581	130,073	Pennsylvania.....	2,332,833	445,471	303,494	231,558
Texas.....	15,089,886	527,469	285,295	24,375	Washington.....	1,394,189	290,383	179,819	132,750
Washington.....	5,851,681	117,522	54,539	39,869	All other states.....	3,130,395	690,704	633,412	859,790
All other states.....	26,480,691	584,962	439,707	328,537	<b>Hogs, total</b> .....	483,383,848	33,870,616	30,877,639	30,595,522
<b>Calves, total</b> .....	25,030,014	2,504,728	1,568,130	883,857	California.....	4,339,254	344,319	314,085	228,675
California.....	930,781	81,344	43,100	28,531	Colorado.....	4,056,945	276,618	108,741	160,210
Illinois.....	4,720,290	513,639	295,928	149,450	Illinois.....	107,716,321	7,299,944	7,854,370	8,291,706
Indiana.....	615,607	60,878	37,566	12,943	Indiana.....	25,277,218	1,751,454	1,498,767	1,950,870
Kansas.....	2,202,653	209,357	92,751	30,720	Iowa.....	38,499,019	2,487,251	2,070,473	1,922,098
Massachusetts.....	854,275	129,162	88,651	73,288	Kansas.....	57,042,948	4,191,327	3,089,611	2,849,648
Minnesota.....	431,438	55,991	21,823	6,219	Kentucky.....	8,564,206	230,428	377,280	502,856
Missouri.....	821,829	81,551	52,044	22,825	Maryland.....	5,803,872	654,701	607,435	607,435
Nebraska.....	637,158	58,158	9,707	8,454	Massachusetts.....	26,048,740	1,501,456	1,549,365	1,876,245
New Jersey.....	1,145,785	95,604	103,389	63,037	Michigan.....	6,734,073	444,760	288,603	341,815
New York.....	4,406,391	377,121	293,751	277,016	Minnesota.....	36,911,941	1,063,955	1,047,094	422,325
Ohio.....	1,599,585	150,223	86,906	31,971	Missouri.....	2,471,053	2,120,983	2,358,325	1,857,053
Pennsylvania.....	1,764,473	152,351	112,867	51,510	Nebraska.....	32,535,715	2,103,002	2,358,325	2,793,304
Texas.....	2,074,188	234,172	94,093	7,544	New Jersey.....	1,210,849	1,282,410	1,282,410	631,694
Wisconsin.....	1,048,962	129,297	34,507	21,973	New York.....	23,802,670	1,302,669	1,023,758	1,701,006
All other states.....	1,776,539	175,770	201,047	92,376	Ohio.....	24,547,970	1,725,285	1,447,773	1,283,597
					Pennsylvania.....	16,934,874	1,222,890	1,085,834	821,821
					Texas.....	10,938,088	939,074	347,040	208,270
					Washington.....	4,107,508	239,352	122,313	72,149
					Wisconsin.....	15,794,705	1,078,301	938,418	947,614
					All other states.....	14,689,928	930,117	814,396	874,041

# SLAUGHTERING AND MEAT PACKING.

Illinois ranked first in 1909, 1904, and 1899 in the slaughtering of each of the kinds of animals for which figures are given. Kansas ranked second in 1909 in the slaughter of beefs and hogs, and New York in the slaughter of calves and sheep and lambs. A comparison of the statistics for 1909 and 1899 indicates a shifting of the slaughter of beefs nearer

to the source of supply, as the absolute increase in Illinois was only 124,140, while the increase in Kansas was 435,233, and in Texas 503,094.

The number of animals of the various kinds slaughtered in 1909, both in wholesale and retail slaughterhouses and on farms and ranges, is given by states in Table 23.

ANIMALS SLAUGHTERED FOR FOOD, IN WHOLESALE AND RETAIL SLAUGHTERHOUSES AND ON FARMS AND RANGES, BY STATES: 1909.

STATE.	Aggregate.	TOTAL.		BEEVES.		CALVES.		SHEEP AND LAMBS.		HOGS.		ALL OTHER ANIMALS.	
		In wholesale and retail slaughterhouses.	On farms and ranges.	In wholesale and retail slaughterhouses.	On farms and ranges.	In wholesale and retail slaughterhouses.	On farms and ranges.	In wholesale and retail slaughterhouses.	On farms and ranges.	In wholesale and retail slaughterhouses.	On farms and ranges.	In wholesale and retail slaughterhouses.	On farms and ranges.
<b>United States</b> .....	<b>88,358,815</b>	<b>69,791,543</b>	<b>18,567,272</b>	<b>12,202,782</b>	<b>1,408,640</b>	<b>5,384,376</b>	<b>1,131,600</b>	<b>14,195,173</b>	<b>529,526</b>	<b>37,841,051</b>	<b>15,378,517</b>	<b>168,161</b>	<b>118,989</b>
Alabama.....	810,688	170,619	646,069	98,243	42,946	12,905	7,872	10,821	5,251	45,039	581,615	3,011	8,385
Arizona.....	124,601	94,026	29,575	44,580	10,773	9,142	1,144	11,684	8,125	17,843	3,299	11,377	0,634
Arkansas.....	809,372	132,351	674,021	58,663	38,088	12,976	8,379	9,566	5,705	48,592	616,350	2,554	5,499
California.....	2,792,028	2,583,885	209,043	618,283	36,319	177,864	50,538	1,300,010	35,915	478,842	82,270	8,886	4,001
Colorado.....	691,009	376,898	114,141	117,786	26,818	31,402	11,557	116,607	19,945	310,958	52,081	115	3,740
Connecticut.....	301,001	257,581	43,420	32,032	8,759	57,818	0,915	18,087	2,085	149,621	25,058		6
Delaware.....	107,841	79,199	28,642	13,087	551	10,315	414	11,374	87	44,422	27,588	1	2
District of Columbia.....	163,160	102,741	419	10,181	8	20,668	28	42,667		77,223	383		
Florida.....	437,911	115,835	322,076	64,489	22,012	2,450	1,500	8,586	1,484	39,880	294,753	430	2,258
Georgia.....	1,140,900	213,017	927,943	93,372	37,605	23,532	22,323	11,021	3,552	81,967	860,409	3,125	4,054
Idaho.....	101,601	118,577	73,024	37,347	12,210	15,377	4,789	25,037	8,404	40,801	47,437	15	88
Illinois.....	15,622,722	14,736,149	886,573	2,370,787	38,406	676,552	81,079	3,915,661	4,284	7,703,765	762,545	63,304	199
Indiana.....	3,321,528	2,622,194	669,335	391,426	27,122	145,370	21,731	76,958	3,714	2,007,981	646,581	450	187
Iowa.....	3,820,358	3,215,109	605,249	418,509	73,454	105,752	18,235	68,434	6,180	2,826,776	807,167	638	213
Kansas.....	7,646,716	7,124,338	422,378	1,406,432	30,660	233,875	11,538	1,141,531	2,399	4,265,111	377,566	17,389	217
Kentucky.....	1,267,587	497,844	769,743	103,285	19,011	44,537	4,546	33,903	10,650	314,292	733,642	1,827	1,804
Louisiana.....	678,280	355,288	323,012	155,337	26,209	126,984	2,667	12,815	3,965	68,587	287,447	1,545	2,724
Maine.....	942,655	225,898	116,787	28,337	18,755	46,205	27,390	98,542	23,277	52,793	47,819	21	40
Maryland.....	1,242,668	1,051,917	191,351	94,073	5,870	93,474	2,110	198,800	2,922	664,924	180,406	46	13
Massachusetts.....	2,259,375	2,201,482	57,893	95,123	13,521	188,212	14,187	348,040	2,412	1,569,032	27,754	1,075	19
Michigan.....	1,041,655	1,136,358	504,697	215,684	43,619	160,458	61,896	164,414	17,818	595,182	381,247	620	117
Minnesota.....	2,234,250	1,743,542	490,708	235,696	79,223	104,117	80,493	1,161,788	16,231	1,161,788	314,597	88	161
Mississippi.....	676,008	128,564	547,454	69,543	34,406	15,428	5,757	9,634	4,845	31,862	408,659	2,087	3,787
Missouri.....	4,883,683	3,884,508	999,175	616,614	32,059	109,154	8,779	557,843	7,461	2,800,148	949,318	740	1,558
Montana.....	303,332	227,840	75,493	65,593	19,755	31,668	8,748	77,002	13,785	53,589	33,143	7	52
Nebraska.....	4,119,371	4,108,503	310,868	729,608	42,083	86,248	5,458	1,129,725	1,753	2,162,905	261,515	17	59
Nevada.....	102,247	76,688	25,559	18,877	11,217	8,456	1,410	33,574	6,073	15,218	5,943		10
New Hampshire.....	100,481	58,159	42,322	11,809	9,110	22,616	10,650	9,629	5,987	14,084	22,563	21	6
New Jersey.....	2,459,109	2,860,952	62,157	88,726	3,175	173,531	14,025	502,672	1,229	1,601,570	73,709	444	19
New Mexico.....	187,068	60,289	126,779	25,787	16,316	6,775	3,658	13,590	58,839	8,561	21,029	5,576	26,037
New York.....	6,880,758	5,661,351	719,407	831,980	68,793	614,815	212,962	2,197,416	51,277	2,016,826	386,264	314	111
North Carolina.....	970,854	124,909	845,945	61,226	36,132	29,860	14,502	20,378	9,763	21,626	783,247	1,319	2,201
North Dakota.....	331,111	144,632	186,479	90,772	31,570	28,958	14,419	11,305	4,342	54,366	136,227	22	21
Ohio.....	4,167,471	3,297,213	870,258	540,592	54,040	390,368	31,180	364,809	16,754	2,061,268	768,195	176	89
Oklahoma.....	688,147	232,609	455,538	93,787	23,043	16,265	5,745	1,662	1,129	119,772	424,436	1,123	1,185
Oregon.....	566,721	378,274	188,447	108,389	24,292	24,330	40,756	128,506	15,788	115,294	102,755	1,755	4,858
Pennsylvania.....	3,766,066	2,905,164	861,742	500,637	88,505	485,555	68,980	573,107	28,218	1,849,496	675,939	2,369	144
Rhode Island.....	90,345	78,048	12,297	5,916	6,690	12,710	1,175	1,681	749	57,738	3,674	3	
South Carolina.....	446,984	109,983	337,021	55,327	17,657	14,173	6,969	1,409	6,527	32,099	309,022	1,237	1,364
South Dakota.....	332,911	172,307	160,604	56,429	28,475	25,983	7,084	10,348	7,246	79,538	117,781	9	68
Tennessee.....	1,117,478	314,271	803,207	97,315	33,483	17,368	0,548	32,917	13,490	164,513	742,123	2,158	4,568
Texas.....	3,347,603	2,338,048	1,009,555	804,533	64,031	338,562	22,445	97,403	9,396	1,074,975	885,360	27,575	28,423
Utah.....	259,692	195,585	64,107	52,617	8,208	18,604	5,812	94,664	16,579	20,939	31,216	381	2,798
Vermont.....	203,089	85,401	117,688	24,744	18,832	21,908	41,375	11,510	6,670	27,228	59,786		86
Virginia.....	944,381	372,087	572,294	63,422	20,058	47,453	5,068	35,872	9,185	225,289	537,797	51	168
Washington.....	968,014	828,023	169,991	174,019	25,087	42,673	44,238	318,083	7,380	291,220	92,600	2,019	686
West Virginia.....	492,728	253,823	238,905	53,740	18,763	31,370	5,108	21,391	8,260	147,297	208,701	25	74
Wisconsin.....	2,482,049	1,687,236	545,713	217,209	51,040	415,043	93,167	110,712	15,116	1,198,354	386,243	018	147
Wyoming.....	82,107	36,429	45,678	13,919	9,810	4,430	1,948	6,813	20,832	11,267	13,064		24

PRODUCTS.

Summary for the United States.—Table 24 shows the quantity and value of each specified product of the slaughtering and meat packing industry as returned for the censuses of 1909, 1904, 1899.

PRODUCT.	1909	1904	1899	Per cent of increase: <sup>1</sup> 1899 1909
<b>Total value.....</b>	<b>\$1,370,568,101</b>	<b>\$922,037,528</b>	<b>\$788,367,647</b>	<b>73.8</b>
<b>Beef:<sup>2</sup></b>				
Pounds.....	4,335,674,330	3,884,952,074	3,055,241,979	41.9
Value.....	\$339,742,608	\$255,204,676	\$220,495,401	54.1
<b>Fresh—</b>				
Pounds.....	4,209,196,068	3,748,055,377	2,917,653,476	44.3
Value.....	\$327,583,456	\$247,090,724	\$210,833,647	55.4
<b>Salted and cured—</b>				
Pounds.....	126,477,662	136,896,697	137,588,503	-8.1
Value.....	\$12,169,152	\$8,107,952	\$9,661,754	25.8
<b>Veal, fresh:</b>				
Pounds.....	252,907,078	154,212,652	84,548,128	199.2
Value.....	\$25,058,886	\$12,856,369	\$7,709,772	225.0
<b>Mutton, fresh:</b>				
Pounds.....	495,457,894	460,754,244	400,812,014	23.6
Value.....	\$50,735,116	\$36,880,455	\$32,681,457	55.2
<b>Pork:<sup>3</sup></b>				
Pounds.....	4,377,127,187	4,147,834,872	4,360,705,789	0.4
Value.....	\$486,845,161	\$340,586,644	\$320,469,119	51.9
<b>Fresh—</b>				
Pounds.....	1,547,494,184	1,224,932,910	1,222,007,411	26.6
Value.....	\$158,714,862	\$91,749,323	\$83,934,324	89.1
<b>Salted—</b>				
Pounds.....	952,130,557	1,558,886,256	1,371,384,591	-30.6
Value.....	\$95,959,048	\$116,626,710	\$88,363,629	8.6
<b>Hams—</b>				
Pounds.....	789,861,744			
Value.....	\$101,099,390			
<b>Shoulders—</b>				
Pounds.....	346,294,769	1,364,015,706	1,767,313,787	6.2
Value.....	\$33,225,458	\$132,210,611	\$148,171,166	56.7
<b>Bacon and sides—</b>				
Pounds.....	741,345,933			
Value.....	\$97,856,403			
<b>All other fresh meat:</b>				
Pounds.....	257,809,083	124,307,681	80,387,411	220.7
Value.....	\$16,392,768	\$9,579,718	\$7,810,553	109.9
<b>Sausage, fresh or cured.....</b>	\$59,564,582	\$33,179,235	\$25,982,709	129.2
<b>Canned goods:</b>				
Pounds.....	121,376,837	( <sup>4</sup> )	112,443,021	7.1
Value.....	\$15,345,543	\$10,114,065	\$9,166,931	67.4
<b>Lard:</b>				
Pounds.....	1,243,567,604	1,169,086,400	1,019,781,839	21.9
Value.....	\$134,396,557	\$82,540,904	\$61,140,234	119.8
<b>Tallow or oleo stock:</b>				
Pounds.....	202,844,139	( <sup>5</sup> )	( <sup>5</sup> )	
Value.....	\$13,499,659	( <sup>5</sup> )	( <sup>5</sup> )	
<b>Oleo oil:</b>				
Gallons.....	19,692,172	19,454,799	19,111,120	3.0
Value.....	\$16,475,726	\$10,201,911	\$11,432,542	43.5
<b>Other oils:</b>				
Gallons.....	11,343,186	4,893,133	8,240,569	37.6
Value.....	\$6,350,745	\$2,695,951	\$3,438,353	84.7
<b>Oleomargarine:</b>				
Pounds.....	42,912,466	( <sup>6</sup> )	( <sup>6</sup> )	
Value.....	\$5,963,981	( <sup>6</sup> )	( <sup>6</sup> )	
<b>Stearin:</b>				
Pounds.....	54,957,997	( <sup>6</sup> )	( <sup>6</sup> )	
Value.....	\$6,871,935	( <sup>6</sup> )	( <sup>6</sup> )	
<b>Soap:</b>				
Pounds.....	5,182,572	49,838,356	( <sup>6</sup> )	
Value.....	\$200,765	\$1,515,154	( <sup>6</sup> )	
<b>Glue and gelatine:</b>				
Pounds.....	27,936,035	17,526,456	( <sup>6</sup> )	
Value.....	\$1,044,338	\$1,087,719	( <sup>6</sup> )	
<b>Fertilizers and fertilizer materials:</b>				
Tons (2,000 pounds).....	362,136	369,074	<sup>4</sup> 168,505	114.9
Value.....	\$8,726,818	\$7,204,061	<sup>4</sup> \$3,300,042	164.4
<b>Hides:</b>				
Number.....	9,560,138	8,039,204	6,249,414	53.0
Pounds.....	504,593,930	456,443,857	335,068,207	50.2
Value.....	\$98,401,515	\$44,206,107	\$33,883,026	101.9
<b>Sheep pelts:</b>				
Number.....	11,691,308	<sup>5</sup> 11,344,544	( <sup>6</sup> )	
Value.....	\$11,404,556	<sup>5</sup> \$8,064,643	( <sup>6</sup> )	
<b>Goat and kid skins:</b>				
Number.....	33,359	( <sup>6</sup> )	( <sup>6</sup> )	
Value.....	\$20,679	( <sup>6</sup> )	( <sup>6</sup> )	
<b>Wool:</b>				
Pounds.....	21,858,926	16,377,333	13,176,686	65.9
Value.....	\$8,327,095	\$5,229,521	\$3,334,439	149.7
<b>Amount received for custom or contract work.....</b>	<b>\$1,329,739</b>	<b>\$198,825</b>	<b>\$141,154</b>	<b>842.0</b>
<b>All other products.....</b>	<b>\$92,969,299</b>	<b>\$53,590,910</b>	<b>\$47,331,910</b>	<b>96.8</b>

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> Includes only products specified.  
<sup>3</sup> Figures not available.  
<sup>4</sup> Includes fertilizers only. Figures not available for fertilizer materials.  
<sup>5</sup> Includes pelts purchased for wool pulling.

There were increases during the decade 1899 to 1909 both in quantity and in value of all the products enu-

merated in Table 24, with the exception of salted or cured beef and salted pork, each of which showed a decrease in quantity. The largest relative increase in value is shown for fresh veal, 225 per cent. "All other fresh meat," which includes goat and kid meat and dressed poultry, and also edible offal—such as hearts, tongues, livers, heads, etc.—increased 109.8 per cent in value during the decade.

Of the products other than meats, lard is the most important, showing an increase during the decade of 21.9 per cent in quantity and of 119.8 per cent in value. No statistics relative to the manufacture of oleomargarine in slaughtering and meat packing establishments were collected at censuses prior to 1909. Of the total number of hides taken from animals slaughtered by establishments in the slaughtering and meat packing industry, approximately 8,115,000 were cattle hides and 1,445,000 calfskins. In addition, a large number of calfskins were sold on the carcasses. From 1899 to 1909 the quantity of wool taken from animals slaughtered by establishments in this industry increased 65.8 per cent, and the value 149.7 per cent.

All products not specifically called for on the schedule are included under "all other products." Among these are lard substitutes and compound lard, sausage casings, scrapple, pickled tripe, pigs' feet, poultry and animal food, hogs' hair, ice, and also special kinds of cars for the transportation of products.

Pork, beef, mutton, and veal, in the order named, are the four most important products for which separate quantities and values are given in Table 24. In 1909 the total quantity of these products amounted to 9,461,256,489 pounds, as compared with 8,647,753,842 pounds in 1904 and 7,901,307,910 pounds in 1899.

Table 25 shows the proportion which the quantity reported for each of these products formed of the combined total at the three censuses, and also the percentage of increase in the quantity of each during the period.

KIND.	FOUR LEADING EDIBLE PRODUCTS OF SLAUGHTERING AND MEAT PACKING ESTABLISHMENTS.					
	Per cent of total.			Per cent of increase. <sup>1</sup>		
	1909	1904	1899	1899-1909	1904-1909	1899-1904
<b>Total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>19.7</b>	<b>9.4</b>	<b>9.4</b>
Pork, fresh and cured.....	46.3	48.0	55.2	0.4	5.5	- 4.9
Beef, fresh and cured.....	45.8	44.9	38.7	41.9	11.6	27.2
Mutton.....	5.2	5.3	5.1	23.6	7.5	15.0
Veal.....	2.7	1.8	1.1	199.2	64.1	82.4

<sup>1</sup> A minus sign (-) denotes decrease.

The quantity of pork produced was practically the same in 1909 as in 1899. The three other kinds of meat listed in the table, on the other hand, increased considerably, so that, although pork still held first place, it showed a pronounced decline in importance as compared with the others. The quantity of veal reported almost trebled during the decade.

**Subsidiary products.**—Many establishments in the slaughtering and meat-packing industry make large quantities of subsidiary products, some of which form the chief products of other industries distinguished by the census. A number of the large concerns kept separate accounts for the branches or departments making certain of these subsidiary products, especially for those making fertilizers and soap, and in such cases separate reports were secured for these departments, which were treated as individual establishments. The total value of the products of these separately reported departments of slaughtering and meat packing establishments amounted in the aggregate to \$32,661,669. In cases, however, where it was impracticable to obtain separate statistics for these subsidiary products they were included in the general operations of the slaughtering and meat packing industry.

In Table 26 is shown the value of several of these products manufactured in establishments reported as engaged primarily in the production of the same, and also the value of such products reported by the establishments in the industry.

PRODUCT.	Value of all products of establishments engaged primarily in making the product specified. <sup>1</sup>	* Value of specified products reported by establishments in the slaughtering and meat packing industry.
Fertilizers.....	\$103,990,213	\$8,726,818
Glue and gelatin.....	13,717,820	1,944,338
Lard.....	10,326,471	134,396,587
Oleomargarine.....	8,147,629	5,063,081
Soap.....	111,357,777	200,765

<sup>1</sup> Includes, in some cases, products other than those specified.

The total value of products shown for establishments engaged primarily in the manufacture of the five classes of products shown in Table 26 amounted to \$247,509,910. This includes products to the value of \$21,490,269 manufactured by separately reported departments of slaughtering and meat packing establishments. The total value of these products reported as produced in the slaughtering and meat packing industry amounted to \$151,232,489. If to this amount be added the \$21,490,269 included in the figures for the five industries mentioned, the value of these products actually produced by the slaughtering and meat packing establishments amounted to \$172,722,758, or 43.3 per cent of the total value of such products, shown in Table 26.

The value of oleomargarine manufactured in slaughtering and meat packing establishments was nearly three-fourths as great as that made in establishments engaged primarily in the manufacture of this product, while the value of lard manufactured by slaughtering and meat packing establishments was over 13 times the value of that produced in establishments or departments of the same reported as lard rendering plants.

**Products, by states.**—Table 27 shows, by states, the quantity and value of certain leading products of the slaughtering and meat packing industry in 1909, and the quantity produced in 1904 and 1899.

Statistics with respect to the specified class of products are shown only for the states reporting a production of at least 59,000,000 pounds of fresh beef; 5,000,000 pounds of fresh veal and mutton; 32,000,000 pounds of fresh pork; 23,000,000 pounds of salt pork; 18,000,000 pounds of ham; 29,000,000 pounds of shoulders, bacon, and sides; 19,000,000 pounds of lard; 4,000,000 pounds of hides; and 100,000 sheep pelts.

The prominence of Illinois in the industry is illustrated by the fact that this state ranked first at each of the last three censuses in output of each of the specified products named in Table 27, with the single exception that New York produced more veal than Illinois in 1899. The percentages of the total output reported by Illinois in 1909 and 1899, respectively, were as follows: Beef, 27.2 and 35.7 per cent; veal, 20.3 and 20.9 per cent; mutton, 31.8 and 36.9 per cent; fresh pork, 19.6 and 33.7 per cent; salt pork, 33.2 and 38.1 per cent; hams, 19.6 and 29.1 per cent; shoulders, 22.9 and 18.9 per cent; lard, 32.4 and 36.5 per cent; and hides, 26.9 and 38.3 per cent.

The largest absolute increase in fresh beef for the decade reported by any state was 234,640,370 pounds in Kansas, while Texas showed the largest relative gain. The largest absolute increase in the production of veal reported for the period by any state was 33,685,297 pounds in Illinois, followed by an increase of 28,335,074 pounds in Texas. The largest absolute increase in output of mutton for the decade was reported for Kansas, and the greatest percentage of increase (239.8 per cent) for Ohio. Illinois, although reporting an output of fresh pork more than twice as great in 1909 as that reported by any other state, showed a decrease of 107,479,929 pounds in output of this product during the decade. Iowa reported the largest absolute increase, and Texas the largest relative gain from 1899 to 1909. Most of the states reported rather large decreases in the production of salted pork, only a little more than two-thirds as much salt pork (69.4 per cent) being reported in 1909 as was produced in 1899. Only four of the states in the table showed increases between 1899 and 1909—Texas showing the largest relative gain, 582 per cent. The largest percentage of increase in output of hams (355.8 per cent) was for Minnesota, and the largest absolute gain was reported by Kansas. In the production of shoulders, bacon, and sides, Wisconsin showed the largest relative gain (375 per cent) and Iowa the greatest absolute increase. In the production of lard Texas showed the largest gains, absolute as well as relative, increasing 839.9 per cent during the decade.

Table 27	1909			1904			1899			PRODUCT AND STATE.	1909			1904			1899		
	Value.	Quantity (pounds).	Quantity (pounds).	Quantity (pounds).	Quantity (pounds).	Quantity (pounds).	Value.	Quantity (pounds).	Quantity (pounds).		Value.	Quantity (pounds).							
<b>Beef, fresh, total</b> .....	\$327,583,456	4,209,196,668	3,748,055,377	2,917,653,476	<b>Hams, total</b> .....	\$101,089,390	789,861,744	(1)	785,670,285.										
California.....	13,820,710	180,315,779	140,301,990	93,818,021	Illinois.....	18,430,261	165,005,979	(1)	228,284,156										
Illinois.....	85,704,478	1,142,820,910	1,376,889,532	1,042,234,306	Indiana.....	5,809,437	45,344,500	(1)	42,658,638										
Indiana.....	9,530,214	119,685,578	93,224,422	219,166,574	Iowa.....	8,590,882	70,975,226	(1)	39,741,810										
Iowa.....	8,854,468	123,780,302	41,675,822	30,578,342	Kansas.....	10,951,193	90,037,473	(1)	57,996,957										
Kansas.....	52,129,824	680,615,803	509,978,750	451,975,433	Massachusetts.....	5,804,732	44,709,082	(1)	57,134,534										
Minnesota.....	3,187,327	59,276,009	55,358,409	26,659,660	Minnesota.....	3,247,740	26,987,049	(1)	5,920,898										
Missouri.....	20,035,864	273,809,501	315,665,100	165,944,314	Missouri.....	6,810,561	55,471,295	(1)	33,844,254										
Nebraska.....	20,914,613	354,858,419	337,481,202	307,786,549	Nebraska.....	6,041,848	46,040,524	(1)	66,273,113										
New York.....	43,428,480	429,981,714	310,605,378	252,508,996	New Jersey.....	2,624,708	18,423,801	(1)	15,008,938										
Ohio.....	10,047,217	119,597,666	67,985,293	1,555,008	Ohio.....	7,053,027	51,636,936	(1)	44,534,108										
Pennsylvania.....	13,072,530	136,838,202	89,925,370	43,652,450	New York.....	6,507,262	49,750,166	(1)	38,046,130										
Texas.....	12,405,125	208,080,588	117,319,123	84,181,747	Pennsylvania.....	5,838,567	41,051,947	(1)	44,629,801										
Washington.....	6,035,883	69,288,504	33,548,474	21,418,889	Wisconsin.....	2,654,733	21,778,540	(1)	25,775,477										
All other states.....	24,410,483	298,642,087	220,093,248	106,932,837	All other states.....	10,504,412	72,563,207	(1)	85,821,582										
<b>Veal, fresh, total</b> .....	25,058,888	252,997,078	154,212,652	84,548,128	<b>Shoulders, bacon, and sides, total</b> .....	131,081,861	1,027,640,702	1,364,015,706	981,643,502.										
California.....	1,104,753	12,077,330	6,470,074	3,964,808	Illinois.....	29,130,863	248,895,404	301,720,854	185,240,920.										
Illinois.....	4,781,751	51,359,193	30,348,188	17,673,896	Indiana.....	9,950,250	91,121,582	149,394,873	117,787,185										
Indiana.....	603,540	5,505,181	3,178,656	1,155,508	Iowa.....	11,111,665	96,574,740	96,101,620	30,781,171										
Kansas.....	2,343,974	25,731,826	9,737,824	3,869,293	Kansas.....	14,308,058	120,186,407	131,997,627	138,485,250										
Massachusetts.....	801,055	8,317,482	6,601,707	5,173,540	Massachusetts.....	6,325,308	52,498,029	59,518,363	92,227,868										
Minnesota.....	386,210	5,765,536	2,120,934	640,910	Minnesota.....	3,237,944	29,512,901	19,186,367	7,713,147										
Missouri.....	767,841	8,831,469	5,421,809	1,832,589	Missouri.....	6,530,412	57,960,400	63,962,310	52,392,149										
Nebraska.....	664,563	7,609,474	1,162,620	1,832,589	Nebraska.....	6,328,324	57,767,465	104,747,378	78,409,619										
New Jersey.....	1,131,257	8,702,274	10,092,263	6,387,285	New York.....	8,064,812	59,266,364	78,349,412	51,749,929										
New York.....	4,316,843	36,610,306	26,406,486	25,179,357	Ohio.....	8,442,040	60,775,690	78,202,528	53,168,202										
Ohio.....	1,498,687	12,921,896	6,680,682	2,464,318	Pennsylvania.....	4,292,320	30,481,988	60,894,209	36,010,835										
Pennsylvania.....	1,671,022	13,405,455	9,097,823	4,371,144	Wisconsin.....	5,004,420	44,877,157	51,581,552	9,448,637										
Texas.....	2,023,838	29,308,086	9,674,766	9,738,012	All other states.....	18,355,436	137,734,295	174,922,583	127,628,530										
Washington.....	1,110,373	9,615,384	2,594,329	1,806,512	<b>Lard, total</b> .....	134,396,587	1,243,567,604	1,169,086,400	1,019,781,839.										
All other states.....	1,853,134	17,235,586	24,630,041	8,326,367	Illinois.....	40,592,051	403,177,806	456,877,415	372,162,769										
<b>Mutton, fresh, total</b> .....	50,735,116	495,457,894	460,754,244	400,812,014	Indiana.....	4,943,363	46,901,294	43,809,750	48,674,440										
California.....	4,215,624	44,220,813	38,021,994	29,605,967	Indiana.....	8,059,149	71,084,771	65,322,473	70,441,702										
Illinois.....	15,051,397	157,615,125	160,511,123	148,003,635	Kansas.....	16,748,155	148,408,252	132,557,097	116,003,884										
Kansas.....	4,448,666	43,884,755	30,246,693	24,309,545	Massachusetts.....	7,159,116	60,840,711	33,215,200	69,843,633										
Massachusetts.....	1,538,054	12,346,470	10,015,035	16,207,400	Minnesota.....	2,581,501	21,429,517	20,435,556	8,248,174										
Minnesota.....	480,143	5,655,124	8,283,313	4,585,842	Missouri.....	5,595,067	48,835,133	33,215,200	52,305,406										
Missouri.....	2,209,306	21,896,982	23,555,759	10,238,198	Nebraska.....	9,163,052	89,851,980	84,703,231	94,801,004										
Nebraska.....	4,076,901	45,101,857	42,556,050	32,091,157	New Jersey.....	4,747,104	49,017,209	5,423,649	11,668,825										
New Jersey.....	2,085,232	16,228,087	21,468,265	17,021,273	New York.....	5,814,101	47,042,820	35,098,711	31,522,702										
New York.....	9,539,554	80,774,979	63,435,207	61,858,172	Ohio.....	6,566,768	58,518,712	49,180,666	32,398,829										
Ohio.....	7,633,364	7,738,777	5,406,034	2,277,155	Pennsylvania.....	4,522,249	36,121,032	34,129,473	26,811,272										
Pennsylvania.....	2,149,700	17,816,377	15,035,808	9,001,293	Texas.....	5,644,149	60,862,980	38,977,625	6,476,327										
Washington.....	1,301,955	13,893,776	8,355,285	6,298,881	Wisconsin.....	2,120,334	19,178,185	16,859,540	21,950,976										
All other states.....	2,815,100	28,284,792	26,963,678	37,810,496	All other states.....	10,140,428	82,302,202	62,178,202	56,472,807										
<b>Pork, fresh, total</b> .....	158,714,862	1,547,494,184	1,224,932,910	1,222,007,411	<b>Hides, total</b> .....	68,401,615	504,563,930	456,443,857	335,968,207.										
California.....	3,472,610	32,204,886	22,796,629	18,815,565	California.....	2,710,097	21,134,504	14,875,563	10,221,863										
Illinois.....	30,321,023	303,890,802	290,619,428	411,876,731	Illinois.....	19,372,440	135,617,679	165,007,637	128,702,573										
Indiana.....	8,974,150	79,377,563	27,391,374	29,262,285	Indiana.....	1,847,702	14,209,481	11,428,871	23,550,014										
Iowa.....	9,750,724	100,113,209	41,200,001	31,774,211	Iowa.....	1,878,592	14,727,015	6,562,413	4,278,686										
Kansas.....	13,757,643	150,199,802	81,016,571	56,242,483	Kansas.....	10,904,415	79,719,102	58,858,924	50,421,335										
Massachusetts.....	7,956,169	66,468,331	82,117,964	44,597,008	Massachusetts.....	686,312	4,072,435	6,149,456	2,609,300										
Minnesota.....	4,330,448	45,709,115	43,542,306	17,354,988	Minnesota.....	837,185	7,240,972	6,587,904	3,051,526										
Missouri.....	13,492,089	138,974,435	118,797,174	100,701,224	Missouri.....	4,427,484	32,406,006	37,971,456	19,907,122										
Nebraska.....	8,624,522	98,834,601	83,484,004	84,632,189	Nebraska.....	5,430,614	39,975,521	39,860,510	31,440,074										
New Jersey.....	10,115,850	96,506,328	121,630,717	76,518,271	New Jersey.....	6,636,928	49,577,870	8,230,549	2,395,855										
New York.....	12,665,175	123,540,054	123,177,550	107,996,721	New York.....	7,105,501	49,577,870	36,892,215	26,522,241										
Ohio.....	6,950,354	60,320,259	49,033,932	40,226,099	Ohio.....	1,970,069	16,900,623	14,619,934	5,728,787										
Pennsylvania.....	6,072,517	50,210,292	37,333,942	45,896,941	Pennsylvania.....	2,428,372	19,170,659	17,768,494	8,203,766										
Texas.....	3,195,006	32,054,404	9,596,282	5,133,863	Texas.....	3,750,416	27,478,391	17,768,494	1,370,101										
Washington.....	4,802,343	48,264,738	35,997,540	24,797,944	Washington.....	002,944	7,325,034	8,416,270	2,510,982										
All other states.....	14,328,239	120,819,365	87,137,481	65,270,288	All other states.....	3,455,954	29,306,536	21,576,974	15,038,452										
<b>Pork, salted, total</b> .....	95,959,048	952,130,557	1,558,886,256	1,371,384,591	<b>Sheep pelts, total</b> .....	11,404,556	11,691,308	11,344,544	Number.										
Illinois.....	30,487,876	316,315,611	584,019,438	522,096,362	California.....	742,098	1,070,801	990,514	(2)										
Iowa.....	5,149,857	51,556,167	120,323,636	135,513,117	Illinois.....	3,869,008	3,619,577	3,632,161	(2)										
Kansas.....	15,664,948	154,756,036	171,957,267	78,884,690	Kansas.....	1,334,782	1,317,653	751,595	(2)										
Massachusetts.....	2,854,321	25,422,070	107,572,501	57,884,374	Massachusetts.....	190,214	141,956	423,080	(2)										
Minnesota.....	2,767,901	25,980,437	52,555,395	23,819,050	Minnesota.....	146,473	132,574	188,791	(2)										
Missouri.....	11,423,438	108,792,776	131,795,452	93,266,664	Missouri.....	330,199	281,627	580,261	(2)										
Nebraska.....	7,882,502	80,409,434	146,084,637	201,807,878	Nebraska.....	1,410,685	1,127,937	956,666	(2)										
New York.....	2,686,225	23,521,908	28,146,502	25,933,082	New Jersey.....	376,036	423,624	502,642	(2)										
New York.....	3,358,624	39,600,127	11,088,757	5,806,344	New York.....	1,389,474	1,913,895	2,069,553	(2)										
Texas.....	4,040,221	39,735,002	60,456,880	73,557,159	Ohio.....	194,720	232,775	148,118	(2)										
Washington.....	4,040,221	39,735,002	60,456,880	73,557,159	Pennsylvania.....	455,030	444,480	363,494	(2)										
All other states.....	9,638,135	80,040,989	144,285,491	152,815,471	Washington.....	326,207	290,298	179,191	(2)										
					All other states.....	639,630	694,111	657,830	(2)										

<sup>1</sup> Included with shoulders, bacon, and sides.

<sup>2</sup> Not reported.

Kansas, which ranked second in quantity of hides reported in 1909 and 1899, showed the largest absolute increase of any state, while Texas showed the greatest relative gain. Sheep pelts are a valuable product of the industry, but no figures are available for 1899, and those given for 1904 are not entirely comparable with

those reported for 1909, because in 1904 a number of establishments engaged in slaughtering and meat packing did wool pulling from purchased pelts, and inadvertently included such purchased pelts with the number taken from owned sheep slaughtered in the plants.

## SLAUGHTERING AND MEAT PACKING.

349

Table 28 shows, by states, the value of the sausage manufactured in 1909, 1904, and 1899.

STATE.	VALUE OF SAUSAGE.		
	1909	1904	1899
<b>Total</b> .....	<b>\$59,564,582</b>	<b>\$33,179,235</b>	<b>\$25,982,709</b>
Illinois.....	14,883,731	8,748,970	8,631,356
Kansas.....	2,863,461	1,814,777	1,469,400
Massachusetts.....	4,228,821	2,349,245	2,384,979
Nebraska.....	2,108,874	1,223,537	1,483,558
New Jersey.....	2,864,949	887,349	631,804
New York.....	6,461,809	3,359,825	2,195,581
Ohio.....	3,346,493	1,711,463	1,133,417
Pennsylvania.....	5,421,307	2,805,029	1,532,434
Wisconsin.....	2,476,466	1,448,005	1,095,130
All other states.....	14,908,671	8,831,035	5,424,990

Each state shown in the table reported a large increase in the value of its sausage output, the largest percentage of increase (353.4 per cent) being in New Jersey, and the largest absolute gain in Illinois. Illinois was the leading state in the production of sausage, reporting 25 per cent of the total value in 1909 and 33.2 per cent in 1899.

**Imports and exports.**—Table 29 shows, for the years ending June 30, 1910, 1905, and 1900, the value of the exports and the imports of different classes of meats and meat products, as distinguished by the Bureau of Foreign and Domestic Commerce.

The total value of exports in 1900 and 1905 was greatly in excess of that of imports, but the difference was much less pronounced in 1910. The total value of exports decreased considerably during the period covered, whereas the value of imports increased. The exports were mainly meats and meat products intended for human consumption, while the imports were principally hides and other animal products intended as raw material for manufacture. The value of hides

and skins imported in 1910 formed 90.3 per cent of the total value of imports, whereas these articles formed but 1.3 per cent of the total value of the exports.

CLASS.	YEAR ENDING JUNE 30—		
	1910	1905	1900
<b>EXPORTS.</b>			
<b>Total value</b> .....	<b>\$134,676,824</b>	<b>\$169,590,201</b>	<b>\$179,273,924</b>
<b>Beef products:</b>			
Canned.....	1,678,452	6,588,958	5,233,982
Fresh.....	7,733,751	22,138,365	20,643,830
Salted or pickled.....	2,744,880	3,095,304	2,697,340
Other, cured.....	38,815	14,057	197,951
Tallow.....	1,779,615	3,022,173	4,393,204
<b>Hog products:</b>			
Bacon.....	18,321,050	25,428,061	38,975,915
Hams and shoulders, cured.....	17,837,375	21,562,204	20,416,367
Pork, canned.....	459,843	993,394	658,402
Pork, fresh.....	126,888	1,201,794	1,025,772
Pork, pickled.....	4,421,844	9,412,034	8,243,797
Lard.....	43,301,156	47,243,181	41,930,164
<b>Mutton.....</b>	<b>213,477</b>	<b>52,503</b>	<b>64,813</b>
Sausage and sausage meats.....	627,669	671,241	(1)
All other meat products.....	2,391,864	4,242,052	5,065,458
Lard compounds and substitutes.....	6,887,738	3,613,235	1,475,084
Oleo oil and neutral lard.....	14,305,080	11,485,145	10,503,856
Oleomargarine.....	349,972	711,638	416,544
Hides and skins, not fur skins.....	1,738,216	1,051,641	804,674
Glue.....	261,756	279,534	225,844
Oil, lard.....	131,241	154,409	337,260
Bones, hoofs, horns and horn tips, strips and waste.....	150,371	181,203	199,194
Grease, grease scraps and all soap stock.....	4,612,426	3,710,907	2,944,322
Sausage casings.....	4,503,339	2,646,868	2,307,571
<b>IMPORTS.</b>			
<b>Total value</b> .....	<b>124,249,388</b>	<b>72,763,686</b>	<b>64,673,455</b>
<b>Meat products:</b>			
Meats and meat extracts.....	(1)	674,441	365,589
All other.....	1,086,966	52,223	105,728
Sausages, bologna.....	127,274	147,119	95,944
Grease and oils.....	1,522,327	1,170,514	779,666
Hides and skins, not fur skins.....	<sup>2</sup> 112,247,836	64,764,146	57,935,998
Glue.....	861,888	701,847	537,492
Bones, horns, and hoofs, unmanufactured.....	1,067,911	926,505	830,063
Bristles, crude, not sorted, bunched or prepared.....	12,987	4,054	22,330
Bristles, sorted, bunched or prepared.....	3,111,872	2,366,444	2,130,537
Hide cuttings, raw, and glue stock.....	1,605,432	1,120,070	1,223,521
Sausage casings.....	2,604,895	836,323	640,889

<sup>1</sup> Included in "all other meat products."

<sup>2</sup> All hides were free of duty on and after August 6, 1900.

### DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the slaughtering and meat packing industry are presented, by states, in Tables 30 and 31.

Table 30 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in the in-

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

Table 31 gives more detailed statistics for the industry for 1909 only.

## MANUFACTURES.

## SLAUGHTERING AND MEAT PACKING—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.					Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manu- facture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).	Expressed in thousands.							
United States.....	1909	1,641	108,716	1,659	17,329	89,728	208,707	\$383,249	\$20,054	\$51,645	\$1,202,828	\$1,370,568	\$187,740	
	1904	1,221	88,819	1,324	12,096	75,399	119,311	240,419	13,453	41,087	811,426	922,038	110,612	
	1899	1,080	.....	.....	10,317	69,264	87,060	190,209	10,211	33,846	685,310	788,368	103,058	
California.....	1909	94	2,135	111	383	1,041	3,867	11,463	550	1,307	28,448	34,280	5,832	
	1904	70	1,659	84	288	1,287	2,093	4,879	351	914	18,752	22,013	3,261	
	1899	64	.....	.....	182	939	.....	3,952	255	553	13,616	15,817	2,201	
Colorado.....	1909	13	834	5	170	659	2,450	3,653	210	389	8,205	9,657	1,362	
	1904	11	303	4	52	247	888	1,107	55	175	2,782	3,324	542	
	1899	14	316	7	48	261	.....	1,381	61	171	3,722	4,344	622	
Connecticut.....	1909	28	523	28	63	432	590	1,067	62	230	3,949	4,572	623	
	1904	26	426	29	26	371	461	733	22	204	2,809	3,218	409	
	1899	19	.....	.....	38	403	.....	587	37	188	3,250	3,835	576	
Delaware.....	1909	9	123	8	33	82	212	289	25	53	1,231	1,372	141	
	1904	5	58	6	5	47	160	143	4	26	477	548	71	
	1899	6	.....	.....	22	42	.....	252	14	23	462	547	85	
District of Columbia.....	1909	5	214	2	77	135	345	1,037	73	90	1,470	1,890	420	
	1904	3	107	1	13	98	108	280	19	60	475	615	140	
	1899	6	129	7	31	91	.....	206	16	43	981	1,131	150	
Georgia.....	1909	8	113	9	14	90	262	168	9	34	402	509	107	
	1904	6	84	4	4	76	321	228	1	29	219	321	102	
	1899	7	146	8	34	104	.....	116	20	32	484	581	107	
Idaho.....	1909	4	56	1	16	39	115	343	16	33	451	532	81	
	1904	3	19	2	7	10	22	93	9	8	120	159	39	
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Illinois.....	1909	109	32,642	93	5,844	26,705	56,651	131,026	6,440	14,602	343,976	389,595	45,619	
	1904	95	32,856	99	5,046	27,111	39,400	80,733	6,571	14,658	280,592	318,201	37,609	
	1899	78	.....	.....	4,236	27,991	.....	71,394	4,432	14,115	247,215	288,672	41,457	
Indiana.....	1909	61	4,852	64	375	4,423	5,973	8,058	690	2,161	41,986	47,289	5,303	
	1904	50	3,400	46	199	3,155	4,388	7,424	249	1,371	26,249	29,435	3,186	
	1899	39	.....	.....	303	3,604	.....	8,876	315	1,570	33,629	43,890	5,261	
Iowa.....	1909	33	4,849	33	672	4,144	8,309	12,362	654	2,190	53,127	59,045	5,918	
	1904	25	3,409	21	284	3,104	4,273	7,326	299	1,332	27,244	30,152	2,908	
	1899	31	3,118	25	193	2,900	.....	6,370	197	1,215	21,604	25,763	4,159	
Kansas.....	1909	35	12,265	23	1,651	10,591	24,560	37,860	1,797	5,862	147,646	165,361	17,715	
	1904	22	10,394	19	983	9,392	13,733	25,332	984	4,836	85,146	96,376	11,230	
	1899	14	9,967	9	1,841	8,117	11,212	16,486	1,632	3,575	67,909	77,412	9,503	
Kentucky.....	1909	37	440	44	48	354	853	1,269	61	251	5,746	6,568	822	
	1904	22	548	30	46	472	887	1,464	44	243	4,595	5,094	1,099	
	1899	28	604	31	62	511	.....	1,327	52	214	4,445	5,177	782	
Louisiana.....	1909	10	210	10	18	182	896	507	17	68	98	276	178	
	1904	6	32	9	2	21	39	25	1	10	54	91	37	
	1899	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
Maine.....	1909	20	152	10	26	107	213	197	21	58	785	957	172	
	1904	12	190	13	17	160	359	310	13	86	524	723	199	
	1899	11	56	12	6	38	52	133	3	18	457	554	97	
Maryland.....	1909	54	1,324	61	229	1,034	3,024	3,808	265	604	11,503	13,683	2,180	
	1904	44	683	61	60	562	1,204	1,322	58	320	5,888	6,848	960	
	1899	50	.....	.....	43	465	.....	1,213	28	220	5,730	6,391	661	
Massachusetts.....	1909	94	3,832	87	420	3,325	4,844	15,547	488	1,837	38,886	44,403	5,517	
	1904	80	3,520	81	412	3,027	3,396	12,933	492	1,695	33,881	38,012	4,131	
	1899	43	3,148	48	226	2,874	.....	11,445	263	1,390	28,591	32,344	3,753	
Michigan.....	1909	45	1,114	55	157	902	3,404	3,584	152	481	11,066	13,435	1,769	
	1904	26	590	28	63	499	969	1,373	65	265	5,630	6,356	726	
	1899	32	.....	.....	72	469	.....	1,450	67	233	4,820	5,402	582	
Minnesota.....	1909	30	2,452	28	503	1,921	4,579	7,881	510	1,129	22,156	25,754	3,598	
	1904	29	1,691	34	281	1,376	1,069	3,437	254	783	15,104	17,589	2,485	
	1899	20	820	27	125	668	.....	1,555	102	304	6,823	7,811	983	
Missouri.....	1909	45	5,529	34	821	4,674	11,735	18,787	845	2,673	72,108	79,581	7,383	
	1904	38	4,882	29	597	4,236	7,685	16,449	623	2,381	54,099	60,110	6,011	
	1899	40	3,412	36	251	3,125	.....	7,969	260	1,454	39,182	43,102	3,980	
Nebraska.....	1909	18	7,221	20	1,186	6,015	11,873	19,414	1,420	3,372	78,358	92,305	13,947	
	1904	9	6,462	3	869	5,590	6,328	20,606	936	3,159	61,278	69,329	8,051	
	1899	12	6,518	7	721	6,090	7,192	16,525	684	2,991	63,048	71,280	8,232	
New Hampshire.....	1909	8	37	10	3	24	87	62	2	14	165	199	34	
	1904	7	15	7	.....	8	28	15	.....	4	26	38	12	
	1899	6	20	8	.....	12	.....	9	.....	6	28	43	15	
New Jersey.....	1909	84	2,420	93	510	1,817	3,610	8,182	633	1,280	33,740	37,583	3,843	
	1904	48	918	68	105	745	949	2,593	117	488	16,071	17,754	1,683	
	1899	50	760	69	100	591	.....	1,676	94	352	12,965	14,215	1,250	
New York.....	1909	238	7,583	262	1,211	6,110	13,936	34,536	1,690	4,387	110,168	127,130	16,962	
	1904	151	4,654	183	710	3,761	7,271	18,102	872	2,692	66,778	76,550	8,772	
	1899	168	4,109	209	612	3,288	.....	15,718	598	1,940	51,173	58,403	7,230	

<sup>1</sup> Exclusive of statistics for two establishments, to avoid disclosure of individual operations.

<sup>2</sup> Exclusive of statistics for one establishment, to avoid disclosure of individual operations.

# SLAUGHTERING AND MEAT PACKING.

351

SLAUGHTERING AND MEAT PACKING—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899—Continued.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Ohio.....	1909	158	3,804	154	624	3,086	0,873	\$12,399	\$687	\$1,857	\$44,347	\$50,804	\$6,457
	1904	105	2,750	119	316	2,315	4,434	6,465	294	1,355	25,311	29,155	3,844
	1899	77	2,193	96	313	1,784	.....	5,396	206	823	18,007	20,768	2,761
Oklahoma.....	1909	7	86	7	10	63	236	290	18	43	749	880	140
	1904	4	46	6	1	39	52	125	4	22	239	294	56
Oregon.....	1909	14	493	14	113	366	752	2,481	124	280	5,015	5,880	865
	1904	<sup>a</sup> 10	313	7	60	246	327	975	73	155	2,390	2,907	517
	1899	29	222	9	41	172	.....	760	47	88	1,359	1,638	279
Pennsylvania.....	1909	180	3,957	198	709	3,050	12,139	13,504	862	1,987	44,845	51,851	7,006
	1904	177	3,074	205	341	2,528	7,366	8,338	397	1,518	28,340	33,101	4,761
	1899	131	2,283	183	377	1,723	.....	6,636	318	945	21,806	25,537	3,731
Rhode Island.....	1909	21	267	26	27	214	428	593	53	122	2,704	3,156	362
	1904	16	223	22	15	186	357	562	13	105	2,384	2,657	273
	1899	<sup>a</sup> 13	278	20	27	231	.....	779	26	123	2,294	2,596	302
Tennessee.....	1909	27	379	31	68	280	1,242	2,516	61	140	1,610	2,057	447
	1904	<sup>a</sup> 12	81	13	9	59	936	408	8	24	274	377	103
	1899	13	.....	.....	15	100	.....	680	17	66	1,480	1,712	232
Texas.....	1909	14	4,248	1	608	3,639	11,330	12,438	698	1,902	37,410	42,530	5,120
	1904	<sup>a</sup> 0	2,354	2	333	2,019	2,086	6,375	323	866	13,593	15,621	2,028
	1899	<sup>a</sup> 12	469	6	49	414	1,640	1,232	62	180	3,171	3,904	733
Utah.....	1909	12	159	7	44	99	572	564	38	77	1,327	1,690	363
	1904	3	41	1	9	31	25	148	10	21	514	653	139
	1899	8	62	14	6	42	69	117	2	19	385	453	68
Virginia.....	1909	24	444	23	79	342	1,491	2,251	85	118	4,057	4,601	544
	1904	<sup>a</sup> 14	200	12	30	158	650	683	28	69	1,746	1,996	250
	1899	<sup>a</sup> 3	63	4	17	42	.....	157	13	18	477	560	83
Washington.....	1909	14	971	4	139	828	1,883	5,103	233	575	13,760	15,654	1,894
	1904	<sup>a</sup> 13	402	9	58	335	550	2,284	79	287	5,423	6,252	829
	1899	<sup>a</sup> 18	337	18	88	231	474	1,014	81	157	4,252	4,893	641
West Virginia.....	1909	6	209	4	38	167	1,321	1,116	39	123	3,385	3,764	379
	1904	<sup>a</sup> 6	168	6	29	133	635	478	20	74	1,608	1,928	260
	1899	3	103	3	16	84	356	313	12	43	1,134	1,338	204
Wisconsin.....	1909	48	2,263	56	317	1,890	3,283	6,629	386	1,042	23,403	27,217	3,814
	1904	<sup>a</sup> 23	1,762	26	156	1,550	2,457	4,857	197	782	14,072	16,569	2,497
	1899	<sup>a</sup> 19	1,069	26	133	1,501	.....	4,031	104	611	12,244	14,142	1,898
All other states.....	1909	34	449	34	117	298	1,769	1,356	140	259	3,670	4,499	823
	1904	35	525	35	70	420	2,815	1,723	88	236	6,679	8,072	1,393
	1899	36	.....	.....	89	291	.....	654	88	154	3,558	4,043	485

<sup>1</sup> Figures can not be shown without disclosure of individual operations.  
<sup>a</sup> Excluding statistics for one establishment, to avoid disclosure of individual operations.  
<sup>b</sup> Excluding statistics for two establishments, to avoid disclosure of individual operations.

MANUFACTURES.

SLAUGHTERING AND MEAT PACKING—

Table 31	STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.				
						Male.	Female.		Number, 15th day of—			Male.	Female.	Male.	Female.			
									Maximum month.	Minimum month.								
1	United States .....	1,641	108,716	1,659	1,855	13,794	1,680	89,728	De 96,234	Ap 84,558	94,854	88,352	5,960	499	43	208,707		
2	Alabama.....	4	63	.....	6	8	2	47	Au 73	Ap 33	52	52	.....	.....	.....	795		
3	California.....	94	2,135	111	105	249	29	1,641	De 1,709	Je 1,586	1,723	1,678	31	13	1	3,867		
4	Colorado.....	13	834	5	24	136	10	659	Je 692	My 634	647	620	14	13	.....	2,450		
5	Connecticut.....	28	523	28	11	37	15	432	Ja <sup>1</sup> 465	My 397	456	450	3	3	.....	590		
6	Delaware.....	9	123	8	6	26	1	82	Ja <sup>1</sup> 88	Au 75	84	83	1	.....	.....	212		
7	District of Columbia.....	5	214	2	12	56	9	135	Oc 159	Je <sup>1</sup> 123	138	138	.....	.....	.....	345		
8	Florida.....	11	59	19	4	4	.....	32	Mh 34	De 28	40	40	.....	.....	.....	.....		
9	Georgia.....	8	113	9	3	8	3	90	Mh 101	Au 79	95	95	.....	.....	.....	292		
10	Idaho.....	4	56	1	4	11	1	39	Ja <sup>2</sup> 39	Jy <sup>2</sup> 39	39	38	1	.....	.....	115		
11	Illinois.....	109	32,642	93	246	5,148	450	26,705	De 29,652	My 24,293	28,755	25,537	3,175	40	3	56,651		
12	Indiana.....	61	4,862	64	72	280	23	4,423	De 4,884	My 3,983	4,888	4,513	290	80	5	5,973		
13	Iowa.....	33	4,849	33	130	498	44	4,144	Ja 5,125	Oc 3,763	4,247	3,936	185	126	.....	8,309		
14	Kansas.....	35	12,265	23	134	1,384	133	10,591	No 11,471	Mh 9,788	11,050	10,230	818	10	1	24,500		
15	Kentucky.....	37	446	44	14	34	.....	354	Ja 377	Ap 323	366	365	1	.....	.....	853		
16	Louisiana.....	10	210	10	8	9	1	182	Se 192	My 177	184	184	.....	.....	.....	896		
17	Maine.....	20	152	19	8	11	7	107	No 123	Jy 96	123	123	.....	.....	.....	213		
18	Maryland.....	54	1,324	61	40	173	16	1,034	De 1,107	Je 900	1,107	1,104	1	2	.....	3,024		
19	Massachusetts.....	94	3,832	87	54	305	61	3,325	Ja 3,552	My 3,170	3,371	3,310	37	22	2	4,844		
20	Michigan.....	45	1,114	55	30	107	20	902	De 962	My 864	923	889	28	6	.....	3,404		
21	Minnesota.....	30	2,452	28	40	427	36	1,921	Ja 2,313	Au 1,623	1,852	1,806	40	6	.....	4,579		
22	Missouri.....	45	5,529	34	95	647	79	4,674	Fe 4,903	My 4,367	4,822	4,658	158	6	.....	11,735		
23	Montana.....	9	162	3	13	37	4	105	No 113	Mh 97	104	100	4	.....	.....	316		
24	Nebraska.....	18	7,221	20	32	1,014	140	6,015	Fe 6,794	Ap 5,643	6,316	5,851	398	50	17	11,873		
25	New Hampshire.....	8	37	10	3	.....	.....	24	Ja <sup>2</sup> 24	Jy <sup>2</sup> 24	24	24	.....	.....	.....	87		
26	New Jersey.....	84	2,420	93	81	306	63	1,817	Ja 2,056	Au 1,617	1,820	1,742	76	2	.....	3,610		
27	New York.....	293	7,583	262	155	846	210	6,110	De 6,313	Au 5,893	6,200	6,082	172	4	2	13,936		
28	Ohio.....	153	3,864	154	158	404	62	3,086	De 3,219	Ap 2,993	3,203	3,133	70	.....	.....	9,873		
29	Oklahoma.....	7	86	7	6	8	2	63	De 91	Fe 43	91	91	.....	.....	.....	236		
30	Oregon.....	14	493	14	12	87	14	366	De 418	Mh 346	417	414	3	.....	.....	752		
31	Pennsylvania.....	180	3,957	198	141	484	84	3,050	De 3,184	Au 2,940	3,183	3,154	22	7	.....	12,139		
32	Rhode Island.....	21	267	26	7	14	6	214	De 230	Jy <sup>1</sup> 204	230	227	.....	3	.....	428		
33	Tennessee.....	27	379	31	23	38	7	280	De 633	My 151	631	591	30	1	.....	1,242		
34	Texas.....	14	4,248	1	42	527	30	3,639	My 3,856	Ja 3,452	4,039	3,703	258	68	10	11,330		
35	Utah.....	12	150	7	17	24	3	99	De 111	Ap 86	111	110	.....	1	.....	572		
36	Virginia.....	24	444	23	26	41	12	342	Ja 424	My 297	415	394	20	1	.....	1,491		
37	Washington.....	14	971	4	34	78	27	828	De 956	Ja 772	962	938	24	.....	.....	1,833		
38	West Virginia.....	6	200	4	10	26	2	167	Au 172	Ap 104	165	165	.....	.....	.....	1,321		
39	Wisconsin.....	48	2,263	56	41	216	60	1,890	Ja 2,600	Se 1,612	1,776	1,656	91	27	2	3,283		
40	All other states <sup>1</sup> .....	10	165	12	11	23	5	114	.....	.....	136	128	.....	8	.....	658		

<sup>1</sup> Same number reported for one or more other months.

<sup>2</sup> Same number reported throughout the year.

# SLAUGHTERING AND MEAT PACKING.

353

DETAILED STATISTICS, BY STATES: 1909.

	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clarks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
1	\$383,249,170	\$1,317,366,878	\$4,915,326	\$15,138,631	\$51,644,720	\$6,700,834	\$1,196,126,950	\$1,218,596	\$2,026,345	\$414,895	\$39,180,581	\$1,370,568,101	\$167,740,317
2	198,059	247,845	7,700	8,143	25,299	13,285	185,213	1,210	41,875	6,995	320,451	121,953	
3	11,463,407	31,533,926	246,164	303,657	1,306,846	184,764	28,263,293	49,849	41,875	3,743	1,133,835	34,280,003	5,831,946
4	3,653,300	9,243,676	61,054	148,519	389,133	67,907	8,226,872	1,970	19,141	329,380	9,656,810	1,362,031	
5	1,966,531	4,341,420	18,920	43,453	239,172	29,948	3,918,985	6,000	9,960	74,982	4,572,225	623,292	
6	288,932	1,352,554	7,994	17,100	52,736	5,628	1,225,538	480	1,660	3,172	38,256	1,371,853	140,687
7	1,086,701	1,793,169	26,300	46,436	90,478	17,985	1,451,723	1,200	1,710	16,637	140,700	1,889,575	419,807
8	101,512	343,476	8,160	1,950	20,193	482	391,370	996	885	10,440	407,084	75,232	
9	168,150	468,038	2,100	7,357	34,110	15,528	385,987	4,044	1,709	884	16,319	509,346	107,831
10	343,199	511,529	6,120	9,720	32,763	4,584	445,976	1,500	2,749	8,117	531,702	81,142	
11	181,026,247	378,189,429	1,007,485	5,432,504	14,601,901	1,483,207	342,490,800	105,663	519,147	230,732	12,255,870	389,594,906	45,618,899
12	8,057,732	45,920,846	185,508	504,826	2,160,644	205,108	41,780,866	26,149	84,963	6,469	975,513	47,289,469	5,303,495
13	12,361,560	57,528,943	233,927	420,919	2,190,101	355,878	52,771,498	29,765	43,304	1,484,451	59,045,232	6,917,856	
14	37,860,081	159,989,169	319,343	1,477,714	5,802,083	704,087	146,881,903	2,175	415,956	10,077	4,255,831	185,360,516	17,714,526
15	1,268,876	6,179,132	35,360	28,805	281,325	36,478	5,709,380	1,844	12,093	106,847	6,588,077	822,219	
16	506,650	217,790	10,700	6,596	67,589	24,018	74,187	780	8,024	25,896	276,454	178,249	
17	196,648	889,119	12,566	8,838	57,634	6,452	778,595	2,472	1,370	756	20,436	956,955	171,908
18	3,807,576	12,853,406	98,278	109,916	603,512	131,855	11,371,261	13,730	16,396	452,018	13,682,951	2,180,335	
19	15,547,180	42,124,655	144,337	343,683	1,837,106	231,950	38,654,189	66,095	106,718	750,517	44,402,972	5,516,833	
20	3,584,247	12,632,575	56,818	95,400	481,245	59,329	11,006,496	2,872	18,630	311,785	13,435,114	1,769,289	
21	7,881,017	24,328,914	92,804	417,404	1,128,869	190,034	21,966,249	7,157	44,569	450	481,318	26,753,697	3,597,414
22	18,780,840	78,268,807	225,120	619,647	2,672,620	303,710	71,834,554	18,953	35,161	2,499,042	79,581,294	7,383,030	
23	482,955	2,012,875	26,640	39,591	91,658	13,785	1,767,250	19,010	3,965	52,076	2,053,609	272,574	
24	19,413,614	87,072,883	174,533	1,245,471	3,372,439	562,777	77,795,101	128,877	74,859	1,800	3,717,526	92,305,484	13,947,606
25	62,482	186,527	2,352	4,216	14,216	2,671	161,841	400	609	4,538	199,221	34,709	
26	8,181,551	36,575,130	205,873	426,761	1,280,317	166,444	33,573,140	88,851	47,405	68,589	711,750	37,583,395	3,843,811
27	34,535,822	120,932,634	547,403	1,142,417	4,387,005	507,208	109,661,026	239,879	243,827	23,575	4,180,794	127,130,051	16,961,817
28	12,398,091	48,174,845	279,518	407,343	1,856,502	224,429	44,122,733	21,769	74,172	7,750	1,180,629	50,894,100	6,456,938
29	280,152	842,866	7,700	10,408	42,777	6,679	742,143	4,195	1,602	6	27,396	889,237	140,415
30	2,481,137	5,636,593	29,423	94,803	280,104	57,209	4,957,637	16,834	8,531	192,052	5,879,615	864,769	
31	13,504,379	49,153,005	348,681	513,279	1,936,965	239,663	44,605,384	112,672	63,602	29,005	1,254,154	51,850,936	7,005,889
32	593,467	3,005,225	38,072	14,733	121,726	11,637	2,782,719	6,266	2,328	27,844	3,156,308	361,952	
33	2,510,295	1,896,084	31,270	29,736	140,275	33,110	1,577,000	2,904	8,801	1,750	70,248	2,055,719	440,009
34	12,438,479	40,949,067	98,780	599,029	1,901,674	338,795	37,020,990	115,762	43,340	780,737	42,529,740	5,119,961	
35	564,466	1,534,639	19,565	18,399	76,671	17,742	1,309,032	3,624	4,464	85,122	1,600,446	303,652	
36	2,280,799	4,308,501	45,685	38,943	117,684	23,663	4,033,490	7,140	7,130	34,766	4,600,630	543,477	
37	5,103,334	15,009,578	107,020	128,379	574,839	81,946	13,678,036	7,849	23,874	409,635	15,653,998	1,894,016	
38	1,115,912	3,627,819	16,500	22,394	123,366	20,193	3,304,634	1,380	4,965	74,377	3,763,888	379,061	
39	6,629,094	26,843,283	114,105	271,467	1,041,772	130,361	23,273,134	31,660	23,894	10,000	947,550	27,216,864	3,813,429
40	873,060	1,546,606	18,000	29,619	123,261	18,865	1,286,705	16,440	2,367	50,839	1,657,168	351,598	

\* All other states embrace: Nevada, 2 establishments; North Carolina, 2; South Carolina, 2; South Dakota, 1; Vermont, 2; Wyoming, 1.

This page was intentionally left blank.

---

---

BUTTER, CHEESE, AND  
CONDENSED MILK

---

---

This page was intentionally left blank.

# THE BUTTER, CHEESE, AND CONDENSED MILK INDUSTRY.

## GENERAL STATISTICS.

The manufacture of butter, cheese, and condensed milk is treated in this report as a single industry, but tables are presented giving most of the important statistics for each of the three branches separately. The general statistics shown for each branch represent the complete returns of those establishments reporting the designated commodity as their product of chief value. The value of products shown for the butter-making branch of the industry, for example, may include the value of cheese or condensed milk manufactured incidentally in factories engaged primarily in the manufacture of butter. Tables 22 to 25, however, show the total quantity of butter, cheese, and condensed milk manufactured by all establishments in the industry.

Factories of considerable size are sometimes operated as adjuncts to farms, but such factories are considered a part of the farm equipment and are covered by the census of agriculture rather than by that of manufactures. The present report is therefore confined to establishments operated independently of farming activities. In Table 4, however, the combined production of butter and cheese on farms and in the factories covered by the census of manufactures is shown. This represents approximately the total output of butter and cheese for the United States.

Skimming or separating stations operated in connection with a butter factory are counted as a part of that factory. Independent separating stations, a small number of which are included among the establishments shown for 1899, have not been included at any later census. Enterprises engaged primarily in the buying and selling of milk and cream, but manufacturing small quantities of butter or cheese incidentally from surplus stock, were likewise excluded from the canvass for 1904 and 1909.

In many cases a number of factories or creameries situated in different localities but operated under the same management have been reported as a single establishment. Where factories so operated were situated in different states, however, separate reports were secured for those in each state; and separate reports were likewise secured for any factories located in a city of 10,000 inhabitants or over. (See Introduction.)

**Summary for the three branches of the industry.**—Table 1 presents a summary of the statistics of the butter, cheese, and condensed milk industry for the United States as a whole for 1909. It distinguishes

three classes of factories, namely, those engaged primarily in the manufacture of butter, of cheese, and of condensed milk.

Table 1	Total for the industry.	ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF—		
		Butter.	Cheese.	Condensed milk.
Number of establishments...	8,479	4,788	3,560	136
Persons engaged in the industry.....	31,506	19,380	7,164	4,962
Proprietors and firm members.....	8,019	3,855	4,148	16
Salaried employees.....	5,056	3,962	312	782
Wage earners (average number).....	18,431	11,563	2,704	4,164
Primary horsepower.....	101,349	78,123	11,638	11,588
Capital.....	\$71,283,615	\$43,017,467	\$9,028,906	\$19,237,242
Expenses.....	258,698,374	184,716,890	41,341,269	32,640,115
Services.....	14,671,932	9,691,151	1,825,270	3,155,511
Salaries.....	3,590,624	2,449,898	155,408	985,318
Wages.....	11,081,308	7,241,253	1,669,862	2,170,193
Materials.....	235,546,064	160,646,441	39,021,766	26,877,857
Miscellaneous.....	8,480,378	5,379,398	494,233	2,606,747
Value of products.....	274,557,718	194,999,198	44,263,177	35,295,343
Value added by manufacture (value of products less cost of materials).....	39,011,654	25,352,757	5,241,411	8,417,486

Of the 8,479 establishments engaged in the industry in 1909, 56.4 per cent reported butter as their product of chief value, 42 per cent cheese, and 1.6 per cent condensed milk. Of the total value of products shown for the combined industry, the butter factories contributed \$194,999,198, or 71 per cent; the cheese factories \$44,263,177, or 16.1 per cent; and the condensed milk factories \$35,295,343, or 12.9 per cent.

In this industry the cost of materials constitutes a very large proportion of the total value of products, the processes of manufacture being relatively simple and inexpensive. The cost of the materials used in 1909 was \$235,546,064, forming 85.8 per cent of the value of products, while the value added by manufacture (that is, the value of products less the cost of materials) was only \$39,011,654. The factories of the industry gave employment to an average of 31,506 persons during 1909, and paid out in salaries and wages a total of \$14,671,932. Of the persons engaged in the industry, 18,431 were wage earners, 5,056 were salaried employees, and 8,019 were proprietors and firm members.

The distribution of the establishments in the industry in 1909, according to the kind of products made, is shown in Table 2.

Of the total number of establishments in the industry in 1909, 7,965, or 93.9 per cent, were engaged exclusively in the manufacture of one of the three main products of the industry, and these reported

the bulk of the respective products. The establishments which manufactured more than one of these products had an output of 29,739,917 pounds of butter, or 4.8 per cent of the total production; 52,147,520 pounds of cheese, or 16.8 per cent of the total; and 72,654,628 pounds of condensed milk, or 14.7 per cent of the total.

PRODUCT.	Number of establishments.
Total.....	8,479
Butter only.....	4,612
Cheese only.....	3,254
Condensed milk only.....	99
Butter and cheese.....	452
Butter, cheese, and condensed milk.....	9
Butter and condensed milk.....	44
Cheese and condensed milk.....	9

Comparison with earlier censuses for the industry as a whole.—Table 3 summarizes the statistics of the butter, cheese, and condensed milk industry for each census from 1879 to 1909, inclusive.

Comparative figures for the industry as a whole are not available for any date prior to 1879, nor does it appear that all three branches of the industry had taken definite form much before that time. The census reports for 1849 gave statistics for 8 factories in Ohio engaged in the manufacture of cheese and reporting

products valued at \$67,210, and the reports for 1859 presented statistics for 2 cheese factories, with products valued at \$13,400. The census of 1869 showed 1,313 cheese factories, with products valued at \$16,771,665, but it was not until 1879 that the manufacture of butter as a factory industry was noted in the census reports. One establishment engaged in the manufacture of condensed milk, with products valued at \$48,000, was reported for 1859, but no statistics for the production of this commodity appear in the reports for 1869. At the census of 1879, however, the production of condensed milk to the value of \$1,547,588 was reported. The value of products reported at this census for butter factories was \$3,868,235; for cheese factories, \$13,991,221; and for factories making both butter and skim-milk cheese, \$6,335,466, about \$3,000,000 of this amount representing the value of the butter produced by these factories.

The value of products reported for the butter, cheese, and condensed milk industry as a whole was nearly eleven times as great in 1909 as in 1879. Some of this increase, however, may be accounted for by the increase in the price of all kinds of dairy products. The relative increase in the cost of materials was greater than that in the value of products.

	Number or amount.					Per cent of increase. <sup>1</sup>				
	1909	1904	1899	1889	1879	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889
	Number of establishments.....	8,479	8,926	9,242	4,552	3,932	-8.3	-5.0	-3.4	103.0	15.8
Persons engaged in the industry.....	31,506	25,865	22,604	(3)	(3)	30.4	21.8	14.4	.....	.....
Proprietors and firm members.....	8,019	6,801	6,987	(3)	(3)	14.8	17.9	-2.7	.....	.....
Salaried employees.....	5,056	3,507	2,818	(3)	(3)	70.4	44.2	24.4	.....	.....
Wage earners (average number).....	18,431	15,557	12,799	12,219	7,903	44.0	18.5	21.6	4.7	( <sup>2</sup> )
Primary horsepower.....	101,349	93,845	88,082	25,526	(3)	15.1	8.0	6.6	245.0	.....
Capital.....	\$71,283,615	\$47,255,556	\$36,303,164	\$16,016,573	\$9,804,803	98.4	50.8	30.2	126.7	66.8
Expenses.....	258,688,374	156,783,579	117,473,263	55,749,260	(3)	120.2	65.0	33.5	110.7	.....
Services.....	14,671,932	9,789,034	7,057,273	5,116,005	1,546,495	107.0	49.9	38.7	37.9	230.8
Salaries.....	3,590,624	1,376,097	911,712	(3)	(3)	293.8	160.9	50.9	.....	.....
Wages.....	11,081,305	8,412,937	6,145,561	(3)	(3)	80.3	31.7	36.9	.....	.....
Materials.....	235,546,064	142,920,277	108,841,200	49,819,301	18,363,570	116.4	64.8	31.3	118.6	171.3
Miscellaneous.....	8,480,378	4,074,268	1,574,790	813,954	(2)	438.5	108.1	158.7	93.5	.....
Value of products.....	274,557,718	168,182,789	130,733,349	69,635,705	25,742,510	109.9	63.2	28.6	115.7	135.5
Value added by manufacture (value of products less cost of materials).....	30,011,654	25,282,512	21,942,149	10,816,404	7,378,931	77.8	54.4	15.1	102.9	46.6

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted comparable figures can not be given.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Percentage omitted because figures are not strictly comparable.

Comparative statistics for the three branches of the industry: 1909 and 1904.—The more important statistics for the three branches of the industry (butter making, cheese making, and the manufacture of condensed milk), as reported at the censuses of 1909 and 1904, are given in Table 4. Complete statistics for these branches are not available for any earlier census.

The number of establishments manufacturing condensed milk as their only product or their product of chief value increased 67.9 per cent from 1904 to 1909, while the number of establishments engaged exclu-

sively or primarily in the manufacture of butter decreased 8.6 per cent, and the number making cheese as their chief or only product decreased 1.4 per cent. In value of products an increase is shown for each class of establishments, the percentages being 64.5 for the butter factories, 51.9 for the cheese factories, and 72 for the condensed milk factories.

It is probable that the greater percentage of increase shown for condensed milk factories as compared with butter and cheese factories is due largely to the fact that the condensed milk branch of the industry is of more recent development.

**Table 4**

ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF—

	Butter.		Per cent of increase: <sup>1</sup> 1904-1909	Cheese.		Per cent of increase: <sup>1</sup> 1901-1909	Condensed milk.		Per cent of increase: <sup>1</sup> 1904-1909
	Number or amount.			Number or amount.			Number or amount.		
	1909	1904		1909	1904		1909	1904	
Number of establishments.....	4,783	5,235	-8.6	3,560	3,610	-1.4	136	81	67.9
Persons engaged in the industry.....	19,380	16,044	20.8	7,164	6,118	17.1	4,902	3,703	34.0
Proprietors and firm members.....	3,855	3,497	10.2	4,148	3,289	26.1	16	15	6.7
Salaried employees.....	3,962	3,017	31.3	312	177	76.3	782	313	149.8
Wage earners (average number).....	11,563	9,530	21.3	2,704	2,652	2.0	4,164	3,375	23.4
Primary horsepower.....	78,123	77,523	0.8	11,638	10,366	12.3	11,583	5,956	94.6
Capital.....	\$43,017,467	\$30,080,419	43.0	\$9,028,906	\$6,232,182	44.9	\$19,237,242	\$10,042,055	75.8
Expenses.....	184,710,990	110,483,899	67.2	41,341,269	27,199,276	52.5	32,640,115	19,190,404	70.1
Services.....	9,091,151	6,381,941	51.0	1,825,270	1,530,602	19.3	3,155,511	1,876,491	68.2
Salaries.....	2,440,898	976,069	151.0	155,408	36,696	323.5	3,985,318	3,693,332	171.2
Wages.....	7,241,253	5,405,872	34.0	1,669,862	1,493,906	11.8	2,170,193	1,513,150	43.4
Materials.....	169,646,441	101,290,711	67.5	39,021,766	25,256,612	54.5	26,877,857	16,372,054	64.2
Miscellaneous.....	5,379,398	2,811,247	91.4	464,233	322,062	53.5	2,696,747	940,859	177.0
Value of products.....	194,999,198	118,520,999	64.5	44,269,177	29,138,100	51.9	35,295,343	20,523,690	72.0
Value added by manufacture (value of products less cost of materials).....	25,352,757	17,230,288	47.1	5,241,411	3,881,488	35.0	8,417,486	4,150,736	102.8

<sup>1</sup> A minus sign (-) denotes decrease.

Table 5 shows the total quantity of butter and cheese produced in the factories of the butter, cheese, and condensed milk industry and on farms in 1909 and 1899.

**Table 5**

PRODUCTION (POUNDS).

PRODUCT.	1909		1899		Per cent of total.	
					1909	1899
	1909	1899	1909	1899		
<b>Butter</b> .....	1,619,415,263	1,491,752,602	100.0	100.0		
Factory product.....	624,764,653	420,126,546	38.6	28.2		
Farm product.....	994,650,610	1,071,626,056	61.4	71.8		
<b>Cheese</b> .....	320,532,181	298,344,642	100.0	100.0		
Factory product.....	311,126,317	281,972,324	97.1	94.5		
Farm product.....	9,405,864	16,372,318	2.9	5.5		

<sup>1</sup> In addition, 2,381,212 pounds of butter were produced in establishments engaged primarily in the manufacture of products other than butter, cheese, or condensed milk.

<sup>2</sup> In addition, 49,413 pounds of cheese were produced in establishments engaged primarily in the manufacture of products other than butter, cheese, or condensed milk.

In 1909 the combined production of butter in the factories of the butter, cheese, and condensed milk industry and on farms, in the United States, amounted to 1,619,415,263 pounds, an increase of 127,662,661 pounds, or 8.6 per cent over the production in 1899. During the decade the output of the factories increased 204,638,107 pounds, or 48.7 per cent, and the production on farms decreased 76,975,446 pounds, or 7.2 per cent.<sup>1</sup> At both censuses the production of butter on farms greatly exceeded the factory output, but the proportion which it formed of the combined total decreased from 71.8 per cent in 1899 to 61.4 per cent in 1909.

The quantity of cheese produced in the United States in the factories of the industry and on farms during 1909 amounted to 320,532,181 pounds, an

<sup>1</sup> It is possible that the comparison of farm production of butter for the two censuses is misleading. The figures published for 1899 included certain estimated quantities to cover the production of farms with incomplete reports, but no such estimates were made for 1909, the figures representing only the quantities actually reported.

increase of 22,187,539 pounds, or 7.4 per cent, over the production in 1899. The production in the factories engaged in the industry increased 29,153,993 pounds, or 10.3 per cent, between 1899 and 1909, and the production on farms decreased 6,966,454 pounds, or 42.6 per cent. At both censuses the quantity made in factories was many times greater than the quantity made on farms, and the proportion which it formed of the combined total increased from 94.5 per cent in 1899 to 97.1 per cent in 1909.

**Summary, by states.**—The butter, cheese, and condensed milk industry as a whole is well distributed throughout the country, with establishments in 43 of the 48 states. Table 6 presents the more important statistics for the industry by states, the states being arranged according to the value of products reported for 1909.

The diagram on the following page shows graphically the value of products reported for the leading states in 1909 and 1899, and the map the value of products reported for each state in 1909.

In determining the rank of the states, as shown in Table 6, all states are considered, regardless of whether or not they are shown separately in the table; hence some omissions occur in the several series of numbers indicating rank, as certain states included under "all other states" held a higher rank in some items than some of the states for which separate figures are given.

In 1909 Wisconsin was the most important state in the combined industry as measured by value of products, having displaced New York, which had previously ranked first. In average number of wage earners and value added by manufacture, however, New York still held first place in 1909 and Wisconsin ranked second, but the percentages of increase for the decade in these items, as well as in the value of products, were less for New York than for Wisconsin. Iowa ranked third as regards value of products in 1909. Minnesota, which shows an increase of 96.5 per

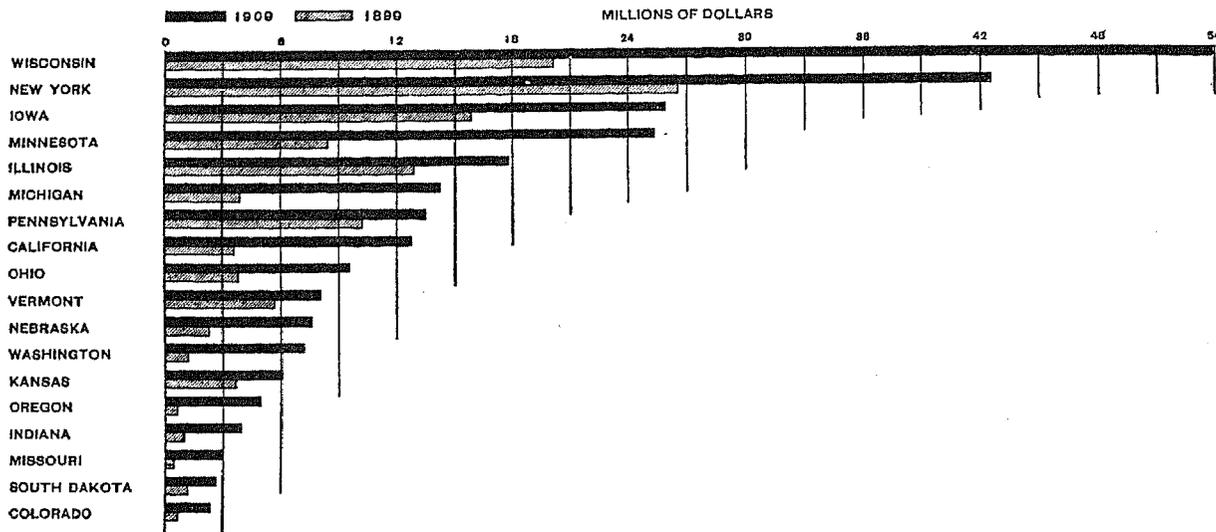
MANUFACTURES.

cent in value of products for the five-year period, advanced from fifth place in 1904 to fourth in 1909, having exchanged positions with Illinois, which shows a gain of only 34.1 per cent for this period.

Among the 13 states which reported products for 1909 valued at more than \$5,000,000, the following show very large percentages of increase in value of products for the decade 1899-1909: Washington (511),

Michigan (264.6), California (256.2), Nebraska (240.8), Minnesota (198.2), Wisconsin (167.6), and Ohio (154.4). Much higher percentages are shown for a number of other states, most of which, however, reported only a small proportion of the total value of products even in 1909. The states showing the highest percentages of increase were North Dakota (743.4), Oregon (670), Idaho (662.1), and Missouri (585).

BUTTER, CHEESE, AND CONDENSED MILK—VALUE OF PRODUCTS, FOR LEADING STATES: 1909 AND 1899.



BUTTER, CHEESE, AND CONDENSED MILK—VALUE OF PRODUCTS, BY STATES: 1909.

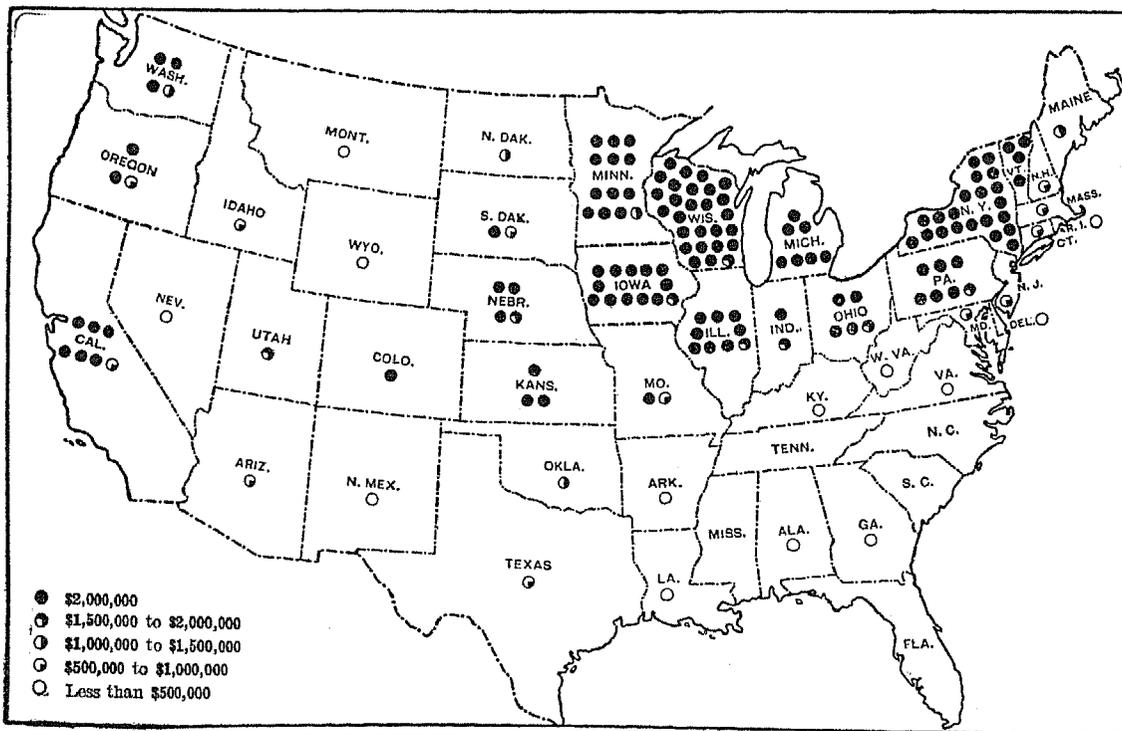


Table 6

BUTTER, CHEESE, AND CONDENSED MILK INDUSTRY.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Rank. 1909 1904	Amount: 1909	Per cent of total: 1909	Rank. 1909 1904	Amount: 1909	Per cent of total: 1909	Rank. 1909 1904	Wage earners.			Value of products.			Value added by manufacture.		
											1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
United States..	8,479	18,431	100.0		\$274,557,718	100.0		\$39,011,654	100.0		44.0	18.5	21.5	109.9	63.2	28.6	77.8	54.4	15.1
Wisconsin.....	2,630	2,863	15.5	2	53,843,249	10.6	1	5,837,619	15.0	2	60.8	24.6	29.1	167.6	79.5	49.1	67.0	62.6	2.7
New York.....	1,552	2,866	15.5	1	42,458,345	15.5	2	6,207,278	16.1	1	17.5	-0.1	17.6	59.9	36.7	16.9	54.7	48.0	4.5
Iowa.....	512	1,231	6.7	4	25,849,866	9.4	3	3,005,236	7.7	4	8.6			63.1			28.3		
Minnesota.....	784	1,184	6.4	5	25,287,462	9.2	4	2,579,989	6.6	5	60.0	13.7	40.7	198.2	96.5	51.8	99.8	49.0	34.1
Illinois.....	295	1,732	9.4	3	17,798,278	6.5	5	3,531,357	9.1	3	16.8	-0.2	17.0	38.2	34.1	3.1	31.8	37.5	-4.2
Michigan.....	435	1,073	5.8	7	14,287,499	5.2	6	1,910,697	4.9	7	113.3	22.6	74.0	264.6	74.0	109.5	196.1	61.6	83.3
Pennsylvania.....	536	1,177	6.4	6	13,544,065	4.9	7	1,899,675	4.8	8	20.6	-3.4	24.8	31.0	17.0	12.5	18.5	-2.9	22.0
California.....	161	597	3.2	10	12,760,670	4.6	8	1,620,970	4.2	9	48.5	-1.0	50.0	256.2	63.2	118.3	169.3	10.1	126.1
Ohio.....	325	1,067	5.8	8	9,689,670	3.5	9	1,044,234	5.1	6	174.3	118.6	25.4	154.4	111.0	20.6	165.9	132.1	14.6
Vermont.....	186	519	2.8	11	8,112,379	3.0	10	1,056,425	2.7	13	-0.6			43.4			37.0		
Nebraska.....	37	383	2.1	14	7,681,272	2.8	11	1,246,526	3.2	11	15.0	51.4	-24.0	240.8	130.9	47.6	211.5	90.5	63.5
Washington.....	97	735	4.0	9	7,271,047	2.7	12	1,594,856	4.1	10	403.4	96.5	156.2	511.0	142.9	151.5	518.2	165.4	132.9
Kansas.....	60	348	1.9	15	6,070,634	2.2	13	1,120,121	2.9	12	-11.9	-15.9	4.8	66.2	53.9	8.0	89.5	62.3	16.8
Oregon.....	95	420	2.3	13	4,920,402	1.8	14	968,242	2.5	14				670.0			644.6		
Indiana.....	132	488	2.0	12	3,958,800	1.4	15	762,469	2.0	15	313.6			325.7			248.4		
Missouri.....	56	159	0.9	18	2,658,818	1.1	16	459,802	1.2	16		7.4		585.0	125.2	204.2	346.6	63.7	172.8
South Dakota.....	95	139	0.8	19	2,685,511	1.0	17	377,478	1.0	18	-6.1	-27.6	29.7	124.0	23.0	82.1	94.8	8.0	80.4
Colorado.....	39	210	1.1	17	2,339,765	0.9	18	416,163	1.1	17				278.6			183.0		
Utah.....	37	214	1.2	16	1,071,031	0.7	19	358,079	0.9	19				170.0			118.3		
Maine.....	29	96	0.5	22	1,301,027	0.5	20	193,617	0.5	22	-40.7			-24.7			-37.8		
Oklahoma.....	19	62	0.3	26	1,149,545	0.4	21	221,245	0.6	20									
North Dakota.....	68	62	0.3	26	1,029,135	0.4	22	137,806	0.3	24				743.4	83.1	360.7			
Idaho.....	18	118	0.6	20	884,066	0.3	23	203,475	0.5	21				662.1	414.0	48.3			
New Hampshire.....	29	50	0.3	29	807,164	0.3	24	98,599	0.3	30	-58.0			-45.0			-59.5		
New Jersey.....	20	73	0.4	24	793,423	0.3	25	123,699	0.3	27				30.0			0.8		
Connecticut.....	30	105	0.6	21	745,450	0.3	26	122,338	0.3	28	-36.7		-42.8	-31.9	-8.6	-25.5	-42.5	-15.9	-31.6
Massachusetts.....	24	56	0.3	28	664,119	0.2	27	115,874	0.3	29				-44.6	-24.3	-26.8	-32.0		-43.4
Texas.....	30	84	0.5	23	660,432	0.2	28	130,730	0.3	25									
Maryland.....	44	69	0.4	25	653,702	0.2	29	129,768	0.3	29	-38.9		-29.2	-5.8	26.0	-25.2	-4.4	8.3	-11.8
Arizona.....	11	58	0.3	27	538,427	0.2	30	150,337	0.4	23				263.5	101.5	80.4			
Montana.....	20	29	0.2	31	418,020	0.2	31	64,747	0.2	32									
Nevada.....	9	16	0.1	33	325,755	0.1	32	36,882	0.1	35				120.3	65.5	33.1			
Kentucky.....	13	50	0.3	28	275,389	0.1	33	79,990	0.2	31									
Wyoming.....	4	20	0.1	32	208,862	0.1	34	57,542	0.1	33					130.0				
Delaware.....	10	32	0.2	30	203,091	0.1	35	52,533	0.1	34						4.3			
Arkansas.....	9	13	0.1	34	131,235	(?)	36	25,850	0.1	36									
Virginia.....	11	16	0.1	33	67,457	(?)	37	13,637	(?)	37									
Georgia.....	4	4	(?)	35	23,171	(?)	39	4,752	(?)	39									
All other states.....	7	7	(?)		68,265	(?)		18,608	(?)										

<sup>1</sup> Percentages are based on figures in Table 26. A minus sign (-) denotes decrease. Percentages are not shown where base is less than 100 for wage earners or less than \$100,000 for value of products or value added by manufacture, or where comparable figures can not be given without disclosing individual operations.

<sup>2</sup> Less than one-tenth of 1 per cent.

Persons engaged in the industry.—Table 7 shows for 1909 the number of persons engaged in the butter, cheese, and condensed milk industry as a whole and in each of the three branches, classified according to occupational status, sex, and age. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in the industry in 1909 was 31,506, of whom 19,380 were reported by the butter factories, 7,164 by the cheese factories, and 4,962 by the condensed milk factories. Of the total number of persons engaged in the combined industry, 18,431, or 58.5 per cent, were wage earners; 10,480, or 33.3 per cent, were proprietors and officials; and 2,595, or 8.2 per cent, were clerks or other subordinate salaried

employees. Of the total number, 29,095, or 92.3 per cent, were males, and 2,411, or 7.7 per cent, females.

The average number of female wage earners employed in 1909 was 1,420, of whom 987, or 69.5 per cent, were in the condensed milk factories. Females formed 23.7 per cent of the total number of wage earners in this branch of the industry, as compared with 3.2 per cent in the butter factories and 2.2 per cent in the cheese factories.

The average number of wage earners employed in the industry, by states, is given in Table 26 for 1909, 1904, and 1899. The distribution by age and sex of the average number of wage earners employed during the year 1909 is not shown for the individual states, but Table 27 gives, by states, such a distribution of the number employed on December 15, or the nearest representative day.

	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
<b>Butter, cheese, and condensed milk.....</b>	<b>31,506</b>	<b>29,095</b>	<b>2,411</b>
Proprietors and officials.....	10,480	10,336	144
Proprietors and firm members.....	8,019	7,901	118
Salaried officers of corporations.....	1,032	1,014	18
Superintendents and managers.....	1,429	1,421	8
Clerks.....	2,595	1,748	847
Wage earners (average number).....	18,431	17,011	1,420
16 years of age and over.....	18,324	16,924	1,400
Under 16 years of age.....	107	87	20
<b>Butter.....</b>	<b>19,380</b>	<b>18,244</b>	<b>1,136</b>
Proprietors and officials.....	5,965	5,883	83
Proprietors and firm members.....	3,855	3,796	59
Salaried officers of corporations.....	905	889	16
Superintendents and managers.....	1,205	1,198	8
Clerks.....	1,851	1,172	679
Wage earners (average number).....	11,563	11,189	374
16 years of age and over.....	11,523	11,154	369
Under 16 years of age.....	40	35	5
<b>Cheese.....</b>	<b>7,164</b>	<b>7,018</b>	<b>146</b>
Proprietors and officials.....	4,299	4,238	61
Proprietors and firm members.....	4,143	4,089	59
Salaried officers of corporations.....	64	62	2
Superintendents and managers.....	87	87	.....
Clerks.....	161	135	26
Wage earners (average number).....	2,704	2,645	59
16 years of age and over.....	2,686	2,627	59
Under 16 years of age.....	18	18	.....
<b>Condensed milk.....</b>	<b>4,962</b>	<b>3,833</b>	<b>1,129</b>
Proprietors and officials.....	215	215	.....
Proprietors and firm members.....	16	16	.....
Salaried officers of corporations.....	63	63	.....
Superintendents and managers.....	136	136	.....
Clerks.....	583	441	142
Wage earners (average number).....	4,164	3,177	987
16 years of age and over.....	4,115	3,143	972
Under 16 years of age.....	49	34	15

In order to compare the distribution of persons engaged in the industry according to occupational status in 1909 with that shown at the census of 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 8.

CLASS.	1909		1904		Per cent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
<b>Total.....</b>	<b>31,506</b>	<b>100.0</b>	<b>25,865</b>	<b>100.0</b>	<b>21.8</b>
Proprietors and firm members.....	8,019	25.5	6,801	26.3	17.9
Salaried employees.....	5,056	16.0	3,507	13.6	44.2
Wage earners (average number).....	18,431	58.5	15,557	60.1	18.5

Salaried employees show the greatest percentage of increase, and constitute the only class forming a larger proportion of the total in 1909 than in 1904.

Table 9 shows the average number of wage earners in the industry, distributed according to age, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. (See Introduction.)

CLASS.	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
16 years of age and over..	18,324	99.4	15,441	99.3	12,678	99.1
Male.....	16,924	91.8	14,036	90.2	11,637	90.9
Female.....	1,400	7.6	1,405	9.0	1,041	8.1
Under 16 years of age....	107	0.6	116	0.7	121	0.9

In 1909 the proportion of males 16 years of age and over in the average number of wage earners was somewhat greater than in 1904 or 1899, while the proportions of females 16 years of age and over and of children under 16 years of age were slightly lower than in the two earlier years.

Wage earners employed, by months.—Table 10 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each month during the year 1909 for the 11 states in which an average of 500 or more wage earners were employed during the year.

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
		<b>United States.....</b>	<b>18,431</b>	<b>15,121</b>	<b>15,239</b>	<b>15,978</b>	<b>18,059</b>	<b>20,262</b>	<b>21,313</b>	<b>21,392</b>	<b>20,934</b>	<b>20,065</b>	<b>18,902</b>	17,571	16,343
California.....	597	<i>525</i>	529	561	604	632	629	624	622	612	608	603	612
Illinois.....	1,732	1,661	1,685	1,710	1,739	1,818	1,867	1,813	1,770	1,710	1,708	1,673	1,627
Iowa.....	1,231	<i>1,060</i>	1,069	1,084	1,174	1,285	1,405	1,453	1,427	1,345	1,225	1,140	1,084
Michigan.....	1,073	966	<i>949</i>	968	1,060	1,139	1,179	1,179	1,161	1,123	1,066	1,055	1,028
Minnesota.....	1,184	<i>1,025</i>	1,031	1,048	1,133	1,255	1,356	1,372	1,342	1,268	1,178	1,115	1,083
New York.....	2,866	<i>2,065</i>	2,071	2,259	2,972	3,409	<b>3,538</b>	3,531	3,397	3,214	3,038	2,636	2,223
Ohio.....	1,067	878	<i>870</i>	885	1,002	1,189	1,215	1,222	1,232	1,229	1,150	1,001	925
Pennsylvania.....	1,177	1,035	<i>1,024</i>	1,039	1,168	1,283	1,335	1,336	1,316	1,253	1,191	1,099	1,040
Vermont.....	519	429	<i>428</i>	451	507	553	532	620	592	576	536	485	460
Washington.....	735	<i>603</i>	657	706	764	843	<b>884</b>	838	783	762	703	659	618
Wisconsin.....	2,863	<i>2,015</i>	2,030	2,257	2,671	3,254	3,413	<b>3,443</b>	3,416	3,303	3,136	2,918	2,494

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

The largest number of wage earners employed in the industry during any month of 1909 was 21,392, in July, and the smallest number 15,121, in January, the minimum number being equal to 70.7 per cent of the maximum. The period of greatest employment in the industry is naturally in the summer months, when milk and cream are most plentiful. In 9 of the 11 leading states for which figures are given in Table 10 the maximum number of wage earners was reported either for June or for July. In 1904 the maximum number, 18,768, were employed in July, and the minimum number, 12,089, in January, the minimum being equal to 64.4 per cent of the maximum. The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for 38 states in Table 27.

**Prevailing hours of labor.**—In Table 11 the wage earners in the butter, cheese, and condensed milk factories in 1909 have been classified according to the hours of labor prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment is classified as a total according to the hours prevailing in the establishment, even though some employees worked a greater or less number of hours. Separate figures are given for each state in which an average of 500 or more wage earners were employed.

**Table 11** AVERAGE NUMBER OF WAGE EARNERS IN THE BUTTER, CHEESE, AND CONDENSED MILK INDUSTRY: 1909

STATE.	In establishments with prevailing hours—							
	Total.	48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States.....	18,431	1,798	228	1,020	1,254	6,379	6,825	932
California.....	597	58	11	56	85	120	244	23
Illinois.....	1,732	131	9	59	40	495	992	6
Iowa.....	1,231	173	12	123	60	597	179	87
Michigan.....	1,073	145	13	27	44	750	68	26
Minnesota.....	1,184	245	4	114	40	692	43	46
New York.....	2,866	169	63	98	398	608	1,436	94
Ohio.....	1,067	64	9	27	58	401	470	38
Pennsylvania.....	1,177	131	49	75	156	337	411	18
Vermont.....	519	31	14	28	29	134	250	33
Washington.....	735	31	.....	87	16	181	415	5
Wisconsin.....	2,863	251	22	68	192	766	1,103	461

Of the wage earners employed in the industry in 1909, more than three-fourths (76.7 per cent) were employed in establishments where the prevailing hours of labor per week were 60 or more. Only 5.1 per cent of the total number were employed in establishments where the prevailing hours were 72 or over, however; and 9.7 per cent were in establishments where the prevailing hours were 48 or less per week. Of the seven groups into which the establishments in the industry are here classified, the one made up of establishments where the prevailing hours of labor per week were between 60 and 72 employed the largest

number of wage earners (6,825, or 37 per cent of the total number), though the group comprising establishments where the prevailing hours were 60 per week employed almost as many (6,379, or 34.6 per cent of the total). The group in which the prevailing hours per week were between 60 and 72 was the most important in point of number of wage earners employed in 8 of the 11 states for which figures are given in the table.

**Character of ownership.**—Table 12 presents data with respect to the character of ownership, or legal organization, of the establishments in the butter, cheese, and condensed milk industry for 1909 and 1904.

CHARACTER OF OWNERSHIP.	Number of establishments.		Value of products.	
	1909	1904	1909	1904
	<b>Total.....</b>	<b>8,479</b>	<b>8,928</b>	<b>\$274,557,718</b>	$168,182,789
Individual.....	3,370	3,817	61,432,341	43,019,439
Firm.....	1,021	1,291	26,997,945	22,053,536
Corporation.....	1,313	1,385	113,493,555	61,309,538
Cooperative association.....	2,775	2,433	72,633,877	40,300,276
<b>Per cent of total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Individual.....	39.7	42.8	22.4	25.1
Firm.....	12.0	14.5	9.8	13.5
Corporation.....	15.5	15.5	41.3	36.5
Cooperative association.....	32.7	27.3	26.5	24.0

<sup>1</sup> Includes 1 establishment owned by the state of Wisconsin.

Of the total number of establishments reported for the industry, both in 1909 and in 1904, 15.5 per cent were under corporate ownership. While corporations thus controlled a comparatively small percentage of the total number of establishments, the value of the products of these establishments represented 41.3 per cent of the total for the industry in 1909 and 36.5 per cent in 1904. It is probable that in the case of some of the establishments for which the cooperative form of ownership was reported the controlling association was actually incorporated, but it is impracticable to determine the number of corporations thus included among the cooperative associations. Cooperative associations, as reported, controlled 32.7 per cent of the establishments engaged in the industry in 1909, as compared with 27.3 per cent in 1904, and reported 26.5 per cent of the total value of products in 1909 and 24 per cent in 1904. This form of ownership has increased in importance in those branches of the industry devoted to the manufacture of butter and cheese, but no cooperative associations were reported for the condensed milk branch of the industry. (See Table 14.)

Establishments controlled by firms formed only 12 per cent of the total number in the industry in 1909, and reported only 9.8 per cent of the total value of products for that year. The largest group of establishments numerically, both in 1909 and in 1904, was that of establishments under individual ownership, but these contributed in 1909 a smaller percentage of

## MANUFACTURES.

the total value of products than those controlled either by corporations or by cooperative associations and in 1904 a smaller percentage than those controlled by corporations. Between 1904 and 1909 there was a decline in the relative importance of establishments under individual and firm ownership.

Table 13 distributes the establishments in the industry in 1909 according to character of ownership, and shows also for each group the average number of wage earners employed, the value of products, and the value added by manufacture, for each state which employed an average of more than 500 wage earners.

STATE.	Number of establishments owned by—				Wage earners in establishments owned by—				Value of products of establishments owned by—				Value added by manufacture in establishments owned by—			
	Individuals.	Firms.	Corporations.	Co-operative associations.	Individuals.	Firms.	Corporations.	Co-operative associations.	Individuals.	Firms.	Corporations.	Co-operative associations.	Individuals.	Firms.	Corporations.	Co-operative associations.
United States...	3,370	1,021	1,313	2,775	3,418	1,791	9,299	3,923	\$61,432,341	\$26,997,945	\$113,493,555	\$72,633,877	\$7,097,166	\$3,578,677	\$20,936,655	\$7,399,156
California.....	52	28	55	26	155	51	313	78	2,263,798	994,872	7,356,944	2,145,056	351,002	153,344	852,541	263,483
Illinois.....	90	43	84	78	101	83	1,447	101	1,574,475	1,384,527	13,200,456	1,638,820	206,046	177,776	2,941,488	206,047
Iowa.....	105	51	58	298	202	134	407	458	3,371,872	2,239,808	7,737,198	12,500,988	429,710	288,277	1,274,499	1,015,760
Michigan.....	131	84	118	102	189	157	518	209	2,986,902	2,512,295	5,531,195	3,257,107	374,495	385,324	888,520	312,358
Minnesota.....	150	33	46	555	192	34	165	793	4,592,276	946,236	3,957,931	15,791,019	527,638	99,111	446,190	1,507,050
New York.....	893	239	208	212	610	393	1,541	316	12,793,485	5,891,390	18,521,508	5,251,956	1,363,607	749,017	3,673,857	510,797
Ohio.....	87	53	72	113	163	89	701	114	1,592,131	1,144,155	5,874,514	1,078,870	271,005	148,102	1,413,458	171,669
Pennsylvania.....	276	102	52	106	354	242	440	141	4,570,716	2,539,499	4,105,119	2,328,731	567,585	305,769	713,125	223,196
Vermont.....	50	14	22	100	107	38	245	129	1,850,284	596,280	2,953,937	2,711,738	191,583	55,999	572,785	236,058
Washington.....	27	12	40	18	58	26	616	35	787,342	510,173	5,333,026	640,506	114,457	78,413	1,333,994	67,992
Wisconsin.....	1,242	236	283	1,869	769	293	803	1,993	19,332,700	5,056,410	10,438,592	19,015,547	1,737,532	505,050	1,550,258	1,984,770

<sup>1</sup> Includes statistics for 1 establishment under state ownership.

Of the entire number of wage earners reported in 1909 for the industry as a whole, 3,418, or 18.5 per cent of the total, were employed in establishments under individual ownership; 1,791, or 9.7 per cent, in those under firm ownership; 9,299, or 50.5 per cent, in those under corporate ownership; and 3,923, or 21.3 per cent, in those under cooperative ownership (including one state establishment). In 7 of the 11 states for which figures are shown establishments under corporate ownership reported a larger value of products than those under any other form of ownership; in 2 states (Iowa and Minnesota) cooperative establishments reported the largest value of products; and in 2 states (Pennsylvania and Wisconsin) establishments under individual ownership reported the largest amount. Establishments under corporate ownership reported the largest number of wage earners in 8 of the states, and those under cooperative ownership in 3.

Minnesota shows the largest proportion of the total number of establishments and value of products for establishments under cooperative ownership (70.8 per cent and 62.4 per cent, respectively), although Wisconsin shows a larger actual number of cooperative establishments, with a greater value of products. Wisconsin led in value of products for establishments under individual and cooperative ownership in 1909 and New York for those under firm and corporate ownership.

Table 14 presents statistics relating to character of ownership in 1909 for the three branches of the butter, cheese, and condensed milk industry.

Of the establishments in which butter was the product of chief value, those controlled by cooperative associations constituted the most numerous group, but those under corporate ownership reported the largest

proportion of the wage earners and of the total value of products. Among the cheese factories, establishments under individual ownership, and among the condensed milk factories, those under corporate ownership formed the most important class in respect to all the items shown in the table.

	Total.	ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF—		
		Butter.	Cheese.	Condensed milk.
Number of establishments owned by—				
Individuals.....	3,370	1,330	2,095	5
Firms.....	1,021	599	418	4
Corporations.....	1,313	920	266	127
Cooperative associations <sup>1</sup> .....	2,775	1,934	841	.....
Wage earners in establishments owned by—				
Individuals.....	3,418	2,206	1,191	21
Firms.....	1,791	1,353	423	15
Corporations.....	9,299	4,778	393	4,128
Cooperative associations <sup>1</sup> .....	3,923	3,226	697	.....
Value of products of establishments owned by—				
Individuals.....	\$61,432,341	\$35,392,755	\$25,843,379	\$196,207
Firms.....	26,997,945	20,939,354	5,913,025	145,566
Corporations.....	113,493,555	74,597,498	3,942,487	34,953,570
Cooperative associations <sup>1</sup> .....	72,633,877	64,039,591	8,564,286	.....
Value added by manufacture in establishments owned by—				
Individuals.....	7,097,166	4,461,721	2,604,478	30,967
Firms.....	3,578,677	2,779,406	776,741	23,530
Corporations.....	20,936,655	11,936,958	635,708	8,363,989
Cooperative associations <sup>1</sup> .....	7,399,156	6,174,672	1,224,484	.....

<sup>1</sup> Includes figures for 1 butter factory under state ownership.

**Establishments classified according to size.**—Table 15 groups the establishments of the butter, cheese, and condensed milk industry, and of each of its three branches, according to the value of products per establishment in 1909, and shows for each group, for 1909 and 1904, the number of establishments and the value of products, together with the percentage of the respective totals represented by each group.

**Table 15**  
VALUE OF PRODUCTS PER ESTABLISHMENT.

	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
<b>Butter, cheese, and condensed milk.....</b>	<b>8,479</b>	<b>8,928</b>	<b>\$274,557,718</b>	<b>\$168,182,789</b>
Less than \$5,000.....	833	1,885	2,610,549	5,749,775
\$5,000 and less than \$20,000.....	4,262	4,953	49,557,002	52,719,903
\$20,000 and less than \$100,000.....	3,004	1,946	116,551,144	70,725,456
\$100,000 and less than \$1,000,000.....	371	1,142	93,905,110	138,987,655
\$1,000,000 and over.....	9		11,933,893	
<b>Per cent of total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Less than \$5,000.....	9.8	21.1	1.0	3.4
\$5,000 and less than \$20,000.....	50.3	55.5	18.0	31.3
\$20,000 and less than \$100,000.....	35.4	21.8	42.5	42.1
\$100,000 and less than \$1,000,000.....	4.4	11.6	34.2	123.2
\$1,000,000 and over.....	0.1		4.3	
<b>Butter.....</b>	<b>4,784</b>	<b>5,235</b>	<b>\$196,060,072</b>	<b>\$118,520,999</b>
Less than \$5,000.....	302	702	893,459	1,984,697
\$5,000 and less than \$20,000.....	1,686	2,647	21,260,540	31,761,456
\$20,000 and less than \$100,000.....	2,511	1,795	101,615,135	65,181,261
\$100,000 and over.....	1,285	191	172,290,938	119,593,585
<b>Per cent of total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Less than \$5,000.....	6.3	13.4	0.5	1.7
\$5,000 and less than \$20,000.....	35.2	50.6	10.8	26.8
\$20,000 and less than \$100,000.....	52.5	34.3	51.8	55.0
\$100,000 and over.....	6.0	11.7	136.9	116.5
<b>Cheese.....</b>	<b>3,560</b>	<b>3,610</b>	<b>\$44,263,177</b>	<b>\$29,138,100</b>
Less than \$5,000.....	528	1,183	1,708,110	3,765,078
\$5,000 and less than \$20,000.....	2,567	2,300	28,178,390	20,894,450
\$20,000 and less than \$100,000.....	456	123	12,744,219	3,900,407
\$100,000 and less than \$1,000,000.....	9	4	1,632,468	573,165
<b>Per cent of total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Less than \$5,000.....	14.8	32.8	3.9	12.9
\$5,000 and less than \$20,000.....	72.1	63.7	63.7	71.7
\$20,000 and less than \$100,000.....	12.8	3.4	28.8	13.4
\$100,000 and less than \$1,000,000.....	0.3	0.1	3.7	2.0
<b>Condensed milk.....</b>	<b>135</b>	<b>81</b>	<b>\$34,234,469</b>	<b>\$20,523,690</b>
Less than \$5,000.....	3		8,980	
\$5,000 and less than \$20,000.....	9	26	118,132	263,997
\$20,000 and less than \$100,000.....	37	28	2,191,790	1,643,788
\$100,000 and less than \$1,000,000.....	86	147	31,915,567	118,815,905
<b>Per cent of total.....</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Less than \$5,000.....	2.2		( <sup>2</sup> )	
\$5,000 and less than \$20,000.....	6.7	7.4	0.3	2.0
\$20,000 and less than \$100,000.....	27.4	34.6	6.4	8.0
\$100,000 and less than \$1,000,000.....	63.7	58.0	93.2	191.7

<sup>1</sup> Includes the group "\$1,000,000 and over," to avoid disclosure of individual operations.

<sup>2</sup> Includes the group "less than \$5,000," to avoid disclosure of individual operations.

<sup>3</sup> Less than one-tenth of 1 per cent.

Of the 8,479 establishments reported for 1909, only 9 had products valued at \$1,000,000 or over. In 1904 3 such establishments were reported, but their statistics could not be shown separately without disclosing individual operations. The value of products of the 9 establishments of this class in 1909 formed 4.3 per cent of the total for the industry, while the value of products of the 833 establishments reporting less than \$5,000 formed but 1 per cent of the total. The establishments having products valued at less than \$20,000 constituted more than one-half (60.1 per cent) of the total number reported, but the value of their products amounted to only 19 per cent of the total. The corresponding proportions for such establishments at the census of 1904 were 76.6 per cent and 34.7 per cent, respectively. Thus the greater part of the value of products of the industry was reported by establishments having products valued at \$20,000 or over, these establishments contributing 81 per cent of the total in 1909 and 65.3 per cent in 1904.

In the butter-making branch of the industry, establishments with products valued at less than \$20,000 reported only 11.3 per cent of the total value of products in 1909, while those with products valued at

\$100,000 or over reported 36.9 per cent. In 1904 the group of establishments first mentioned reported 28.4 per cent of the total value of products, and the group comprising establishments with products valued at \$100,000 or over reported only 16.5 per cent. In the cheese-making branch of the industry only a small part of the total value of products was reported by the very large establishments, and a very large proportion (67.6 per cent in 1909 and 84.6 per cent in 1904) was reported by establishments with products valued at less than \$20,000. In the condensed milk branch by far the greater part of the manufacturing was done in the large establishments, those having products valued at \$100,000 or over reporting 93.2 per cent of the total value of products in 1909 and 91.7 per cent in 1904.

The value of products per establishment in the industry as a whole increased from \$18,842 in 1904 to \$32,381 in 1909. There are decided differences among the three branches of the industry with respect to size of establishments. In 1909 the average value of products per establishment for those engaged chiefly in the manufacture of butter was \$40,980; for those engaged chiefly in the manufacture of cheese, \$12,433; and for those engaged chiefly in the manufacture of condensed milk, \$253,589. In 1904 these averages were \$22,640, \$8,071, and \$253,379, respectively.

In some respects, and especially from the standpoint of conditions under which persons engaged in the industry work, the best classification of establishments to bring out the feature of size is a classification according to the number of wage earners employed. Table 16 gives such a classification for the industry as a whole, showing not only the number of establishments falling into each group, but also the average number of wage earners employed in each class of establishments for the 11 states in which an average of 500 or more wage earners were employed in 1909.

Of the 8,479 establishments in the industry in 1909, 1,025, or 12.1 per cent, employed no wage earners; 6,992, or 82.5 per cent, employed from 1 to 5; and 340, or 4 per cent, from 6 to 20. Only 42 establishments reported more than 50 wage earners, and of these only 7 establishments reported more than 100, and none more than 250.

Of the total number of wage earners, 50.2 per cent were reported by establishments employing from 1 to 5 wage earners, 18.3 per cent by those employing from 6 to 20, 26.3 per cent by those employing from 21 to 100, and 5.1 per cent by those employing more than 100. The table shows that from the standpoint of employment the majority of the establishments in the industry as a whole in each of the states shown are small. Only four states had any establishments employing more than 100 wage earners, and of the wage earners employed in such establishments 59 per cent were in Illinois. In two states, Minnesota and Wisconsin, more than four-fifths of the wage earners (85.9 per cent and 82.4 per cent, respectively), were in establishments employing from 1 to 5 wage earners.

Table 16

STATE.	BUTTER, CHEESE, AND CONDENSED MILK INDUSTRY: 1909												
	Total.		Establishments employing—										
			No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.	
Estab-lish-ments.	Wage earners (average number).	Estab-lish-ments.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	
United States.....	8,479	18,431	1,025	6,992	9,258	340	3,376	80	2,490	35	2,362	7	945
California.....	161	597	14	118	227	26	290	3	80				
Illinois.....	295	1,732	29	232	348	16	162	9	301	5	363	4	558
Iowa.....	512	1,231	29	444	707	31	285	8	239				
Michigan.....	435	1,073	27	378	607	25	267	3	90	2	109		
Minnesota.....	784	1,184	41	728	1,017	13	111	2	56				
New York.....	1,552	2,866	234	1,249	1,366	42	402	21	673	5	321	1	104
Ohio.....	325	1,067	27	266	329	24	249	3	82	4	289	1	118
Pennsylvania.....	536	1,177	79	425	645	25	247	5	137	2	148		
Vermont.....	186	519	4	169	246	7	52	5	150	1	71		
Washington.....	97	735	6	73	141	11	102	3	121	3	206	1	165
Wisconsin.....	2,630	2,863	447	2,144	2,359	34	285	3	104	2	115		

**Expenses.**—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of interest or depreciation, and consequently they can not properly be used for calculating profits. Facts of interest, however, may be brought out concerning the relative importance of the different classes of expenses which make up the total. As shown in Table 1, the expenses reported for 1909 amounted to \$258,698,374, distributed as follows: \$235,546,064, or 91.1 per cent, for cost of materials; \$11,081,308, or 4.3 per cent, for wages; \$3,590,624, or 1.4 per cent, for salaries; and \$8,480,378, or 3.3 per cent, for miscellaneous expenses, consisting of amounts paid for advertising, traveling expenses, ordinary repairs of buildings and machinery, taxes, insurance, and other sundry expenses not elsewhere included. The cost of milk and cream used for materials forms such a large proportion of the total expenses in the industry that there is relatively little variation in the proportions shown for the four items of expense in the different states.

Table 17 shows, in percentages, for the industry as a whole and for the three branches, the distribution of the reported expenses among the classes indicated.

Table 17

BRANCH OF INDUSTRY.	PER CENT OF TOTAL EXPENSES REPORTED: 1909			
	Cost of materials.	Salaries.	Wages.	Miscellaneous expenses.
Total.....	91.1	1.4	4.3	3.3
Butter.....	91.8	1.3	3.9	2.9
Cheese.....	94.4	0.4	4.0	1.2
Condensed milk.....	82.3	3.0	6.6	8.0

There was very little difference in the proportions represented by the several classes of expenses between the butter factories and the cheese factories, although the percentage for cost of materials was slightly greater in the latter. In the manufacture of condensed milk, however, the proportion for cost of

materials was much less and that for the other items correspondingly greater.

**Engines and power.**—The amount of power used in the butter, cheese, and condensed milk industry was first reported at the census of 1889. Table 2 shows that the total horsepower used in the industry as a whole increased from 25,526 in 1889 to 101,349 in 1909. Table 18 shows for the industry the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current), and their total horsepower, at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the establishments reporting.

Table 18

POWER.	BUTTER, CHEESE, AND CONDENSED MILK INDUSTRY.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	7,775	7,523	8,115	101,349	93,845	88,062	100.0	100.0	100.0
Owned.....	7,133	7,395	8,115	95,771	92,134	87,429	94.5	98.2	99.3
Steam.....	6,555	7,031	7,868	90,802	88,677	84,666	89.6	94.5	96.1
Gas.....	509	277	137	3,373	1,800	825	3.3	1.9	0.9
Water wheels.....	60	79	110	1,403	1,380	1,594	1.4	1.5	1.8
Water motors.....	9	8	( <sup>1</sup> )	62	31	( <sup>1</sup> )	0.1	( <sup>2</sup> )	.....
Other.....				131	246	344	0.1	0.3	0.4
Rented.....	642	133		5,578	1,711	633	5.5	1.8	0.7
Electric.....	642	133	( <sup>1</sup> )	5,366	1,597	316	5.3	1.7	0.4
Other.....				212	114	317	0.2	0.1	0.4
Electric motors.....	1,246	291	41	8,276	2,378	627	100.0	100.0	100.0
Run by current generated by establishment.....	604	158	41	2,910	781	311	35.2	32.8	49.6
Run by rented power.....	642	133	( <sup>1</sup> )	5,366	1,597	316	64.8	67.2	50.4

<sup>1</sup> Not reported<sup>2</sup> Less than one-tenth of 1 per cent.

The total primary power used in the industry increased 13,287 horsepower, or 15.1 per cent, between 1899 and 1909. The greater part of the increase was in steam and rented electric power, although there

was also a large increase in the power reported for gas and other internal combustion engines.

In 1909, as in 1904 and 1899, steam power formed the major part of the primary power used in the industry, but its relative importance has decreased considerably since 1899. In that year steam power formed 96.1 per cent of the total primary power, but in 1909 the percentage was only 89.6. Rented electric power, on the other hand, represented 5.3 per cent of the total in 1909, as compared with three-tenths of 1 per cent in 1899, and the power of gas and other internal combustion engines also shows a marked increase in

relative importance. Although the industry is not one that requires a large amount of power, the average per establishment increased from 9.5 horsepower in 1899 to 10.5 horsepower in 1904 and 12 horsepower in 1909.

The number of motors used for the distribution of power by means of electric current generated in the establishment increased from 41 in 1899 to 604 in 1909, and their horsepower from 311 to 2,910.

Table 19 shows the amount of each of the several kinds of power and of the different kinds of fuel used in the industry in 1909, for 11 leading states.

Table 19

BUTTER, CHEESE, AND CONDENSED MILK INDUSTRY: 1909

STATE.	Number of establishments reporting.	Total horsepower.	Primary horsepower.					Electric horsepower.		Fuel used.							
			Owned by establishments reporting.					Rented.		Total, rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.	Electric.	Other.			Anthracite (long tons).	Bituminous (short tons).				
United States....	6,420	101,349	95,771	90,802	3,873	1,465	131	5,366	212	3,276	2,910	47,344	588,169	1,069	182,587	94,325	215,318
California.....	145	2,496	1,596	1,380	207	.....	.....	880	20	906	26	65	347	.....	7,269	27,110	829
Illinois.....	266	6,753	6,567	6,444	73	.....	50	186	.....	625	439	94	111,896	.....	718	711	78
Iowa.....	507	8,911	8,519	8,181	218	120	.....	354	38	438	84	192	66,615	168	2,312	292	.....
Michigan.....	336	4,776	4,624	4,503	47	14	.....	144	8	286	142	462	41,585	513	5,003	239	.....
Minnesota.....	769	11,874	11,227	10,821	406	.....	.....	647	.....	711	64	412	38,871	5	22,520	556	100
New York.....	1,044	16,629	16,390	15,263	469	626	32	239	.....	648	409	23,216	99,204	59	33,808	1,236	13,266
Ohio.....	191	3,386	3,296	2,725	472	65	34	86	4	512	426	222	31,305	23	2,370	19	43,347
Pennsylvania.....	464	7,613	7,497	7,247	126	124	.....	51	65	233	182	15,384	31,957	.....	4,914	248	12,870
Vermont.....	151	2,944	2,807	2,402	74	331	.....	127	10	379	252	3,789	6,380	.....	7,138	167	.....
Washington.....	92	2,203	1,807	1,772	11	24	.....	306	.....	714	318	.....	10,151	78	10,846	22,018	.....
Wisconsin.....	1,560	16,467	16,131	15,258	812	58	3	336	.....	356	20	1,085	71,557	149	67,455	1,014	.....
All other states.....	895	17,297	15,310	14,737	458	103	12	1,020	67	2,468	548	2,423	78,301	74	18,234	40,700	144,837

The states from which the largest amounts of power were reported were New York, Wisconsin, Minnesota, Iowa, Pennsylvania, and Illinois, the total for these six states amounting to 68,247 horsepower, or 67.3 per cent of the aggregate for the United States. In amount of steam power used in 1909, New York and Wisconsin led, with 15,263 and 15,258 horsepower, respectively. Gas engines were in general use, Wisconsin reporting the largest amount of power of this class—812 horsepower, or 24.1 per cent of the total. In the use of rented electric power, California ranked first, with 880 horsepower, or 16.4 per cent of the total. Water power is but little used in the industry. New

York and Vermont together reported 957 horsepower of this character, or 65.3 per cent of the total.

**Fuel consumed.**—The amount expended for fuel and rent of power in 1909 was \$2,771,983, which is distributed by states in Table 27. Bituminous coal was the principal kind of fuel used in the industry, the quantity consumed during 1909 amounting to 588,169 tons. Gas and oil are also used to a considerable extent, as well as wood, of which 182,587 cords were reported for 1909. The greatest quantity of gas was reported for Ohio, the largest amount of oil for California, and the greatest quantity of wood for Wisconsin.

SPECIAL STATISTICS OF MATERIALS AND PRODUCTS.

The special schedule used in collecting the statistics for the butter, cheese, and condensed milk industry included inquiries as to the quantity and cost of the milk and cream used during the year and the quantity and value of the various products. In the case of cooperative factories, or those where the materials were not purchased but were handled on fixed terms,

the cost was based on the prices paid for similar materials by other factories in the vicinity.

**Quantity and value of principal materials used, by states: 1909.**—In Table 20 the quantity and cost of the principal materials used in the manufacture of butter, cheese, and condensed milk in 1909 are shown, by states.

## MANUFACTURES.

BUTTER, CHEESE, AND CONDENSED MILK—PRINCIPAL MATERIALS USED, BY STATES: 1909.

STATE.	MILK.		CREAM.		SKIMMED MILK.		SUGAR.	
	Quantity (pounds).	Cost.	Quantity (pounds).	Cost.	Quantity (pounds).	Cost.	Quantity (pounds).	Cost.
United States.....	9,888,727,303	\$118,675,613	1,406,143,908	\$95,025,507	56,974,760	\$110,469	78,457,978	\$3,674,174
Arizona.....	24,859,984	263,670	985,589	71,705				
Arkansas.....	5,677,402	64,707	430,810	29,891				
California.....	206,222,329	2,748,287	101,128,644	7,996,666				100
Colorado.....	111,072,584	1,185,956	6,661,696	523,010	9,234,200	9,096	21,200	1,145
Connecticut.....	2,510,047	34,045	8,341,910	566,408	49,000	244		
Delaware.....	13,855,524	150,295	508,310	45,123				
Georgia.....	1,658,999	17,334						
Idaho.....	4,032,821	52,640	8,319,958	598,092	24,000	150	25,400	1,663
Illinois.....	707,013,502	7,922,432	44,565,553	3,043,052	10,218,353	19,224	19,660,937	970,183
Indiana.....	119,475,669	1,295,916	27,098,202	1,724,887			149,196	7,795
Iowa.....	474,821,988	5,300,006	243,619,568	16,100,578	208,240	1,133	399,162	19,526
Kansas.....	119,462,779	1,093,221	47,340,211	3,021,906	1,145,000	3,543	29,460	4,096
Kentucky.....	8,134,799	96,285	786,211	55,151	240,000	1,960		
Maine.....	32,641,490	463,251	5,330,125	389,228			843,830	39,055
Maryland.....	35,492,856	428,128	962,936	56,012	180,000	72	125,878	6,223
Massachusetts.....	10,042,147	115,708	5,981,975	413,818				
Michigan.....	478,008,911	5,609,182	33,241,827	5,588,744	960,670	3,455	9,939,033	484,740
Minnesota.....	646,597,385	7,331,676	236,861,608	14,366,509	3,695,976	8,640	4,130	532
Missouri.....	35,695,793	354,845	29,484,057	1,953,851	10,003,200	4,758	9,433	488
Montana.....	9,596,678	112,830	2,960,485	224,917			4,500	600
Nebraska.....	167,861,401	1,587,018	56,010,365	3,315,938			10,900	600
Nevada.....	2,323,255	25,521	3,465,796	243,194				
New Hampshire.....	28,483,364	406,162	2,733,412	271,724			5,000	250
New Jersey.....	42,579,133	504,500	3,640	216	250,000	750	232,680	12,212
New York.....	2,422,727,788	30,606,583	17,842,320	1,233,461	1,075,100	1,625	34,166,665	1,563,025
North Dakota.....	10,312,430	105,618	10,803,418	723,538	57,600	360	1,900	119
Ohio.....	344,686,001	4,120,473	41,291,271	2,823,140	444,000	956	184,400	9,254
Oklahoma.....	53,735,418	521,147	5,467,267	338,532			7,550	384
Oregon.....	123,778,170	1,482,191	23,084,616	1,798,815			133,900	7,804
Pennsylvania.....	787,448,479	9,899,471	16,061,716	1,018,160	13,577,181	88,133	3,440,019	163,265
South Dakota.....	18,050,853	194,392	29,106,828	1,976,016			4,582	547
Texas.....	5,496,798	63,249	9,376,412	433,260				42
Utah.....	64,553,492	793,088	9,032,800	664,041			41,600	2,704
Vermont.....	240,020,144	2,904,316	48,343,294	3,622,642	1,013,738	5,095	3,071,061	164,881
Virginia.....	3,880,138	41,402	119,305	7,898				
Washington.....	150,544,931	2,228,683	29,415,008	2,478,610			6,700	594
Wisconsin.....	2,366,154,761	28,357,656	246,838,822	17,165,904	4,598,502	11,285	5,940,392	222,547
Wyoming.....	6,689,937	65,612	2,409,634	127,758				
All other states <sup>1</sup> .....	3,527,033	38,016	128,291	9,612				

<sup>1</sup> "All other states" embrace the following, with establishments as indicated: Alabama, 1; Louisiana, 1; New Mexico, 2; Rhode Island, 1; West Virginia, 2.

The figures given in the table for cream and skimmed milk represent the quantities of these materials delivered as such at the factories rather than the quantities actually used in the manufacture of butter, cheese, and other products. Large additional quantities of cream are separated from whole milk at the butter factories, and while much of the skimmed milk resulting from this separation is sold or returned to patrons, the quantities used in the manufacture of cheese and casein doubtless far exceed the small quantities reported as purchased. Moreover, in some instances considerable quantities of whole milk and cream are sold by the factories instead of being used for manufacturing purposes. It is evident, therefore, that the figures in the table do not represent the actual quantities of the specified materials used in the manufacture of the different products.

There were considerable differences among the states with respect to the relative quantities of milk and cream reported. In New York, for instance, the establishments in the industry reported 2,422,727,788 pounds of milk and only 17,842,320 pounds of cream in 1909, or 1 pound of cream to 135.8 pounds of milk, while the factories in Wisconsin reported 2,366,154,761 pounds of milk and 246,838,822 pounds of cream, or 1 pound of cream to 9.6 pounds of milk. The figures

for Vermont show 1 pound of cream to 5 pounds of milk, and for Connecticut, one of the states where the industry is practically confined to the manufacture of butter, the quantity of cream reported was more than three times as great as the quantity of milk. The relative quantity of milk used in a given state depends in a measure upon the extent to which cheese and condensed milk are manufactured in the state, and the states showing the smallest ratios between the quantity of milk and the quantity of cream reported as materials are those in which butter is the principal product of the industry. It is evident, however, that there are other important factors to be considered. Chief among these, perhaps, is the extent to which it has become customary, in the sections where the butter factories are located, for the farmers to separate the milk on the farm and send the cream to the factory instead of the whole milk, as was the practice before the hand separator came into general use.

In quantity of milk reported New York and Wisconsin were the foremost states in 1909, with 24.5 per cent and 23.9 per cent, respectively, of the total, while Wisconsin, Iowa, and Minnesota, ranking in the order named, together reported more than half of the cream purchased.

Sugar is used for the most part in the manufacture of sweetened condensed milk, and the extent to which it is used is therefore directly dependent upon the production of this variety of condensed milk.

**Milk and cream used in leading states: 1909, 1904, and 1899.**—Table 21 shows for 1909, 1904, and 1899 the quantities of milk and cream reported for the 12 states which led in 1909 with respect to value of products for the industry.

BUTTER, CHEESE, AND CONDENSED MILK—MILK AND CREAM USED IN LEADING STATES: 1909, 1904, AND 1899.

Table 21 STATE.	Cen-sus.	Milk (pounds).	Cream (pounds).
United States.....	1909	9,888,727,303	1,406,143,908
	1904	12,147,304,550	583,186,471
	1899	11,678,082,821	203,673,958
Wisconsin.....	1909	2,366,154,761	246,838,822
	1904	2,665,903,141	80,032,094
	1899	1,973,702,160	27,026,227
New York.....	1909	2,422,727,788	17,842,320
	1904	2,718,366,410	6,170,069
	1899	2,309,599,597	2,496,730
Iowa.....	1909	474,821,988	243,619,568
	1904	1,094,925,394	110,850,356
	1899	1,586,044,020	45,621,241
Minnesota.....	1909	645,597,385	236,861,608
	1904	1,072,506,743	57,562,246
	1899	852,728,424	14,816,175
Illinois.....	1909	707,013,502	44,565,553
	1904	809,720,061	11,082,470
	1899	1,038,843,401	4,171,210
Michigan.....	1909	478,008,911	83,241,827
	1904	670,230,324	7,714,987
	1899	313,871,971	2,816,106
Pennsylvania.....	1909	787,448,479	16,061,716
	1904	946,150,704	4,167,213
	1899	927,655,335	3,587,009
California.....	1909	206,222,329	101,128,644
	1904	481,091,233	29,664,300
	1899	316,287,052	1,151,300
Ohio.....	1909	344,686,001	41,291,271
	1904	405,702,734	6,582,168
	1899	375,013,872	5,700,296
Vermont.....	1909	240,020,144	48,343,294
	1904	342,225,993	49,742,424
	1899	432,270,103	22,868,877
Nebraska.....	1909	167,861,401	56,010,385
	1904	157,978,200	32,312,868
	1899	179,461,039	9,941,850
Washington.....	1909	150,544,931	29,415,098
	1904	66,762,847	23,595,768
	1899	72,061,394	3,071,243

<sup>1</sup> Exclusive of statistics for 1 establishment engaged in the manufacture of condensed milk.

The total quantity of milk reported for 1904 was slightly larger than that for 1899, but taking the decade as a whole the figures show a decrease of 15.3 per cent—from 11,678,082,821 pounds in 1899 to 9,888,727,303 pounds in 1909. On the other hand, the quantity of cream reported shows a steady increase from 203,673,958 pounds in 1899 to 1,406,143,908 pounds, or nearly seven times as much, in 1909.

In all the states for which separate figures are given in the table, large increases took place during each five-year period in the amount of cream reported by the factories, except in Vermont, where the quantity decreased somewhat between 1904 and 1909. On the other hand, there were only four states, Wisconsin, New York, Michigan, and Washington, in which the

quantity of milk reported for 1909 was greater than that for 1899, and only two, Nebraska and Washington, in which it was greater than that for 1904. The most pronounced decrease during the decade in the quantity of milk was in Iowa, in which state there was a decrease of 1,111,222,632 pounds, or about five-eighths of the net decrease during the decade in the industry as a whole.

The rapid increase in the quantity of cream reported (together with the decrease in the quantity of milk which generally accompanies it) is doubtless due in large measure to the introduction of the hand separator, which enables the farmer to separate the milk economically on the farm. The importance of the increase in the relative quantity of cream purchased, and of the hand separator as a factor in bringing about this change, is the more evident in view of the fact that the whole increase must be accounted for by the butter-making branch of the industry, since cream is not used to any extent in the manufacture of either cheese or condensed milk.

**Quantity of leading products, by states: 1909, 1904, and 1899.**—Table 22 gives, by states, the quantities of butter, cheese, and condensed milk made in the factories of the industry, as reported at the censuses of 1909, 1904, and 1899.

Attention is again called to the fact that in the tables showing separately the quantities of butter, cheese, and condensed milk manufactured the figures represent the total quantity of the given product reported for the industry as a whole, whether made in establishments engaged primarily in the manufacture of that product or in establishments belonging to one of the other branches of the industry. The products made in establishments in other industries are not included in the totals, but the quantities, so far as available, are shown in a footnote.

In the quantity of butter manufactured in the factories of the industry there was an increase of 204,638,107 pounds, or 48.7 per cent, during the decade 1899-1909. Wisconsin ranked first in the production of butter in 1909, with 103,884,684 pounds; Minnesota was second, with 88,842,846 pounds; and Iowa was third, with 88,582,187 pounds. The figure shown for Wisconsin represents an increase of 68.1 per cent over the production of 1899, that for Minnesota an increase of 115.8 per cent, and that for Iowa an increase of 14.7 per cent. In 11 of the states for which separate figures are given in Table 21 the quantity of butter manufactured in 1909 was less than in 1899, Illinois showing the largest absolute decrease and New Hampshire the largest relative decrease. Although the manufacture of butter was reported from 43 states in 1909, the combined product of 6 states, Wisconsin, Minnesota, Iowa, New York, California, and Michigan, amounting to 400,002,143 pounds, represented 64 per cent of the total for the industry.

## MANUFACTURES.

BUTTER, CHEESE, AND CONDENSED MILK—PRINCIPAL PRODUCTS, BY STATES: 1909, 1904, AND 1899.

Table 22	STATE.	Census.	Butter (pounds).	Cheese (pounds).	Condensed milk (pounds).	STATE.	Census.	Butter (pounds).	Cheese (pounds).	Condensed milk (pounds).
United States <sup>1</sup>	1909		624,764,653	311,126,317	494,796,544	Montana	1909	1,307,777		
	1904		531,478,141	317,144,872	308,485,182	1904	( <sup>2</sup> )			
	1899		420,126,546	281,972,324	186,921,787	1899		34,238		
Arizona	1909		1,053,869	421,043	( <sup>2</sup> )	Nebraska	1909	23,973,162	77,122	
	1904		799,433	161,796	162,000	1904		16,035,468	158,470	
	1899		424,083	373,752		1899		11,726,180	313,600	
Arkansas	1909		360,834		( <sup>2</sup> )	Nevada	1909	1,039,784		
	1904		127,309			1904		758,184	33,000	
	1899		168,575	12,000		1899		623,402	80,150	
California	1909		37,283,450	1,567,640	( <sup>2</sup> )	New Hampshire	1909	1,740,235	184,497	
	1904		20,637,386	3,001,051	7,723,021	1904		3,008,839	207,149	( <sup>2</sup> )
	1899		13,147,137	2,676,543	4,314,666	1899		5,034,270	110,741	2,876,157
Colorado	1909		6,351,091	550,022	( <sup>2</sup> )	New Jersey	1909	768,857		7,688,412
	1904		5,054,006	871,673	( <sup>2</sup> )	1904		1,178,846	6,700	
	1899		1,566,639	1,465,257		1899		1,325,519	100,000	1,072,000
Connecticut	1909		1,950,935		( <sup>2</sup> )	New York	1909	45,897,216	105,194,898	120,601,000
	1904		2,903,277	( <sup>2</sup> )		1904		58,256,504	132,836,482	102,480,355
	1899		3,888,405	321,263		1899		40,693,846	127,386,032	75,447,148
Delaware	1909		627,300	( <sup>2</sup> )		North Dakota	1909	3,683,679	( <sup>2</sup> )	
	1904		644,823	( <sup>2</sup> )		1904		3,013,151	51,894	
	1899		960,889	15,000		1899		463,188	225,399	
Georgia	1909		78,058			Ohio	1909	17,491,251	11,800,601	37,655,347
	1904		133,900			1904		11,591,981	17,351,773	1,947,218
	1899		48,960			1899		8,087,631	18,156,527	100,000
Idaho	1909		2,357,386	( <sup>2</sup> )		Oklahoma	1909	4,110,978		
	1904		671,783	132,420		1904		416,100		
	1899		432,570	194,380		1899		53,200	66,378	
Illinois	1909		24,570,976	4,799,235	114,500,748	Oregon	1909	8,472,660	4,218,953	21,788,937
	1904		27,339,925	5,301,211	93,425,052	1904		5,080,599	2,255,692	( <sup>2</sup> )
	1899		34,055,312	9,055,110	71,257,449	1899		1,975,357	1,195,564	
Indiana	1909		11,712,450	424,597	6,674,660	Pennsylvania	1909	30,484,217	11,234,037	26,461,384
	1904		4,742,632	978,963	3,317,721	1904		35,754,841	11,453,424	20,364,700
	1899		3,553,483	1,260,168	204,000	1899		37,137,161	10,267,443	2,862,000
Iowa	1909		88,582,187	999,559	4,984,333	South Dakota	1909	9,495,608		
	1904		71,181,706	2,829,745	( <sup>2</sup> )	1904		11,058,400	( <sup>2</sup> )	
	1899		77,233,264	4,242,637		1899		6,172,107	420,779	
Kansas	1909		18,712,568	( <sup>2</sup> )	( <sup>2</sup> )	Texas	1909	2,133,590	( <sup>2</sup> )	( <sup>2</sup> )
	1904		16,488,131	1,120,863		1904		266,806		
	1899		18,196,483	2,422,710	144,640	1899		252,714	58,290	
Kentucky	1909		549,929			Utah	1909	3,722,784	1,060,122	( <sup>2</sup> )
	1904		239,061			1904		3,586,547	1,629,730	127,800
	1899		184,663	28,000		1899		2,519,214	1,874,179	
Maine	1909		2,105,622	55,591	( <sup>2</sup> )	Vermont	1909	20,227,495	2,762,656	13,342,666
	1904		5,005,907	361,850	( <sup>2</sup> )	1904		27,256,874	4,343,160	( <sup>2</sup> )
	1899		4,461,399	553,946	2,373,786	1899		22,453,381	4,713,105	1,973,556
Maryland	1909		1,118,530		( <sup>2</sup> )	Virginia	1909	158,853	( <sup>2</sup> )	
	1904		1,816,433			1904		81,803	( <sup>2</sup> )	
	1899		2,541,716			1899		170,521	57,000	
Massachusetts	1909		1,888,307			Washington	1909	11,302,591	422,290	53,614,242
	1904		3,470,323	( <sup>2</sup> )		1904		7,722,911	921,383	13,841,906
	1899		4,591,919	250,542	108,000	1899		3,198,421	1,482,127	1,962,500
Michigan	1909		35,511,760	13,382,160	32,404,944	Wisconsin	1909	103,884,684	143,065,648	30,573,886
	1904		21,013,000	16,814,856	27,681,698	1904		89,155,975	109,423,856	11,514,222
	1899		7,820,712	10,422,582	18,378,869	1899		61,813,502	77,748,680	3,466,516
Minnesota	1909		88,842,840	2,735,883		Wyoming	1909	783,585	( <sup>2</sup> )	
	1904		62,122,554	3,090,055	79,120	1904		500,515	84,600	
	1899		41,174,469	3,285,019		1899				
Missouri	1909		10,261,876	219,112	( <sup>2</sup> )	All other states <sup>6</sup>	1909	165,073	890,051	24,504,686
	1904		5,806,724	743,447		1904		265,314	379,789	28,820,459
	1899		1,440,616	1,072,751	380,500	1899		492,400	58,061	

<sup>1</sup> In addition, in 1909, 2,351,212 pounds of butter, 49,413 pounds of part-cream cheese, and 401,800 pounds of condensed milk, and in 1904, 1,971,120 pounds of butter, were reported by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>2</sup> Included with the quantity shown for "all other states," to avoid the disclosure of individual operations.

<sup>3</sup> The product of 2 establishments in Indiana and 1 in Utah engaged in the manufacture of condensed milk in 1904 was included with that for "all other states," to avoid the disclosure of individual operations.

<sup>4</sup> The product of the 2 establishments reported from Wyoming in 1899 was included with that for "all other states" to avoid the disclosure of individual operations.

<sup>5</sup> "All other states" embrace: For 1909—Alabama, Louisiana, New Mexico, Rhode Island, and West Virginia, and certain products manufactured in Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Idaho, Kansas, Maine, Maryland, Missouri, North Dakota, Texas, Utah, and Wyoming; for 1904—Rhode Island, Tennessee, and West Virginia, and establishments in Colorado, Connecticut, Delaware, Indiana, Iowa, Maine, Massachusetts, Montana, New Hampshire, New Jersey, Oregon, South Dakota, Utah, Vermont, and Virginia (see Notes 2 and 3); and for 1899—Alabama, Mississippi, Rhode Island, Tennessee, West Virginia, and Wyoming.

The production of cheese in 1909 was 1.9 per cent less than that in 1904, and only 10.3 per cent greater than that in 1899, and since both of the other main products of this industry show a considerable increase for the period 1904-1909, as well as for the decade, it may be inferred that milk is less profitably used in the manufacture of cheese than in the manufacture of

butter or condensed milk. Of the 34 states for which separate figures for the production of cheese in 1899 are shown, 8 did not report any cheese for 1909, and 14 reported a smaller quantity than for 1899. By far the largest gain in any state during the decade 1899-1909 was that in Wisconsin, amounting to 70,316,968 pounds, or 90.4 per cent. The greatest

absolute decrease for the decade considered as a whole was in New York, where the quantity reported in 1909 was 22,191,134 pounds, or 17.4 per cent, less than that in 1899; there was an increase in the production of cheese in this state, however, between 1899 and 1904.

Condensed milk shows an increase in production for the decade 1899-1909 amounting to 307,874,757 pounds, or 164.7 per cent. The bulk of this product was reported by a small number of states. New York produced 24.4 per cent of the total quantity in 1909, Illinois 23.1 per cent, and Washington 10.8 per cent, the combined output of these three states representing 58.4 per cent of the total for the industry. The quantity of condensed milk produced in the five states next in rank, namely, Ohio, Michigan, Wisconsin, Pennsylvania, and Oregon, represented 30 per cent of the total, making 88.4 per cent for the eight states taken together. Four states, Arkansas, Connecticut, Maryland, and Texas, reported the production of condensed milk for the first time in 1909, but the quantity can not be shown separately without disclosing individual operations. There were three states which had reported this product at one or more of the earlier censuses that reported none for 1909.

Quantity of leading products, by geographic divisions: 1909, 1904, and 1899.—Table 23 shows the quantities of the principal products of the butter, cheese, and condensed milk industry, by geographic divisions, for 1909, 1904, and 1899.

In the production of butter the three most important divisions at each census were the West North Central, the East North Central, and the Middle Atlantic, ranking in the order named. In 1909 the West North Central division produced 39 per cent of the total quantity of butter reported for the industry, the East North Central division 30.9 per cent, and the Middle Atlantic 12.3 per cent, these three leading divisions together reporting over four-fifths of the total. The quantity of butter made in factories in the West North Central and East North Central divisions shows an increase for each five-year period, and the proportions which their output formed of the total for the industry were greater in 1909 than in either 1904 or 1899. The production in the Middle Atlantic division increased between 1899 and 1904, but decreased between 1904 and 1909 to a figure below that of 1899, and formed a smaller percentage of the total at each successive census. Of the remaining divisions only two, the New England and the South Atlantic, reported a smaller output in 1909 than in 1899. In the Pacific, Mountain, and West South Central divisions the increases during each five-year period were considerable and the proportions which these divisions contributed to the total production were larger in 1909 than in 1904 or 1899.

Of the total factory production of cheese at each census more than nine-tenths was reported from two divisions—the East North Central and Middle Atlantic. In 1899 the Middle Atlantic division ranked first in quantity of cheese reported, but in 1904 and

1909 it was outranked by the East North Central division. The production in the latter division and the percentage which this formed of the total for the industry show an uninterrupted increase throughout the decade.

BUTTER, CHEESE, AND CONDENSED MILK—PRINCIPAL PRODUCTS, BY GEOGRAPHIC DIVISIONS: 1909, 1904, AND 1899.

Table 23 DIVISION AND CENSUS.	BUTTER.		CHEESE.		CONDENSED MILK.	
	Quantity (pounds).	Per cent of total.	Quantity (pounds).	Per cent of total.	Quantity (pounds).	Per cent of total.
<b>United States<sup>1</sup></b>						
1909 .....	624,764,653	100.0	311,126,317	100.0	494,798,544	100.0
1904 .....	531,478,141	100.0	317,144,872	100.0	808,485,182	100.0
1899 .....	420,126,546	100.0	281,972,324	100.0	186,921,787	100.0
<b>New England division:</b>						
1909 .....	27,912,594	4.5	3,002,744	1.0	213,342,666	2.7
1904 .....	41,735,270	7.9	4,912,159	1.5	( <sup>2</sup> )	
1899 .....	40,429,374	9.6	5,956,597	2.1	7,331,499	3.9
<b>Middle Atlantic division:</b>						
1909 .....	77,150,200	12.3	116,428,935	37.4	154,751,795	31.3
1904 .....	95,190,191	17.9	144,296,606	45.5	212,845,055	39.8
1899 .....	79,156,526	18.8	137,753,475	48.9	79,381,148	42.5
<b>East North Central division:</b>						
1909 .....	193,171,121	30.9	178,532,241	57.4	221,809,585	44.8
1904 .....	153,843,513	28.9	149,870,599	47.3	134,885,821	43.7
1899 .....	115,330,640	27.5	116,643,076	41.4	93,406,834	50.0
<b>West North Central division:</b>						
1909 .....	243,551,926	39.0	4,031,670	1.3	4,984,333	1.0
1904 .....	185,706,254	34.9	7,994,474	2.5	79,120	( <sup>1</sup> )
1899 .....	166,406,307	37.2	11,982,895	4.2	525,140	0.3
<b>South Atlantic division:</b>						
1909 .....	1,082,741	0.3	( <sup>2</sup> )		( <sup>2</sup> )	
1904 .....	2,676,959	0.5	( <sup>2</sup> )			
1899 .....	3,731,086	0.9	72,000	( <sup>3</sup> )		
<b>East South Central division:</b>						
1909 .....	549,929	0.1				
1904 .....	239,061	0.3				
1899 .....	184,663	0.3	28,000	( <sup>3</sup> )		
<b>West South Central division:</b>						
1909 .....	6,605,402	1.1	( <sup>2</sup> )		( <sup>2</sup> )	
1904 .....	810,215	0.2				
1899 .....	474,489	0.1	137,268	( <sup>3</sup> )		
<b>Mountain division:</b>						
1909 .....	16,616,876	2.7	2,031,787	0.7	( <sup>2</sup> )	
1904 .....	11,370,468	2.1	2,913,219	0.9	289,809	0.1
1899 .....	5,600,146	1.3	3,987,718	1.4		
<b>Pacific division:</b>						
1909 .....	57,058,701	9.1	6,208,883	2.0	75,403,179	15.2
1904 .....	39,640,899	7.5	6,778,029	2.1	21,564,927	7.0
1899 .....	18,320,915	4.4	5,354,234	1.9	6,277,166	3.4
<b>Production in states which can not be distributed by geographic divisions without disclosing individual operations:</b>						
1909 .....	165,073	( <sup>3</sup> )	890,051	0.3	24,504,986	5.0
1904 .....	235,314	( <sup>3</sup> )	379,789	0.1	28,820,459	9.3
1899 .....	492,400	0.1	58,061	( <sup>3</sup> )		

<sup>1</sup> In addition, in 1909, 2,381,212 pounds of butter, 49,413 pounds of part-cream cheese, and 401,300 pounds of condensed milk, and in 1904, 1,971,120 pounds of butter, were reported by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>2</sup> Quantities not shown by states in Table 22 are included under "production in states which can not be distributed by geographic divisions without disclosing individual operations."

<sup>3</sup> Less than one-tenth of 1 per cent.

The manufacture of condensed milk, like that of cheese, is largely centralized, although it was so to a less extent in 1909 than in 1904 or 1899. In 1909, as in the two earlier census years, the East North Central and Middle Atlantic divisions together produced by far the greater part of the total output of condensed milk, but notwithstanding large increases in actual production in both divisions the percentage which the product of the Middle Atlantic division represented of the total was lower in 1909 than at the earlier censuses. This is due chiefly to the remarkable increase during the decade in the Pacific division, which produced 15.2 per cent of the total quantity of condensed milk in 1909, as compared with 3.4 per cent in 1899.

Quantity and value of products, by states: 1909.—Table 24 shows in detail the products of the industry in the several states for 1909.

## MANUFACTURES.

## BUTTER, CHEESE, AND CONDENSED MILK—DETAILED

Table 24	STATE.	BUTTER.						CHEESE.					
		Total.		Packed solid.		In prints or rolls.		Total.		Full-cream.		Part-cream.	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1	United States <sup>1</sup> ..	624,764,653	\$179,510,619	410,692,616	\$115,098,056	214,072,037	\$64,412,563	311,126,317	\$43,239,924	287,110,383	\$40,817,073	10,803,392	\$1,188,000
2	Arizona.....	1,053,869	318,190	48,694	14,177	1,005,175	304,013	421,043	67,210	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
3	Arkansas.....	360,834	107,565	130,458	37,187	230,376	70,378	1,567,640	252,582	1,444,640	239,286	123,000	13,296
4	California.....	37,283,450	11,644,453	7,704,696	2,388,265	29,518,754	9,256,188	1,567,640	252,582	1,444,640	239,286	123,000	13,296
5	Colorado.....	6,351,691	1,863,695	664,599	183,200	5,687,092	1,680,495	550,622	77,550	406,620	59,144	144,002	18,406
6	Connecticut.....	1,950,935	632,550	104,536	49,783	1,786,399	582,767	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
7	Delaware.....	627,300	184,438	39,129	10,711	588,171	173,727	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
8	Georgia.....	78,058	23,171	47,750	14,325	30,308	8,846	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
9	Idaho.....	2,357,356	759,820	434,063	123,352	1,923,223	627,468	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
10	Illinois.....	24,570,976	7,088,414	14,767,503	4,215,191	9,803,473	2,873,223	4,799,235	620,488	2,919,897	398,397	561,028	58,005
11	Indiana.....	11,712,450	3,301,014	8,170,531	2,279,029	3,541,919	1,021,985	424,597	61,503	424,597	61,503	( <sup>2</sup> )	( <sup>2</sup> )
12	Iowa.....	88,582,187	24,440,715	75,581,191	20,800,762	13,000,996	3,639,953	999,559	148,876	999,559	148,876	( <sup>2</sup> )	( <sup>2</sup> )
13	Kansas.....	18,712,568	4,997,903	10,659,510	2,799,381	8,053,058	2,198,522	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
14	Kentucky.....	549,929	170,867	236,732	63,985	313,197	106,882	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
15	Maine.....	2,105,622	713,620	340,806	99,745	1,764,816	613,875	55,591	8,876	54,991	8,776	1,000	100
16	Maryland.....	1,118,530	323,082	234,000	65,253	884,440	257,829	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
17	Massachusetts.....	1,888,307	599,518	493,939	141,369	1,394,368	458,149	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
18	Michigan.....	35,511,760	10,043,137	30,328,760	8,586,270	5,183,000	1,456,867	13,382,160	1,911,875	13,028,317	1,860,879	76,220	10,984
19	Minnesota.....	88,842,846	24,581,058	81,104,848	22,359,427	7,737,998	2,221,631	2,735,883	374,716	2,695,883	371,516	40,000	3,200
20	Missouri.....	10,201,876	2,862,230	4,452,602	1,213,508	5,809,274	1,648,722	219,112	30,122	219,112	30,122	( <sup>2</sup> )	( <sup>2</sup> )
21	Montana.....	1,307,777	405,346	211,531	61,330	1,096,246	344,007	( <sup>2</sup> )					
22	Nebraska.....	23,973,162	6,570,084	13,652,328	3,654,578	10,320,834	2,915,506	77,122	10,407	77,122	10,407	( <sup>2</sup> )	( <sup>2</sup> )
23	Nevada.....	1,039,784	318,727	85,366	25,050	953,418	293,677	( <sup>2</sup> )					
24	New Hampshire.....	1,740,235	542,462	1,123,533	344,981	616,702	197,481	184,497	28,642	176,697	27,472	7,800	1,170
25	New Jersey.....	768,857	240,190	100,460	51,902	668,397	188,988	( <sup>2</sup> )					
26	New York.....	45,897,216	13,471,482	31,451,828	9,127,057	14,415,888	4,344,425	105,194,898	14,266,924	89,055,411	12,502,997	7,171,365	778,770
27	North Dakota.....	3,683,679	981,355	2,873,519	750,158	810,160	225,197	( <sup>2</sup> )					
28	Ohio.....	17,491,251	4,955,273	11,205,341	3,162,518	6,225,910	1,822,755	11,860,601	1,633,517	9,768,970	1,305,461	1,550,560	197,656
29	Oklahoma.....	4,110,973	1,125,091	2,410,932	640,290	1,700,046	485,401	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
30	Oregon.....	8,472,000	2,682,166	902,102	298,721	7,450,558	2,388,385	4,218,953	640,868	4,168,038	631,259	37,415	5,309
31	Pennsylvania.....	30,484,217	9,613,299	9,283,220	2,741,957	21,200,997	6,871,342	11,234,037	1,414,890	9,423,849	1,314,704	490,685	42,921
32	South Dakota.....	9,495,608	2,598,413	8,880,010	2,424,807	615,598	173,516	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
33	Texas.....	2,133,590	612,315	581,193	163,020	1,552,397	449,295	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
34	Utah.....	3,722,784	1,137,888	650,707	193,311	3,072,077	944,077	1,060,122	157,058	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
35	Vermont.....	20,227,495	6,022,066	12,589,015	3,073,807	7,638,480	2,348,259	2,762,656	395,778	2,576,073	378,057	186,583	17,721
36	Virginia.....	158,853	42,966	121,576	33,147	37,277	9,810	( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})
37	Washington.....	11,302,591	3,692,931	1,418,308	434,227	9,884,283	3,258,704	422,290	65,597	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
38	Wisconsin.....	103,884,684	29,547,135	77,137,263	21,893,972	26,747,431	7,713,163	148,065,648	21,141,640	147,071,501	21,070,010	229,892	19,405
39	Wyoming.....	783,585	223,525	15,344	4,120	768,241	219,396	250,719	40,115	250,719	40,115	( <sup>2</sup> )	( <sup>2</sup> )
40	All other states.....	165,073	50,725	93,583	28,075	71,490	22,650	639,332	90,692	2,350,787	358,092	183,842	20,997

<sup>1</sup> In addition, 2,381,212 pounds of butter, valued at \$664,171, 49,413 pounds of part-cream cheese, valued at \$5,745, 401,300 pounds of condensed milk, valued at \$24,078, and other dairy products, to the value of \$25,388 were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

STATISTICS OF PRODUCTS, BY STATES: 1909.

	CHEESE—continued.				CONDENSED MILK.						CREAM SOLD.		CASEIN.		SKIM-MED MILK SOLD.	WHEY.
	Skimmed.		Other kinds.		Total.		Sweetened.		Unsweetened.		Pounds.	Value.	Pounds.	Value.		
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.						
1	7,770,812	\$429,519	5,441,730	\$805,332	494,796,544	\$33,563,129	214,518,310	\$17,345,278	280,278,234	\$16,217,851	81,211,374	\$9,828,972	13,018,298	\$795,544	\$629,135	\$53,877
2					( <sup>2</sup> )	( <sup>2</sup> )			( <sup>2</sup> )	( <sup>2</sup> )	181,209	26,596				282
3					( <sup>2</sup> )	( <sup>2</sup> )			( <sup>2</sup> )	( <sup>2</sup> )	72,650	7,339				1,077
4					( <sup>2</sup> )	( <sup>2</sup> )			( <sup>2</sup> )	( <sup>2</sup> )	2,074,825	411,473	1,412,919	75,435		13,653
5					( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})	1,207,001	142,697	2,500	250		5,493
6					( <sup>2</sup> )	( <sup>2</sup> )			( <sup>2</sup> )	( <sup>2</sup> )	854,591	84,221	41,647	2,500		287
7			( <sup>2</sup> )	( <sup>2</sup> )							495,434	50,662				8,190
8											417,800	49,934				
9											11,496,133	1,274,790	794,098	47,853	102,226	6,173
10	1,165,289	53,373	153,021	10,711	114,500,748	8,437,627	48,240,252	4,468,085	66,260,496	3,969,542	968,026	94,916	16,000	1,515		1,493
11					6,674,660	350,812	1,045,590	73,631	5,629,070	277,181						
12					4,084,333	384,263	1,278,445	104,591	3,705,888	279,672	1,169,943	134,156			303	6,181
13					( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})	520,802	83,233	85,491	3,527		7,191
14											292,209	35,692				8,782
15					( <sup>2</sup>)	(^{2})	(^{2})	(^{2})	(^{2})	(^{2})	1,842,731	243,126	186,905	15,104		21,515
16					3,962,285	208,787	3,436,289	187,757	525,996	21,030	1,225,490	109,624	44,227	2,557		7,616
17											241,677	31,251	134,860	9,855		2,520
18	150,000	7,950	127,623	32,062	32,404,944	1,924,621	27,695,866	1,693,030	4,709,078	231,591	2,572,704	249,276	116,592	5,937	32,896	5,261
19											1,338,833	146,897				1,354
20					( <sup>2</sup> )	( <sup>2</sup> )			( <sup>2</sup> )	( <sup>2</sup> )	122,357	18,838				1,246
21											42,541	5,181				200
22											281,811	27,149	107,211	620		500
23											22,096	2,857				850
24											1,038,205	167,073	145,503	17,196		21,629
25					7,688,412	306,183	2,324,572	139,361	5,363,840	256,822	780,875	95,037	27,153	1,221		4,856
26	4,455,681	291,246	4,512,441	693,911	120,601,999	9,428,283	87,658,031	7,575,218	32,943,968	1,853,065	27,078,783	3,481,296	6,712,971	482,308	121,601	21,124
27											3,348	496	664,000	1,300		486
28	346,310	14,017	194,761	16,383	37,655,347	2,409,959	4,232,160	256,529	33,423,187	2,153,430	4,735,900	500,528	94,452	6,963	76,645	5,774
29											17,740	1,762				90
30			15,500	4,240	21,788,937	1,164,360	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	1,019,239	132,097				300
31	1,206,400	40,300	113,103	16,965	26,461,384	1,481,413	10,777,613	738,399	15,683,771	743,014	4,754,954	531,432	2,197,418	106,480	122,125	610
32											390,108	43,147				1,583
33					( <sup>2</sup> )	( <sup>2</sup> )			( <sup>2</sup> )	( <sup>2</sup> )	149,281	19,152				4,128
34					10,735,958	545,051	132,000	9,900	10,603,958	535,151	1,114,836	128,528	9,342	542		467
35					13,342,666	975,663	9,096,582	669,325	4,246,084	306,338	4,502,709	600,393	4,389	1,442		9,898
36											7,469	978				150
37					53,614,242	2,976,326			53,614,242	2,976,326	3,009,180	341,981				100
38	447,132	22,633	317,123	20,592	30,573,886	2,218,239	16,661,772	1,240,398	13,912,114	977,841	4,490,508	545,723	215,760	12,671	41,234	6,958
39											42,116	4,455				
40			8,158	1,468	9,806,743	661,542	1,939,138	189,054	29,656,542	1,636,848	29,200	4,380	4,860	365		375

<sup>2</sup> Figures included with those for "all other states," to avoid the disclosure of individual operations.

Quantity and value of products for the United States: 1909, 1904, and 1899.—Table 25 shows in detail the products of the industry for 1909, 1904, and 1899.

BUTTER, CHEESE, AND CONDENSED MILK—QUANTITY AND VALUE OF PRODUCTS: 1909, 1904, AND 1899.

Table 25 PRODUCT.	1909	1904	1899
<b>Total value.....</b>	<b>1 \$274,557,718</b>	<b>2 \$168,182,789</b>	<b>\$130,783,349</b>
<b>Butter:</b>			
Pounds.....	624,764,653	531,478,141	420,126,546
Value.....	\$179,510,619	\$113,189,453	\$84,079,754
Packed solid—			
Pounds.....	410,092,616	364,432,996	328,956,590
Value.....	\$115,098,056	\$74,483,303	\$63,961,893
Prints and rolls—			
Pounds.....	214,072,037	167,045,145	91,169,956
Value.....	\$64,412,563	\$38,706,147	\$20,117,861
<b>Cheese:</b>			
Pounds.....	311,126,317	317,144,872	281,972,324
Value.....	\$43,239,024	\$28,611,760	\$26,519,829
Full-cream—			
Pounds.....	287,110,383	239,652,634	225,776,105
Value.....	\$40,817,073	\$22,024,853	\$21,363,477
Part-cream—			
Pounds.....	10,893,392		
Value.....	\$1,188,000		
Skimmed—			
Pounds.....	7,770,812	3,459,582	( <sup>3</sup> )
Value.....	\$429,519	\$148,568	( <sup>3</sup> )
Other kinds—			
Pounds.....	5,441,730	74,032,656	56,196,219
Value.....	\$805,332	\$6,438,339	\$5,156,352
<b>Condensed milk:</b>			
Pounds.....	494,796,544	308,485,182	186,921,787
Value.....	\$33,593,129	\$20,149,282	\$11,888,792
Sweetened—			
Pounds.....	214,518,310	198,355,189	( <sup>3</sup> )
Value.....	\$17,345,278	\$13,478,376	( <sup>3</sup> )
Unsweetened—			
Pounds.....	280,278,234	110,129,993	( <sup>3</sup> )
Value.....	\$16,217,851	\$6,670,906	( <sup>3</sup> )
<b>Cream sold:</b>			
Pounds.....	81,211,374	28,131,914	61,764,552
Value.....	\$9,828,972	\$2,364,407	\$4,435,444
<b>Skimmed milk sold:</b>			
Pounds.....	352,594,574	1,161,414,457	2,253,494,156
Value.....	\$929,135	\$1,368,738	\$2,531,460
<b>Casein:</b>			
Pounds.....	13,018,298	11,581,874	12,298,405
Value.....	\$795,544	\$554,099	\$383,581
<b>All other products.....</b>	<b>\$6,990,395</b>	<b>\$1,945,050</b>	<b>\$944,489</b>

<sup>1</sup> In addition, 2,381,212 pounds of butter, valued at \$664,171, 49,413 pounds of part-cream cheese, valued at \$5,745, 401,300 pounds of condensed milk, valued at \$24,078, and other dairy products to the value of \$25,388 were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>2</sup> In addition, 1,971,120 pounds of butter, valued at \$448,729, and other dairy products to the value of \$71,588 were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>3</sup> Not reported separately.

In 1909, 34.3 per cent of the total production of butter reported for the industry was put up in prints and rolls, as compared with 31.4 per cent in 1904 and 21.7 per cent in 1899, the remainder in each case being packed solid. The increase from 1899 to 1909 in the quantity of butter put up in prints and rolls amounted to 122,902,081 pounds, or 134.8 per cent, and the in-

crease in butter packed solid to 81,736,026 pounds, or 24.8 per cent.

Of the total quantity of cheese made in the factories of the industry in 1909, 92.3 per cent was full-cream cheese, 3.5 per cent was part-cream cheese, 2.5 per cent was skimmed-milk cheese, and 1.7 per cent was reported under the heading of "other kinds," comprising a number of fancy varieties, such as Neufchâtel and Brie.

The several kinds of cheese were not uniformly reported at the three censuses. The supplemental schedule used for the industry in 1904 called for separate returns for three classes of cheese, designated, respectively, standard factory (cheddars or flats), skimmed cheese, and "other kinds," while that used in 1899 distinguished only two kinds, standard factory and "other kinds." Further, the quantities of full-cream and part-cream cheese reported for 1909 include a number of kinds of cheese that in 1904 and 1899 were classified as "other kinds."

The two kinds of condensed milk, sweetened and unsweetened, were not reported separately prior to 1904. During the five-year period 1904-1909, however, the increase in the production of unsweetened condensed milk was much more rapid than that in the production of the sweetened variety—the respective percentages being 154.5 and 8.1. The proportion which unsweetened condensed milk represented of the total production thus increased from 35.7 per cent in 1904 to 56.6 per cent in 1909.

The quantity of skimmed milk sold shows a rapid decrease from census to census. This decrease is due in part to the growing practice of delivering cream instead of milk to butter factories, and in part to the growth of the condensed milk industry, in which the whole milk is used with no residue of skimmed milk.

The number of cream separators used by the factories decreased from 9,701 in 1899 to 8,842 in 1904 and 5,624 in 1909. This decrease is no doubt due in great part to the increasing use of separators on the farms, which has already been spoken of in connection with the large increase in the amount of cream received at the factories and the relative decrease in the amount of whole milk received.

DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the butter, cheese, and condensed milk industry are presented, by states, in Tables 26 and 27.

Table 26 shows for 1909, 1904, and 1899 the number

of establishments, number of persons engaged in the industry, primary horsepower, capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture, and Table 27 gives statistics in greater detail for 1909 only.

BUTTER, CHEESE, AND CONDENSED MILK—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
United States.....	1909	8,479	31,506	8,019	5,056	18,431	101,349	\$71,284	\$3,591	\$11,081	\$235,546	\$274,558	\$39,012
	1904	8,928	25,865	6,801	3,507	15,557	93,845	47,256	1,376	8,413	142,920	168,183	25,263
	1899	9,242	22,604	6,987	2,818	12,790	89,062	36,303	912	6,146	108,841	130,783	21,942
Arizona.....	1909	11	75	1	16	58	350	240	22	51	388	538	150
	1904	5	30	2	7	30	263	180	7	22	190	267	77
	1899	7	33	4	14	15	101	73	6	9	122	148	26
Arkansas.....	1909	9	28	4	11	13	163	97	4	7	105	131	26
	1904	3	8	3	1	4	42	11	1	2	28	33	5
	1899	8	13	5	3	5	72	27	1	2	25	33	8
California.....	1909	161	918	110	202	597	2,495	2,829	202	466	11,140	12,761	1,621
	1904	281	997	269	125	603	3,026	2,107	78	414	6,460	7,821	1,361
	1899	178	629	137	90	402	1,922	1,157	47	203	2,081	3,583	602
Colorado.....	1909	39	304	20	68	210	657	1,221	68	130	1,024	2,340	416
	1904	120	141	16	28	97	470	593	31	69	1,081	1,290	209
	1899	38	133	35	18	80	403	204	11	40	471	618	147
Connecticut.....	1909	30	148	9	34	105	231	211	17	52	623	745	122
	1904	141	140	17	28	95	209	159	15	57	670	815	145
	1899	71	262	49	47	166	531	275	24	85	882	1,094	212
Delaware.....	1909	10	74	30	12	32	204	208	5	14	211	264	53
	1904	11	43	14	4	25	165	63	2	12	160	197	37
	1899	22	68	20	5	34	254	85	2	13	184	253	69
Georgia.....	1909	4	6	1	1	4	45	28	( <sup>2</sup> )	1	18	23	5
	1904	6	18	4	1	14	64	26	1	4	27	39	12
	1899	4	8	3	1	4	30	13	1	2	11	14	3
Idaho.....	1909	18	150	12	20	118	260	231	23	77	681	884	203
	1904	16	35	9	13	13	120	44	2	10	136	172	36
	1899	19	33	11	8	14	140	75	3	7	85	116	31
Illinois.....	1909	295	3,000	896	372	1,732	6,753	7,820	398	942	14,267	17,798	3,531
	1904	405	2,302	272	295	1,735	6,350	5,322	154	829	10,709	13,277	2,508
	1899	527	2,097	394	220	1,433	6,886	4,466	136	697	10,199	12,970	2,680
Indiana.....	1909	132	807	116	203	488	1,858	1,042	85	262	3,190	3,959	763
	1904	87	324	72	65	187	1,025	362	19	98	1,011	1,291	280
	1899	112	233	62	23	118	1,000	287	7	57	711	930	210
Iowa.....	1909	512	2,199	212	756	1,231	8,911	4,472	377	855	22,842	25,850	3,008
	1904	655	2,323	361	802	1,160	9,944	2,919	137	687	12,896	15,028	2,132
	1899	907	2,111	565	413	1,133	11,853	3,459	81	589	13,502	15,846	2,344
Kansas.....	1909	90	568	55	165	348	2,544	1,776	151	211	4,951	6,071	1,120
	1904	90	604	88	102	414	2,531	1,993	75	188	3,256	3,946	690
	1899	171	598	100	97	395	3,302	1,140	41	167	3,062	3,658	691
Kentucky.....	1909	13	78	5	17	56	164	81	10	30	195	275	80
	1904	3	21	6	3	12	37	19	3	5	48	84	36
	1899	9	31	14	.....	17	37	19	.....	5	55	77	22
Maine.....	1909	29	138	11	31	96	523	424	24	48	1,098	1,301	203
	1904	146	123	21	24	78	455	385	9	47	1,045	1,230	185
	1899	61	240	30	39	162	496	430	17	70	1,407	1,728	321
Maryland.....	1909	44	137	54	14	69	522	257	10	39	524	654	130
	1904	55	156	71	5	80	576	176	2	29	399	519	120
	1899	84	222	91	18	113	800	234	7	34	558	694	136
Massachusetts.....	1909	24	95	18	21	56	318	115	7	29	548	664	116
	1904	36	123	12	47	64	354	211	9	41	779	877	98
	1899	50	141	18	24	99	449	324	13	62	1,025	1,198	173
Michigan.....	1909	435	1,740	350	317	1,073	4,776	3,434	187	554	12,377	14,287	1,910
	1904	371	1,301	259	167	875	3,794	1,888	65	432	7,027	8,200	1,182
	1899	286	798	203	92	503	2,371	1,251	25	222	3,274	3,919	645
Minnesota.....	1909	784	1,971	425	362	1,184	11,874	4,752	137	829	22,707	25,287	2,530
	1904	771	1,563	286	236	1,041	11,511	3,305	63	634	11,140	12,871	1,731
	1899	596	1,291	210	341	740	8,025	2,265	59	308	7,189	8,480	1,201
Missouri.....	1909	56	277	31	87	159	788	701	68	100	2,499	2,950	460
	1904	54	241	42	51	148	573	546	33	69	1,033	1,314	281
	1899	79	164	66	24	74	639	200	5	31	329	432	103

<sup>1</sup> Excluding statistics for 1 establishment, to avoid disclosure of individual operations.  
<sup>2</sup> Less than \$500.  
<sup>3</sup> Excluding statistics for 2 establishments, to avoid disclosure of individual operations.

BUTTER, CHEESE, AND CONDENSED MILK—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899—Continued.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Montana.....	1909	20	43	4	10	29	235	\$179	\$0	\$24	\$354	\$419	\$65
	1904	1											
	1899	3	3	1		2	16	7		1	6	8	2
Nebraska.....	1909	37	602	14	205	383	1,032	2,975	196	256	6,435	7,681	1,246
	1904	40	300	24	113	253	861	1,861	102	137	2,072	3,326	654
	1899	93	446	47	66	333	2,263	952	41	147	1,854	2,254	400
Nevada.....	1909	9	25	3	6	16	94	102	5	15	289	326	37
	1904	4	11		1	10	67	57	(*)	9	161	197	36
	1899	4	20			11	45	50	3	6	127	148	21
New Hampshire.....	1909	29	85	13	22	50	492	214	8	31	709	807	98
	1904	34	103	20	20	63	514	163	6	36	730	864	134
	1899	53	180	27	34	110	711	311	11	58	1,226	1,468	242
New Jersey.....	1909	20	102	15	14	73	771	256	8	42	670	793	123
	1904	29	74	20	5	43	353	135	1	21	318	395	77
	1899	53	143	55	14	74	607	242	4	37	488	610	122
New York.....	1909	1,552	4,930	1,483	581	2,866	16,629	12,216	507	1,607	36,161	42,458	6,207
	1904	1,766	4,804	1,721	215	2,868	14,322	9,068	192	1,485	26,793	31,048	4,255
	1899	1,908	4,438	1,772	227	2,439	13,905	7,084	122	1,167	22,487	26,558	4,071
North Dakota.....	1909	68	106	32	12	62	854	312	8	46	891	1,020	138
	1904	60	98	18	25	55	618	202	2	38	478	562	84
	1899	21	31	13	5	13	191	52	1	8	96	122	26
Ohio.....	1909	325	2,494	1,216	211	1,067	3,386	2,739	173	557	7,085	9,690	2,005
	1904	431	807	318	61	488	3,462	1,428	19	292	3,729	4,593	864
	1899	479	869	391	89	389	2,569	1,041	19	190	3,055	3,809	754
Oklahoma.....	1909	19	101	17	22	62	427	197	19	36	928	1,150	222
	1904	3	16	4	1	11	91	16	(*)	6	66	89	23
	1899	5	8	5		3	32	13		2	14	19	5
Oregon.....	1909	95	615	63	132	420	1,935	1,718	131	290	3,952	4,920	968
	1904	88	257	91	36	130	715	429	17	81	1,361	1,629	268
	1899	68	142	60	20	62	491	223	9	27	509	639	130
Pennsylvania.....	1909	536	2,093	635	281	1,177	7,613	4,291	155	556	11,674	13,544	1,870
	1904	645	2,152	623	311	1,218	9,483	3,649	89	556	9,656	11,581	1,925
	1899	749	1,795	692	127	976	8,868	3,033	46	446	8,712	10,290	1,578
South Dakota.....	1909	95	252	50	63	139	1,456	683	44	112	2,308	2,686	378
	1904	97	350	32	126	192	1,410	484	26	125	1,833	2,183	350
	1899	138	287	44	95	148	1,579	461	12	77	1,005	1,199	194
Texas.....	1909	36	143	30	29	84	477	309	15	40	530	660	130
	1904	10	19	12	2	5	62	35	1	4	49	63	14
	1899	12	30	9	3	18	84	42		9	51	81	30
Utah.....	1909	37	285	25	46	214	695	1,134	42	116	1,613	1,971	358
	1904	49	159	38	23	98	813	407	16	55	789	964	175
	1899	57	252	39	54	159	616	269	16	63	550	714	104
Vermont.....	1909	186	699	104	70	519	2,944	1,795	48	292	7,056	8,112	1,056
	1904	220	653	106	133	419	2,564	1,053	30	223	5,816	6,416	660
	1899	255	801	142	137	522	3,624	1,223	38	236	4,885	5,656	771
Virginia.....	1909	11	28	10	2	16	141	97	1	6	54	67	13
	1904	4	9	6		3	14	10		1	16	20	4
	1899	10	20	12		8	48	15		2	40	52	12
Washington.....	1909	97	978	58	185	735	2,203	2,277	199	457	5,676	7,271	1,595
	1904	88	502	60	68	374	987	871	61	219	2,392	2,993	601
	1899	60	237	56	35	146	526	304	27	81	932	1,190	258
Wisconsin.....	1909	2,630	5,161	1,804	434	2,863	16,467	9,766	217	1,877	48,006	53,843	5,837
	1904	2,360	4,479	1,858	323	2,298	15,276	5,897	69	1,328	26,406	29,995	3,589
	1899	2,018	3,732	1,538	414	1,780	12,413	4,918	70	893	16,624	20,120	3,496
Wyoming.....	1909	4	27		7	20	79	115	11	17	211	269	58
	1904	5	17	3	3	11	83	38	3	7	95	114	19
	1899												
All other states.....	1909	7	15	8		7	42	20		7	50	71	21
	1904	27	398	17	38	343	545	1,146	37	151	1,465	1,871	406
	1899	27	65	13	12	40	173	79	5	13	108	151	48

\* Figures can not be shown without disclosing individual operations.

† Less than \$500.

‡ Excluding statistics for 1 establishment, to avoid disclosure of individual operations.

§ Excluding statistics for 2 establishments, to avoid disclosure of individual operations.

BUTTER, CHEESE, AND CONDENSED MILK—DETAILED STATISTICS, BY STATES: 1909.

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.											WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
		Total.	Proprietors and firm members.	Salaried officers, supts., and managers.	Clerks.		Average number.	Wage earners.				Total.	16 and over.		Under 16.			
					Male.	Female.		Number, 15th day of—					Male.	Female.	Male.	Female.		
								Maximum month.	Minimum month.	Maximum month.	Minimum month.							
United States	8,479	31,506	8,019	2,461	1,748	847	18,431	Jy	21,392	Ja	15,121	19,323	17,743	1,468	91	21	101,349	
Arizona	11	75	1	0	4	3	58	Je	67	Ja	52	56	56				350	
Arkansas	9	28	4	10	1		13	Jy	16	Ja	11	15	13	1		1	163	
California	161	918	119	90	70	42	597	My	632	Ja	525	635	596	39			2,456	
Colorado	39	304	29	19	27	22	210	Jy	247	Ja	187	200	155	45			657	
Connecticut	30	148	9	31	3		108	Je	108	Oc	104	104	103	1			231	
Delaware	10	74	30	6	1	5	32	Se	35	Ap	30	33	33				204	
Georgia	4	6	1	1	1		4	Oc	5	Ja	4	5	5				45	
Idaho	18	150	12	11	10	8	118	Au	129	Ja	103	122	117	5			260	
Illinois	295	3,000	896	133	187	52	1,732	Je	1,807	De	1,627	1,689	1,340	335	6	8	0,753	
Indiana	132	807	116	130	37	36	488	Jy	527	Ja	441	507	477	29	1		1,853	
Iowa	512	2,109	212	370	295	82	1,231	Jy	1,453	Ja	1,066	1,187	1,140	43	4		8,911	
Kansas	60	568	55	60	60	45	348	Au	433	Ja	270	331	289	41	1		2,544	
Kentucky	13	78	5	7	4	0	56	Je	59	Ja	54	57	56	1			164	
Maine	29	138	11	18	4	9	96	Je	107	Oc	91	99	91	8			523	
Maryland	44	137	54	11	2	1	69	My	82	Ja	66	81	79		2		522	
Massachusetts	24	95	18	15	5	1	56	Je	58	Fe	55	58	59			2	318	
Michigan	435	1,740	350	187	93	67	1,073	Je	1,179	Fe	949	1,155	1,047	106	2		4,776	
Minnesota	784	1,971	425	227	89	40	1,184	Jy	1,372	Ja	1,025	1,191	1,179	8	4		11,574	
Missouri	56	277	31	29	35	23	159	Jy	210	Fe	121	142	121	21			788	
Montana	20	43	4	6	3	1	29	Je	30	Ja	27	32	27	5			235	
Nebraska	37	602	14	75	68	67	383	Jy	545	Ja	253	506	449	54	3		1,032	
Nevada	9	25	3	4	1	1	16	My	19	Ja	14	16	14	2			94	
New Hampshire	29	85	13	10	3	3	50	Jy	57	De	45	52	50	2			492	
New Jersey	20	102	15	8	3	3	73	Jy	79	Ja	69	72	72				771	
New York	1,552	4,930	1,489	271	234	70	2,800	Je	3,588	Ja	2,065	3,163	2,808	278	17		10,629	
North Dakota	68	100	32	10	2	62	Je	72	Ja	40	67	66		1			854	
Ohio	325	2,494	1,210	78	91	42	1,067	Au	1,232	Fe	876	1,144	1,026	102	8	8	3,386	
Oklahoma	19	101	17	10	0	6	62	Jy	83	Ja	40	50	40	9	1		427	
Oregon	95	615	63	39	63	30	420	Je	515	Ja	344	399	365	30	4		1,935	
Pennsylvania	530	2,093	635	158	82	41	1,177	Jy	1,336	Fe	1,024	1,234	1,154	71	8	1	7,613	
South Dakota	95	252	50	31	18	14	139	Jy	170	Ja	116	131	125	6			1,456	
Texas	36	143	30	16	11	2	84	De	91	Ja	75	94	93	1			477	
Utah	37	285	25	19	8	8	214	Se	228	Ja	195	204	173	31			635	
Vermont	186	699	104	42	15	19	519	Je	620	Fe	428	518	494	22	2		2,944	
Virginia	11	28	10	2	2	16	Au	20	Ja	13	21	20	1				141	
Washington	97	978	58	55	106	24	735	Je	884	Ja	603	650	548	97	4	1	2,203	
Wisconsin	2,630	5,161	1,864	244	131	59	2,863	Jy	3,443	Ja	2,015	3,277	3,183	71	23		16,467	
Wyoming	4	27	4	2	1	20	Jy	24	Ja	18	19	19	10	3			79	
All other states <sup>2</sup>	7	15	8				7				7	7	7				42	

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including int. rev.	Contract work.	Other.		
United States	\$71,283,615	\$258,698,374	\$1,926,606	\$1,664,018	\$11,081,308	\$2,771,983	\$232,774,081	\$324,347	\$360,275	\$301,658	\$7,494,098	\$274,557,718	\$39,011,654
Arizona	240,469	505,740	15,440	6,470	50,029	16,748	371,342	260	1,688	387	42,496	538,227	150,337
Arkansas	96,840	119,842	4,364	100	6,526	3,535	101,841	100	309		3,067	131,235	25,859
California	2,829,359	12,198,871	113,755	88,040	466,252	98,542	11,046,158	40,123	12,268	23,031	316,502	12,760,970	1,620,970
Colorado	1,220,524	2,238,279	30,000	38,097	129,712	16,225	1,907,377	5,664	6,464	224	104,516	2,330,765	416,163
Connecticut	210,618	709,405	14,781	1,800	52,409	6,099	617,013	482	718		10,193	745,450	122,338
Delaware	207,599	240,437	3,900	1,560	14,081	3,523	207,635	847	452		8,439	203,691	52,533
Georgia	27,951	20,623	480		1,245	367	18,052		173		306	23,171	4,752
Idaho	230,910	823,980	12,840	10,000	77,409	11,158	669,433	6,867	1,037	85	34,501	884,066	203,475
Illinois	7,810,996	10,485,553	175,463	222,812	942,206	259,306	14,007,525	20,150	34,186	225	823,590	17,798,278	3,531,357
Indiana	1,042,271	3,677,566	52,381	33,001	261,870	38,756	3,157,375	4,238	6,920	0,402	116,614	3,958,600	762,460
Iowa	4,471,937	24,857,702	188,278	188,314	854,577	246,470	22,595,154	10,413	23,550	41,875	709,065	25,849,866	3,008,236
Kansas	1,775,018	5,681,301	83,554	67,009	211,368	43,756	4,906,757	7,592	18,501	250	342,514	6,070,634	1,120,121
Kentucky	81,363	247,099	3,794	6,180	30,428	2,290	193,103	480	582		10,146	275,389	79,990
Maine	424,405	1,209,521	17,518	6,083	47,624	14,269	1,083,741	2,868	2,219	208	34,991	1,301,227	203,017
Maryland	257,063	587,238	9,225	670	38,981	11,445	512,489	970	938		12,920	653,702	129,768
Massachusetts	114,798	600,218	5,442	1,062	28,958	4,614	543,631	560	979	6,024	8,958	664,119	115,874
Michigan	3,433,729	13,580,217	115,683	71,769	554,498	139,134	12,237,068	10,358	21,856	10,271	418,982	14,287,499	1,910,697
Minnesota	4,752,089	24,272,895	82,421	54,096	829,306	255,693	22,451,780	19,222	21,004	4,046	555,327	25,287,462	2,579,989
Missouri	700,817	2,764,960	30,394	38,023	100,267	20,721	2,478,295	10,970	8,225	36	78,029	2,958,818	450,802
Montana	178,656	401,957	6,660	2,712	23,798	3,565	350,608	3,990	804		9,820	418,920	64,747
Nebraska	2,975,211	7,273,042	96,466	99,304	255,689	60,537	6,374,209	6,845	9,131	136,591	235,170	7,681,272	1,246,526
Nevada	101,911	815,085	4,740	300	14,600	4,537	284,336	560	494		5,468	325,755	36,882
New Hampshire	213,526	770,877	6,055	1,758	31,299	8,487	700,078	2,367	1,360		19,593	807,164	98,599
New Jersey	255,696	737,788	4,010	4,300	41,075	17,003	652,721	2	1,548	29	16,500	793,423	123,999
New York	12,216,234	39,367,847	275,972	230,952	1,607,364	470,264	35,690,803	39,019	58,666	12,246	982,661	42,458,345	6,207,278
North Dakota	312,246	973,917	7,502	450	45,943	13,890	877,439	1,580	2,087	77	24,999	1,020,135	137,806
Ohio	2,738,717	8,938,606	94,608	78,647	558,764	90,537	7,594,899	12,860	18,851	5,434	488,066	9,689,670	2,004,234
Oklahoma	197,261	1,072,347	12,550	6,072	36,239	14,458	913,842	1,407	1,083		88,636	1,149,545	221,245
Oregon	1,718,058	4,594,168	59,577	71,363	290,269	60,129	3,892,091	23,597	9,291	5,409	182,442	4,920,462	968,242
Pennsylvania	4,290,786	12,695,937	88,896	66,578	556,365	166,098	11,508,292	19,935	15,952	3,738	270,083	13,544,005	1,869,675
South Dakota	633,230	2,545,073	22,154	21,760	111,770	33,097	2,274,036	5,339	3,033		72,984		

This page was intentionally left blank.

---

---

# CANNING AND PRESERVING

---

---

(379)

This page was intentionally left blank.

# CANNING AND PRESERVING.

## GENERAL STATISTICS.

**Summary for the four branches of the industry: 1909.**—Table 1 presents a summary of the statistics of the canning and preserving industry as a whole for 1909. It also distinguishes four classes of establishments: (1) Establishments whose chief products are canned and preserved fruits and vegetables, including dried and packed fruits put up by packing houses; (2) establishments whose chief products are canned and cured fish, including pickled, smoked, and dried fish; (3) establishments whose chief products are canned oysters and clams; (4) establishments whose chief products are pickles, preserves, jellies, sauces, etc.

The general statistics for the industry do not cover the canning of meats, soups, or other products by meat-packing establishments, statistics for which are included with those for the slaughtering and meat-packing industry. Data as to the quantity of canned and preserved fruits, vegetables, and fish produced as subsidiary or incidental products in the meat-packing or other industries are, however, shown in the footnotes to Table 17. The drying and packing of fruits and vegetables when done on the farm by the grower is not included, the value of the products so prepared on farms being covered by the census of agriculture. The shucking of oysters, except as done in connection with canning, is not considered as properly within the scope of the census of manufactures.

In making up the statistics for the four branches of the industry named, each establishment has been assigned according to its product of chief value. Some of the establishments are engaged in the canning of fruits and vegetables in the summer and fall months and in the canning and preserving of fish and oysters at other times; and large quantities of pickles, preserves, and sauces are made by establishments engaged primarily in canning vegetables. This overlapping makes it advisable to present in most of the tables only totals for all establishments in the four branches of the industry combined.

In 1909 the establishments in the industry as a whole gave employment on the average to 71,972 persons, of whom 59,968 were wage earners, and paid out \$26,945,466 in salaries and wages.

In the canning and preserving industry the cost of materials constitutes a large proportion of the total value of products, the processes of manufacture being relatively simple and inexpensive. The combined cost of the materials used by all four branches of the industry in 1909 was \$101,823,059, which is equal to 64.8 per cent of the total value of products

(\$157,101,201), while the value added by manufacture (that is, the value of products less the cost of materials) was \$55,278,142.

**Table 1**

	Total for the industry.	ESTABLISHMENTS ENGAGED PRIMARILY IN CANNING AND PRESERVING—			
		Fruits and vegetables.	Fish.	Oysters.	Pickles, preserves, and sauces.
Number of establishments.....	3,767	2,789	328	70	580
Persons engaged in the industry.....	71,972	47,448	8,341	2,873	13,310
Proprietors and firm members.....	4,244	3,316	338	49	541
Salaried employees.....	7,760	3,640	743	158	3,219
Wage earners (average number).....	59,968	40,492	7,260	2,666	9,550
Primary horsepower.....	81,179	59,950	6,969	1,423	12,837
Capital.....	\$119,207,127	\$67,313,424	\$18,790,180	\$3,647,136	\$29,450,387
Expenses.....	141,480,156	89,771,512	22,061,016	2,420,579	33,194,049
Services.....	26,645,406	15,090,277	3,985,512	609,441	7,200,230
Salaries.....	7,803,623	3,318,579	894,559	195,360	3,455,125
Wages.....	19,081,843	11,771,698	3,090,953	474,081	3,745,111
Materials.....	101,823,059	62,643,622	15,911,335	1,570,705	21,797,397
Miscellaneous.....	12,717,631	6,137,613	2,194,169	189,433	4,196,416
Value of products.....	157,101,201	91,439,161	25,514,436	2,813,857	37,338,747
Value added by manufacture (value of products less cost of materials).....	55,278,142	28,895,539	9,603,101	1,243,152	15,536,350

Of the 3,767 establishments canvassed in 1909, nearly three-fourths (2,789) were engaged primarily in the canning and preserving of fruits and vegetables, these establishments contributing products to the value of \$91,439,161, or 58.2 per cent of the total for the industry as a whole. Establishments engaged chiefly in the canning and curing of fish formed approximately one-eleventh of the total number, and the value of their products represented 16.2 per cent of the total for all four branches. The 70 establishments engaged chiefly in oyster canning contributed 1.8 per cent of the total value of all products; and those establishments whose chief products were pickles, preserves, and sauces, which formed about one-seventh of the total number, contributed 23.8 per cent of the total value.

In the case of establishments engaged primarily in canning fruits and vegetables the cost of materials represented 68.4 per cent of the value of products; in the case of those handling fish principally, 62.4 per cent; of those chiefly canning oysters and clams, 55.8 per cent; and of those making chiefly pickles, preserves, and sauces, 58.4 per cent. It should be noted that the cost of cans and other containers is an important factor in the cost of materials.

Comparison with earlier censuses, for the industry as a whole.—Table 2 summarizes the statistics for the canning and preserving industry as a whole for each census from 1889 to 1909, inclusive.

Table 2

	CANNING AND PRESERVING—ALL BRANCHES COMBINED.							
	Number or amount.				Per cent of increase. <sup>1</sup>			
	1909	1904	1899	1889	1899-1909	1904-1909	1899-1904	1889-1899
Number of establishments.....	3,767	3,168	2,570	1,312	46.6	18.9	23.2	95.9
Persons engaged in the industry.....	71,972	66,022	( <sup>2</sup> )	( <sup>2</sup> )	.....	9.0	.....	.....
Proprietors and firm members.....	4,244	3,450	( <sup>2</sup> )	( <sup>2</sup> )	.....	23.0	.....	.....
Salaried employees.....	7,760	5,628	4,199	( <sup>2</sup> )	84.8	37.9	34.0	.....
Wage earners (average number).....	59,968	56,944	57,012	58,359	5.2	5.3	-0.1	( <sup>3</sup> )
Primary horsepower.....	81,179	60,831	38,624	20,690	110.2	33.4	57.5	86.7
Capital.....	\$119,207,127	\$79,245,880	\$55,480,983	\$23,415,619	114.9	50.4	42.8	136.9
Expenses.....	141,486,156	115,539,183	86,327,718	39,062,450	63.9	22.5	33.8	.....
Services.....	26,945,466	21,567,056	17,183,832	8,259,422	56.8	24.9	25.5	.....
Salaries.....	7,863,623	5,230,704	3,478,727	( <sup>2</sup> )	126.0	50.3	50.4	.....
Wages.....	19,081,843	16,336,352	13,705,105	( <sup>2</sup> )	39.2	16.8	19.2	.....
Materials.....	101,823,059	83,147,336	63,667,568	28,704,413	59.9	22.5	30.6	121.8
Miscellaneous.....	12,717,631	10,824,791	5,476,318	2,098,624	132.2	17.5	97.7	160.9
Value of products.....	157,101,201	130,465,976	99,335,464	46,625,539	58.2	20.4	31.3	113.0
Value added by manufacture (value of products less cost of materials).....	55,278,142	47,318,640	35,667,896	17,921,126	55.0	16.8	32.7	99.0

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Figures not comparable.

Comparable statistics for the industry as a whole are not available for censuses prior to 1889. The canning and preserving of food products is an industry which lies on the border line between manufacture on the one hand, and agriculture and fishing on the other, and for this reason the several branches of the industry have not always been regarded in census reports as manufacturing business. In 1879 there were reported 520 establishments engaged in the canning and preserving of fruits and vegetables and the manufacture of pickles, preserves, and sauces, which gave employment to an average of 32,835 wage earners, and turned out products valued at \$20,006,918; but statistics for the canning and preserving of fish and oysters in 1879 are not available.

The value of products reported was more than three times as great in 1909 as in 1889, but part of the increase is attributable to the advance that has taken place in the price of the farm and sea products used as materials. The average number of wage earners reported shows little change from census to census, but the figures shown in the table for 1889 are far from comparable with those for later censuses.<sup>1</sup> The introduction of new and improved machinery has permitted an increase in output since 1899 without an increase

in wage earners; the horsepower reported, however, has increased greatly.

Comparison with earlier censuses for the four branches of the industry.—Table 3 shows, for the four branches of the industry separately, the most important items for 1909 and 1899 and the per cent of increase.

The canning and preserving of fruits and vegetables, the largest of the four branches of the industry, showed a marked increase during the decade 1899-1909 in all items except the average number of wage earners, for which the increase was only 8.9 per cent. The value of products increased 62 per cent. In fish canning and preserving there was a decrease of 35.5 per cent in the average number of wage earners, but this decrease was probably due in part to the erroneous inclusion in 1899 either of some of the fishermen engaged in the catching of fish or of some of the laborers engaged on contract work—that is, working for contractors and not employed directly by the manufacturer—for which work only the expenses should be reported. This branch of the industry shows the least relative increase of any of the four branches in value of products, but this may be accounted for in part by the great growth in the fish-canning industry in Alaska during the decade. No doubt a smaller proportion of the salmon catch of Alaska was sent to the states for use in the canneries in 1909 than in 1899. The oyster-canning branch, although the least important, shows by far the greatest percentages of increase during the decade. In 1909 there were approximately three times as many establishments as in 1899, twice as many wage earners, twice as great a value of products, and three times as great a value added by manufacture. The manufacture of pickles, preserves, and sauces shows an increase during the decade of 32.2 per cent in the average number of wage earners, 59 per cent in value of products, and 61.8 per cent in value added by manufacture.

<sup>1</sup> The main source of incomparability between the statistics of wage earners for 1889 and those for later years is found in the fact that the average number for 1889 was computed on the basis of the number of weeks or months each plant was in operation, while the average number for later censuses was computed on the basis of a full year's operation, even though the plant may have run only a short time. A plant running six months and employing continuously during that period 50 wage earners would have been reported in 1889 as having an average of 50, while at later censuses it would have been reported as having an average of 25. In the case of industries in which most establishments operate continuously, this change in the method of calculating the average number of wage earners has little effect upon the comparability of the statistics; but in the case of a seasonal industry like canning and preserving it has a very great effect. The figures for the average number of wage earners in 1889 in this industry are much larger than they would be if computed on the basis used at later censuses.

Table 3

ESTABLISHMENTS ENGAGED PRIMARILY IN CANNING AND PRESERVING—

	Fruits and vegetables.			Fish.			Oysters.			Pickles, preserves, and sauces.		
	1900	1899	Per cent of increase.	1900	1899	Per cent of increase.	1900	1899	Per cent of increase.	1900	1899	Per cent of increase.
Number of establishments.....	2,780	1,813	53.8	323	310	5.8	70	23	204.3	580	424	36.8
Persons engaged in the industry.	47,448	(2)	(2)	8,341	(2)	(2)	2,873	(2)	(2)	13,310	(2)	(2)
Proprietors and firm members.....	3,316	(2)	(2)	338	(2)	(2)	49	(2)	(2)	541	(2)	(2)
Salaried employees.....	3,640	1,747	108.4	743	547	35.8	153	40	295.0	3,219	1,865	72.0
Wage earners (average number).....	40,492	37,180	8.9	7,260	11,263	-35.5	2,666	1,335	99.7	9,550	7,225	32.2
Primary horsepower.....	50,906	25,906	122.8	4,224	11,423	65.0	1,423	922	54.3	12,837	6,572	95.3
Capital.....	\$67,313,424	\$27,705,621	142.2	\$18,796,180	\$16,250,094	15.7	\$3,647,136	\$441,091	725.7	\$29,450,387	\$10,992,677	167.9
Expenses.....	83,771,512	49,122,015	70.5	22,091,016	15,740,063	40.3	2,429,579	1,143,243	112.5	33,104,049	20,321,497	63.3
Services.....	15,000,277	9,522,979	58.5	3,985,512	3,438,562	15.9	669,441	282,256	137.2	7,200,236	3,940,035	82.7
Salaries.....	3,318,579	1,271,508	161.0	804,559	473,700	88.8	195,360	31,831	513.7	3,455,125	1,701,598	103.1
Wages.....	11,771,698	8,251,471	42.7	3,090,953	2,934,772	4.3	474,081	250,425	89.3	3,745,111	2,283,437	67.3
Materials.....	62,643,622	37,382,541	67.3	15,911,335	11,572,568	37.5	1,570,705	837,380	87.6	21,797,397	13,875,079	57.1
Miscellaneous.....	6,137,613	2,216,495	176.9	2,194,169	727,893	200.0	189,433	23,607	702.4	4,196,416	2,565,383	67.4
Value of products.....	91,430,161	66,427,412	62.0	25,514,436	18,178,113	40.4	2,813,857	1,252,803	124.6	87,333,747	23,477,136	59.0
Value added by manufacture (value of products less cost of materials).....	28,805,530	10,044,871	51.7	9,003,101	6,605,545	45.4	1,243,152	415,423	199.2	15,536,350	9,602,057	61.8

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Comparable figures not available.

Summary by states.—Table 4 summarizes the more important statistics for the industry as a whole, by states, the states being arranged according to the value of products reported for 1909. An omission in

any of the series of numbers indicating rank means that some state included under the heading of "all other states" outranks some of the states for which separate figures are given.

Table 4

CANNING AND PRESERVING—ALL BRANCHES COMBINED.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.				Value added by manufacture.				Per cent of increase. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.			
							1909	1904				1909	1904	1909	1904	1909	1904	1909	1904	1909	1904
United States.....	3,787	59,968	100.0	.....	\$157,101,201	100.0	.....	.....	\$55,278,524	100.0	.....	.....	5.2	5.3	-0.1	58.2	20.4	31.3	55.0	16.8	32.7
California.....	196	7,757	12.9	2	32,014,820	21.0	1	1	8,905,007	16.1	1	1	-5.4	0.2	-5.6	120.3	26.2	74.0	85.7	19.9	54.9
New York.....	790	7,075	11.8	3	10,039,735	12.1	2	2	7,370,950	13.3	2	2	10.3	-0.2	22.1	52.2	13.2	34.5	54.5	5.4	46.6
Maryland.....	468	8,613	14.4	1	13,709,449	8.7	3	3	3,619,819	6.6	5	4	-6.6	-5.8	-0.8	-5.7	6.0	-11.0	-7.3	-3.8	-3.7
Washington.....	80	2,029	3.4	9	9,595,357	6.1	4	12	4,649,864	8.2	4	13	-11.0	194.5	-69.8	88.5	165.3	-23.9	145.6	259.3	-31.6
Pennsylvania.....	83	2,753	4.6	6	9,484,026	6.0	5	4	4,819,493	8.7	3	3	25.3	.....	.....	57.0	.....	.....	54.9	.....	.....
Indiana.....	134	3,406	5.7	5	8,758,343	5.6	6	8	2,813,682	5.1	6	7	58.3	-0.6	59.2	178.5	48.6	87.4	129.8	21.2	89.5
Maine.....	245	3,850	6.4	4	7,688,833	4.9	7	5	2,563,915	4.0	8	6	-40.7	10.4	-46.3	24.0	5.8	17.8	8.1	-15.3	8.5
Illinois.....	118	2,383	4.0	7	7,010,586	4.9	8	6	2,800,830	5.1	7	6	12.4	11.0	1.2	29.9	8.2	20.1	32.8	2.9	29.0
Massachusetts.....	71	1,449	2.4	14	6,840,306	4.4	9	7	2,257,499	4.1	9	9	-17.0	8.0	-23.1	8.0	4.0	3.8	30.1	28.3	1.4
Michigan.....	104	2,073	3.5	8	4,970,911	3.2	10	10	1,890,991	3.4	10	11	48.1	2.5	44.4	87.1	30.2	43.7	126.9	31.5	72.6
Wisconsin.....	83	1,776	3.0	13	4,807,454	3.1	11	13	1,840,707	3.3	11	12	130.6	35.5	70.3	253.7	46.1	142.2	190.1	43.9	94.7
Ohio.....	107	2,009	3.4	10	4,659,074	3.0	12	9	1,557,495	2.8	12	8	2.4	-6.3	9.3	43.5	3.8	38.3	18.4	-13.0	36.0
New Jersey.....	84	1,818	3.0	12	3,064,098	2.3	13	15	1,450,039	2.0	13	15	-24.3	.....	.....	4.1	.....	.....	16.5	.....	.....
Oregon.....	71	661	1.1	20	3,207,060	2.0	14	14	1,019,628	1.9	14	14	-16.4	.....	.....	-60.8	.....	.....	46.6	.....	.....
Iowa.....	71	1,247	2.1	16	2,549,377	1.6	15	11	981,488	1.8	15	10	22.1	-22.4	57.4	20.2	-30.6	73.3	4.4	-37.0	65.6
Delaware.....	77	1,369	2.3	15	2,105,945	1.3	16	17	552,449	1.0	20	19	.....	37.0	.....	44.0	.....	.....	.....	-30.1	.....
Kentucky.....	36	663	1.1	21	1,866,895	1.2	17	21	763,554	1.4	17	22	32.5	25.0	5.5	202.7	69.4	114.1	230.7	95.9	68.8
Virginia.....	325	1,860	3.1	11	1,854,318	1.2	18	10	646,051	1.2	18	20	.....	73.7	.....	52.2	.....	.....	.....	51.3	.....
Missouri.....	222	952	1.6	18	1,573,835	1.0	19	18	568,826	1.0	19	18	.....	25.6	.....	19.0	.....	.....	.....	20.0	.....
Colorado.....	30	518	0.9	22	1,527,779	1.0	20	23	855,352	1.0	16	21	118.6	64.4	32.9	276.4	86.1	102.2	448.7	118.4	151.3
Minnesota.....	32	415	0.7	25	1,343,021	0.9	21	24	448,226	0.8	21	24	240.2	.....	.....	303.3	.....	.....	270.2	.....	.....
Utah.....	24	396	0.7	20	1,059,487	0.7	22	22	343,716	0.6	23	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Louisiana.....	26	974	1.6	17	977,763	0.6	23	20	404,665	0.7	22	16	144.7	58.6	54.3	129.0	-16.6	174.7	131.4	-24.6	208.9
Mississippi.....	11	847	1.4	19	824,233	0.5	24	16	316,391	0.6	24	17	30.3	11.0	.....	-9.2	-45.3	.....	.....	.....	.....
West Virginia.....	30	271	0.4	29	604,794	0.4	25	25	174,797	0.3	27	23	-52.0	-17.1	-12.1	-21.8	-20.8	-1.3	-50.7	-53.6	6.2
Texas.....	19	158	0.3	32	498,166	0.3	26	28	297,452	0.5	25	30	.....	32.8	.....	.....	50.0	.....	.....	139.5	.....
Nebraska.....	12	215	0.3	30	480,500	0.3	27	26	211,219	0.4	26	26	33.5	.....	.....	128.0	.....	.....	.....	.....	.....
Connecticut.....	12	128	0.2	33	345,740	0.2	28	35	170,719	0.3	28	33	-3.8	-0.8	-3.0	92.2	92.2	.....	.....	.....	.....
Vermont.....	8	118	0.2	35	330,435	0.2	29	37	116,118	0.2	33	37	-7.8	.....	.....	55.5	59.4	163.3	-40.6	.....	.....
Georgia.....	26	428	0.7	24	321,287	0.2	30	32	122,938	0.2	31	31	.....	.....	.....	.....	.....	.....	.....	.....	.....
South Carolina.....	15	467	0.8	23	318,081	0.2	31	27	159,530	0.3	29	27	270.6	-55.3	.....	.....	-44.0	.....	.....	-20.3	.....
Kansas.....	8	120	0.2	34	285,532	0.2	32	31	109,346	0.2	34	32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas.....	44	262	0.5	28	278,903	0.2	33	29	98,073	0.2	35	28	114.7	.....	.....	176.2	.....	.....	.....	.....	.....
Florida.....	18	188	0.3	31	213,320	0.1	35	36	183,545	0.2	30	35	22.9	2.9	20.3	95.4	29.1	51.4	.....	.....	.....
Tennessee.....	37	303	0.5	27	206,008	0.1	36	33	75,415	0.1	36	34	161.2	49.3	75.0	.....	-14.9	.....	.....	.....	.....
North Carolina.....	21	188	0.3	31	143,691	0.1	37	34	68,721	0.1	37	36	.....	-5.5	.....	.....	-35.1	.....	.....	.....	.....
New Hampshire.....	6	26	(2)	38	53,344	(2)	38	40	22,550	(2)	39	40	.....	.....	.....	.....	.....	.....	.....	.....	.....
Alabama.....	10	46	0.1	37	24,867	(-)	41	38	8,374	0.1	40	38	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	13	137	0.2	.....	364,089	0.2	.....	.....	159,172	0.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Percentages are based on figures in Table 22. A minus sign (-) denotes decrease. Per cent not shown where base is less than 100 for wage earners or less than \$100,000 for value of products or value added by manufacture, or where comparative figures can not be given without disclosing individual operations.  
<sup>2</sup> Less than one-tenth of 1 per cent.

The industry is well distributed throughout the United States, being reported from 44 states and the District of Columbia in 1909.

California is by far the most important state in the canning and preserving industry, largely on account of its fruit products. The state ranked first at the censuses of 1909 and 1904 in value of products and value added by manufacture, but second in 1909 and third in 1904 in average number of wage earners. The establishments in California are on the average much larger than those in most other states, and doubtless the use of improved machinery accounts for the relatively small number of wage earners. The number of wage earners employed in the industry in the state decreased 5.4 per cent during the decade ending with 1909, but the value of products increased 120.3 per cent. New York ranked second in total value of products and value added by manufacture in 1909; Maryland ranked third in value of products and fifth in value added by manufacture, but first in wage earners; Pennsylvania ranked fifth in value of products and third in value added by manufacture; and Washington ranked fourth in both items.

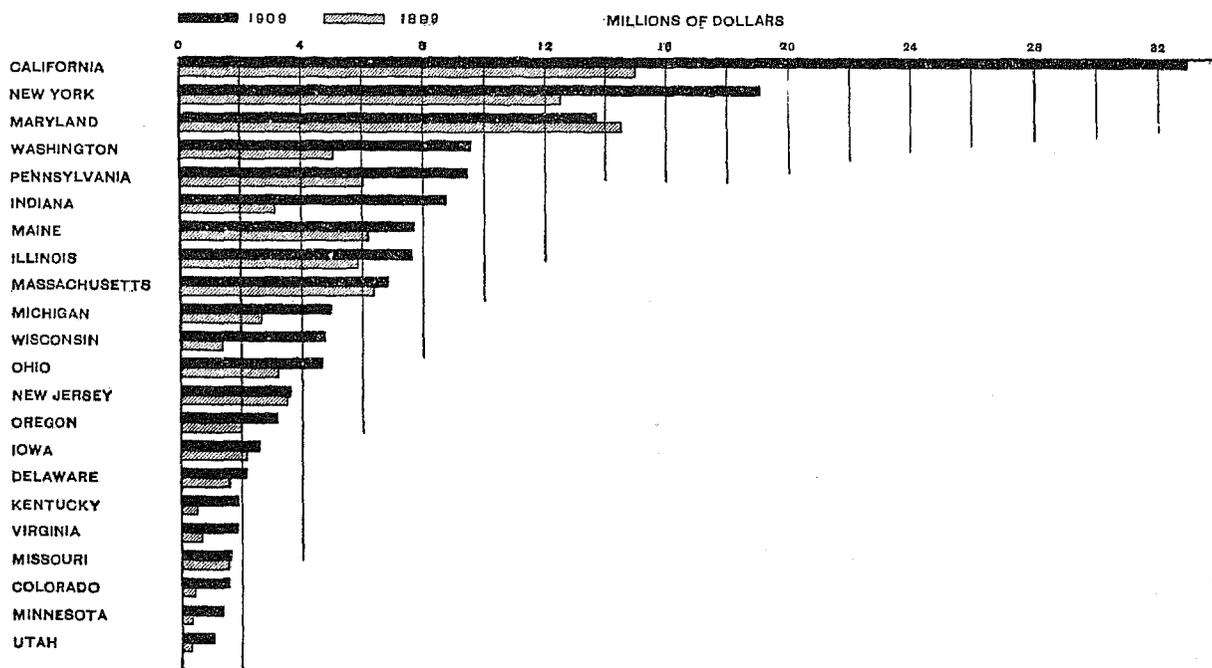
The majority of the more important states in the canning and preserving industry have the same or practically the same rank in value added by manu-

facture that they hold with respect to total value of products. Most of the states had the same or nearly the same rank as to value of products in 1909 as in 1904, showing that there has been no very conspicuous change in the geographic distribution of the industry. The state of Washington, however, because of the great increase in the fish-canning branch of the industry in that state, advanced from twelfth place in 1904 to fourth in 1909; and Mississippi, on account of the great decrease in the fish and oyster canning industry of the state, fell from sixteenth place in 1904 to twenty-fourth in 1909.

Of the 10 leading states in value of products, Indiana showed the most rapid increase in number of wage earners and value of products during the period from 1899 to 1909, the number of wage earners increasing 58.3 per cent, and the value of products 178.5 per cent. Still higher percentages of increase are shown for some of the states in which the industry has attained importance only during recent years, such as Minnesota, Colorado, Kentucky, and Wisconsin. Only 3 of the states for which the percentages are shown in Table 4 reported a smaller value of products in 1909 than in 1899, namely, Maryland, Mississippi, and West Virginia.

The diagram below shows graphically the value of products reported for the principal states in 1909 and 1899.

CANNING AND PRESERVING—VALUE OF PRODUCTS, FOR LEADING STATES: 1909 AND 1899.



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

In view of the seasonal nature of the industry, this method of calculation may give somewhat less accurate results in this case than for some of the other industries.

The average number of persons engaged in the canning and preserving industry during 1909 was 71,972, of whom 59,968, or 83.3 per cent, were wage earners; 6,920, or 9.6 per cent, proprietors

Pages 385 through 433 were inadvertently omitted during scanning.

This page was intentionally left blank.

---

---

# MANUFACTURED ICE

---

---

(435)

This page was intentionally left blank.

# THE MANUFACTURED ICE INDUSTRY.

## GENERAL STATISTICS.

Scope of the industry.—This industry includes all establishments engaged primarily in the manufacture of ice for sale, together with a few cold-storage houses making ice for sale in considerable quantities. For some establishments of the latter class the two branches of business were so closely interwoven that the receipts for storage had to be included in the value of products. For manufacturing plants in other indus-

tries making ice for sale, only the quantity and value of the ice was reported. For establishments such as breweries, cold-storage houses, and chemical factories, which manufacture ice solely for their own use, no statistics of any kind are included in this report.

Comparison with earlier censuses.—Table 1 summarizes the statistics of the industry for each census from 1869 to 1909, inclusive.

Table 1	NUMBER OR AMOUNT.						PER CENT OF INCREASE. <sup>1</sup>					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
Number of establishments.....	2,004	1,320	775	222	35	4	158.6	51.8	70.3	249.1	534.3	775.0
Persons engaged in the industry.....	21,107	13,179	8,858	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	138.3	60.2	48.8	.....	.....	.....
Proprietors and firm members.....	1,066	746	447	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	138.5	42.9	66.9	.....	.....	.....
Salaried employees.....	3,927	2,332	1,531	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	159.5	68.4	52.3	.....	.....	.....
Wage earners (average number).....	16,114	10,101	6,880	2,826	447	97	134.2	59.5	46.8	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Primary horsepower.....	317,780	191,660	100,421	20,264	( <sup>2</sup> )	72	214.5	65.8	90.9	395.6	.....	.....
Capital.....	\$118,841,538	\$68,592,001	\$38,019,507	\$9,846,468	\$1,251,200	\$434,000	212.1	78.2	75.2	236.1	687.0	188.3
Expenses.....	81,614,653	17,576,459	9,715,161	2,859,371	( <sup>2</sup> )	( <sup>2</sup> )	225.4	79.9	80.9	239.8	.....	.....
Services.....	13,046,881	7,550,273	4,629,076	1,441,187	140,885	40,600	194.8	80.7	63.1	221.2	623.0	247.0
Salaries.....	3,867,011	2,001,111	1,228,331	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	216.4	93.3	63.2	.....	.....	.....
Wages.....	9,778,970	5,549,162	3,402,745	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	187.4	76.2	63.1	.....	.....	.....
Materials.....	11,317,498	6,011,325	3,312,303	940,600	158,112	82,165	241.7	88.3	81.5	252.1	405.0	92.4
Miscellaneous.....	6,650,274	4,014,861	1,773,692	477,485	( <sup>2</sup> )	( <sup>2</sup> )	274.0	65.6	126.4	271.5	.....	.....
Value of products.....	42,953,055	23,790,045	13,780,978	4,900,983	544,763	258,250	211.7	80.6	72.6	181.2	799.7	110.9
Value added by manufacture (value of products less cost of materials).....	31,635,557	17,778,720	10,468,555	3,960,284	386,651	176,085	202.2	77.9	69.8	164.3	924.3	119.6
Ice manufactured (tons) <sup>4</sup> .....	12,647,949	7,199,448	4,294,439	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	194.5	75.7	67.6	.....	.....	.....

<sup>1</sup> Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Figures not strictly comparable.

<sup>4</sup> In addition, in 1909, 1,582,259 tons of ice, valued at \$4,249,790, and in 1904, 814,689 tons, valued at \$1,899,912, were produced by establishments engaged primarily in the manufacture of products other than ice.

The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

While artificial ice was manufactured in the United States as early as 1866, the industry did not attain any considerable importance until the decade ending with 1889. The 4 ice manufacturing establishments reported for 1869 were all located in the Southern states, where the necessity for artificial ice was most urgent, and of the 35 establishments reported for 1879 all were in the South with the exception of 5 in California and 1 in Missouri. Since 1879, however, the industry has spread rapidly, and in 1909 establishments were reported from 41 states and the District of Columbia. During the 20 years from 1889 to 1909 the value of products increased \$38,052,072, or 776.4 per cent, the value added by manufacture, \$27,675,273, or 698.8 per cent, and the average number of wage earners, 13,288, or 470.2 per cent. The quantity of ice manufactured in 1909 was 12,647,949 tons, or almost three times the amount reported for 1899. The cost of materials in 1909 was equal to 26.3 per cent of the value of products, a much smaller proportion than in most other industries.

Summary, by states.—Table 2 summarizes the more important statistics, by states, the states being arranged according to the value of products reported for 1909. No establishments in this industry were reported for 1909 from Maine, New Hampshire, Minnesota, North Dakota, South Dakota, Montana, or Wyoming.

Pennsylvania ranked first at the censuses of 1909 and 1904 in average number of wage earners, value of products, and value added by manufacture, the number of wage earners employed in the industry in the state increasing 72.7 per cent during the decade 1899-1909, and the value of products 136.5 per cent. Texas ranked second in 1909 in value of products and third in value added by manufacture, while New York ranked third in value of products and second in value added by manufacture.

Remarkable gains, especially in value of products, are shown by nearly all the states. The development for the decade 1899-1909 was most rapid in Oklahoma, the value of products for this state being more than eleven times as great in 1909 as in 1899. Kansas, Washington, California, and West Virginia also show very high percentages of increase.

**Table 2**

STATE.	Number of establishments 1909	WAGE EARNERS.				VALUE OF PRODUCTS.				VALUE ADDED BY MANUFACTURE.				PER CENT OF INCREASE. <sup>1</sup>								
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).			Value of products.			Value added by manufacture.		
				1909	1904			1909	1904			1909	1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
<b>United States.</b>	<b>2,004</b>	<b>16,114</b>	<b>100.0</b>			<b>\$42,953,065</b>	<b>100.0</b>			<b>\$31,635,557</b>	<b>100.0</b>			<b>134.2</b>	<b>59.5</b>	<b>46.8</b>	<b>211.7</b>	<b>80.6</b>	<b>72.6</b>	<b>202.2</b>	<b>77.9</b>	<b>68.8</b>
Pennsylvania.....	170	1,606	10.0	1	1	4,822,884	11.2	1	1	3,597,624	11.4	1	1	72.7	29.9	32.9	136.5	64.3	44.0	118.5	61.7	35.1
Texas.....	132	1,437	8.9	2	2	3,844,120	8.9	2	2	2,752,277	8.7	3	2	132.6	65.4	40.6	224.7	84.5	76.0	218.5	32.1	74.9
New York.....	89	1,124	7.0	3	3	3,808,070	8.9	3	3	2,763,302	8.7	2	3	252.4	36.4	59.0	202.3	117.7	66.4	253.5	135.8	49.9
California.....	77	660	4.1	8	8	2,331,302	5.4	4	4	1,707,660	5.0	4	4	250.5	60.5	118.4	356.2	78.3	155.8	351.9	75.3	157.8
Ohio.....	97	892	5.5	4	4	2,270,112	5.3	5	5	1,705,728	5.4	5	5	108.3	71.5	78.9	289.4	80.5	198.7	683.4	84.4	107.9
Missouri.....	92	761	4.7	7	7	2,083,886	4.9	6	6	1,416,674	4.5	7	7	172.8	75.8	55.2	225.1	84.4	70.3	241.4	93.8	76.1
Illinois.....	83	804	5.0	5	5	1,928,323	4.5	7	7	1,486,393	4.7	6	8	28.8	65.8	-22.3	94.6	105.1	-5.1	81.9	114.4	-15.2
Louisiana.....	69	633	3.9	9	9	1,500,953	3.5	8	7	1,002,447	3.2	11	6	119.0	38.2	58.5	162.9	30.5	92.6	160.3	30.6	99.2
New Jersey.....	59	456	2.8	10	10	1,496,555	3.5	9	15	1,110,470	3.5	9	15	149.2	70.1	46.4	281.9	131.0	65.3	291.2	133.4	67.6
Kansas.....	86	593	3.7	10	20	1,459,842	3.4	10	18	1,118,104	3.5	8	18	420.2	150.2	107.9	644.9	149.6	198.5	698.6	151.8	217.1
Tennessee.....	57	779	4.8	6	11	1,324,400	3.1	11	13	1,043,362	3.3	10	12	102.3	103.0	-0.8	146.1	93.6	27.1	143.7	85.9	31.1
Indiana.....	85	563	3.5	11	10	1,310,556	3.0	12	10	934,750	3.1	12	10	64.1	44.0	14.0	141.6	75.3	37.5	132.9	67.8	38.8
Oklahoma.....	77	449	2.8	17	22	1,272,515	3.0	13	20	965,450	3.1	13	20	.....	127.9	.....	1,036.6	141.1	371.4	.....	137.3	.....
Florida.....	70	461	2.9	15	14	1,206,874	2.8	14	14	822,834	2.6	17	14	94.5	50.3	24.5	182.0	70.5	59.8	175.3	60.4	71.6
Georgia.....	61	404	2.1	12	8	1,162,636	2.7	15	9	837,536	2.8	14	9	96.8	23.8	59.0	154.5	35.5	87.7	169.1	35.0	99.4
Virginia.....	74	475	2.9	13	12	1,143,358	2.7	10	16	875,450	2.8	15	16	131.7	37.3	68.8	167.1	70.7	48.6	171.7	88.6	44.1
Kentucky.....	78	472	2.9	14	13	1,134,590	2.6	17	12	827,735	2.6	16	11	145.8	36.8	79.7	150.0	61.4	54.8	122.0	46.8	51.6
Maryland.....	42	355	2.2	18	18	1,022,360	2.4	16	11	722,791	2.3	18	13	157.2	40.3	83.3	183.9	40.0	103.3	162.5	31.3	100.0
Mississippi.....	51	341	2.1	21	15	866,358	2.0	19	17	653,665	2.1	19	17	121.4	24.5	77.9	216.1	43.6	120.1	212.4	42.6	119.1
Arkansas.....	49	352	2.2	19	17	819,938	1.9	20	21	613,352	1.9	20	21	113.2	34.9	75.2	281.4	68.0	127.0	202.7	60.5	126.0
Alabama.....	45	343	2.1	20	19	776,645	1.8	21	19	575,507	1.8	21	19	114.4	41.2	51.9	221.1	46.1	119.8	201.6	40.5	114.7
North Carolina.....	45	318	2.0	22	21	659,377	1.5	22	22	479,559	1.5	22	22	97.5	35.3	40.0	189.0	57.7	83.3	195.7	49.2	98.1
Colorado.....	30	251	1.6	23	24	569,830	1.3	23	23	443,734	1.4	23	23	.....	81.9	.....	179.4	51.6	84.3	166.6	45.6	76.3
Washington.....	25	163	1.0	26	26	557,711	1.3	24	28	416,583	1.3	24	25	.....	.....	.....	436.5	129.0	133.7	.....	106.4	.....
Arizona.....	23	117	0.7	28	29	501,228	1.2	25	26	357,642	1.1	26	26	.....	.....	.....	276.7	93.4	94.7	.....	77.6	.....
West Virginia.....	35	233	1.5	24	23	475,527	1.1	26	24	364,022	1.2	25	24	.....	32.4	.....	300.0	34.8	196.6	.....	25.0	.....
South Carolina.....	32	218	1.4	25	25	432,666	1.0	27	27	304,103	1.0	27	27	.....	96.4	.....	273.3	77.5	110.3	.....	79.9	.....
Dist. of Columbia.....	7	93	0.6	29	27	349,547	0.8	28	25	250,050	0.8	28	27	.....	.....	.....	91.3	34.1	42.6	113.1	80.8	65.7
Iowa.....	18	151	0.9	27	33	289,642	0.7	29	33	225,692	0.7	29	34	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon.....	25	69	0.4	32	28	256,966	0.6	30	29	181,389	0.6	30	28	.....	.....	.....	121.6	18.4	87.1	.....	2.8	.....
Massachusetts.....	7	55	0.4	34	36	202,915	0.5	31	35	135,784	0.4	32	38	.....	.....	.....	.....	.....	.....	.....	.....	.....
Michigan.....	5	87	0.5	30	.....	199,105	0.5	32	.....	158,643	0.5	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut.....	7	66	0.4	33	31	159,346	0.4	33	31	115,836	0.4	33	31	.....	.....	.....	.....	31.4	.....	.....	.....	.....
Delaware.....	15	71	0.4	31	30	153,138	0.4	34	30	103,655	0.3	34	30	.....	.....	.....	.....	7.7	.....	.....	.....	.....
New Mexico.....	10	50	0.3	35	32	144,164	0.3	35	32	102,063	0.3	35	32	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nebraska.....	7	30	0.2	36	34	124,837	0.3	36	34	84,880	0.3	36	33	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah.....	4	20	0.1	37	35	93,190	0.2	37	35	64,170	0.2	37	36	.....	.....	.....	.....	.....	.....	.....	.....	.....
Idaho.....	4	19	0.1	38	38	64,828	0.2	38	38	53,186	0.2	38	39	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rhode Island.....	5	17	0.1	39	35	57,446	0.1	39	36	38,658	0.1	39	35	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nevada.....	3	14	0.1	40	37	39,117	0.1	40	37	28,976	0.1	40	37	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	4	16	0.1	.....	.....	36,107	0.1	.....	.....	25,403	0.1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> Percentages are based on figures in Table 2. A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners or less than \$100,000 for value of products or value added by manufacture, or where comparative figures can not be given without disclosing individual operations.

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

**Table 3**

CLASS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
<b>All classes.....</b>	<b>21,107</b>	<b>20,726</b>	<b>381</b>
Proprietors and officials.....	3,405	3,333	72
Proprietors and firm members.....	1,066	1,007	59
Salaried officers of corporations.....	971	959	12
Superintendents and managers.....	1,368	1,367	1
Clerks.....	1,588	1,302	286
Wage earners (average number).....	16,114	16,091	23
16 years of age and over.....	15,995	15,972	23
Under 16 years of age.....	119	119	.....

Of the 21,107 persons engaged in the industry during 1909, 16,114, or 76.3 per cent, were wage earners; 3,405, or 16.1 per cent, were proprietors and officials; and 1,588, or 7.5 per cent, clerks, this class including other subordinate salaried employees. Of the total number of wage earners, only 23, or one-tenth of 1 per cent, were females, and only 119 (all males) were under 16 years of age.

The average number of wage earners in each state, for 1909, 1904, and 1899, is given in Table 20. The distribution of the average number by sex and age is not shown for the individual states, but Table 21 gives such a distribution for the number employed on December 15, or the nearest representative day, and also shows the month of maximum and minimum employment.

In order to compare the distribution of the persons engaged in the industry in 1909 with that in 1904 it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 4.

**Table 4**

CLASS.	PERSONS ENGAGED IN THE INDUSTRY.				Percent of increase: 1904-1909
	1909		1904		
	Number.	Per cent distribution.	Number.	Per cent distribution.	
Total.....	21,107	100.0	13,179	100.0	60.2
Proprietors and firm members.....	1,066	5.0	746	5.7	42.9
Salaries employees.....	3,927	18.6	2,332	17.7	68.4
Wage earners (average number).....	16,114	76.3	10,101	76.0	59.5

Salaried employees show the greatest relative increase and constitute the only class forming a larger proportion of the total in 1909 than in 1904.

Table 5 shows the average number of wage earners in the industry, distributed according to age, and in the case of those 16 years of age and over according to sex, for 1909, 1904, and 1899. The number of children

employed was so small that the increase from 1899 to 1909 has little significance.

**Table 5**

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY.					
	1909		1904		1899	
	Number.	Per cent distribution.	Number.	Per cent distribution.	Number.	Per cent distribution.
Total.....	16,114	100.0	10,101	100.0	6,880	100.0
16 years of age and over.....	15,995	99.3	10,047	99.5	6,846	99.5
Male.....	15,972	99.1	10,029	99.3	6,838	99.4
Female.....	23	0.1	18	0.2	8	0.1
Under 16 years of age.....	119	0.7	54	0.5	34	0.5

Wage earners employed, by months.—Table 6 gives the number of wage earners employed on the 15th (or the nearest representative day) of each month during the year 1909 for the 11 states in which an average of 500 or more wage earners were employed during the year.

**Table 6**

STATE.	WAGE EARNERS EMPLOYED IN THE INDUSTRY: 1909 <sup>1</sup>												
	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States.....	16,114	9,847	10,008	11,803	14,929	18,081	20,875	22,872	22,644	21,403	16,526	13,020	11,392
California.....	666	549	524	548	659	700	731	807	789	762	692	642	591
Illinois.....	804	479	484	632	733	877	1,035	1,123	1,134	1,078	852	676	551
Indiana.....	563	315	310	378	515	613	751	809	812	788	624	442	390
Kansas.....	593	350	358	435	502	638	790	907	926	835	591	422	362
Louisiana.....	633	473	451	532	609	704	765	827	825	808	629	491	478
Missouri.....	761	401	406	461	711	846	1,005	1,093	1,109	1,078	801	646	577
New York.....	1,124	753	756	888	1,037	1,141	1,324	1,485	1,450	1,407	1,261	1,079	939
Ohio.....	892	525	550	646	771	924	1,152	1,308	1,258	1,209	936	787	638
Pennsylvania.....	1,606	1,044	1,063	1,296	1,489	1,841	2,006	2,197	2,165	2,041	1,666	1,315	1,149
Tennessee.....	779	440	453	545	775	944	1,070	1,143	1,087	1,052	723	602	514
Texas.....	1,437	308	338	1,000	1,292	1,637	1,945	2,130	2,109	2,001	1,435	1,090	983

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

The largest number of wage earners employed in the industry during any month of 1909 was 22,872, in July, and the smallest number, 9,847, in January, the minimum number being equal to 43.1 per cent of the maximum. In 1904, likewise, the maximum number was employed in July, and the minimum number, in January. This industry is naturally most active during the summer months, and the table shows a fairly uniform number of wage earners employed during the months of June, July, August, and September. The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for a larger number of states in Table 21.

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

**Table 7**

STATE.	AVERAGE NUMBER OF WAGE EARNERS IN THE INDUSTRY: 1909							
	Total.	In establishments with prevailing hours—						
		48 and under.	Be-tween 48 and 54.	54.	Be-tween 54 and 60.	60.	Be-tween 60 and 72.	72 and over.
United States.....	16,114	305	30	283	965	2,007	1,975	10,549
California.....	666	32	.....	28	102	256	131	117
Illinois.....	804	3	.....	2	242	84	139	334
Indiana.....	563	4	.....	8	45	70	436	
Kansas.....	593	10	.....	1	65	140	377	
Louisiana.....	633	.....	.....	51	22	68	492	
Missouri.....	761	13	.....	14	147	37	550	
New York.....	1,124	91	.....	76	65	107	225	
Ohio.....	892	8	.....	47	109	140	588	
Pennsylvania.....	1,606	38	.....	69	19	229	138	
Tennessee.....	779	2	.....	23	23	56	698	
Texas.....	1,437	36	16	.....	46	121	97	

The nature of the ice manufacturing industry is such that economical management calls for operation day and night, and practically all the larger plants are organized on the basis of two 12-hour shifts per day. More than nine-tenths (90.2 per cent) of the wage earners employed in this industry in 1909 were in establishments in which the prevailing hours were 60 or more per week, and 65.5 per cent in establishments in

which the prevailing hours were 72 or more per week. Less than 4 per cent of the total number of wage earners were reported as working 54 hours or less per week.

The proportion of wage earners reported as working 72 or more hours per week in the different states ranged from 17.6 per cent in California to 89.6 per cent in Tennessee, and that of wage earners working 60 or more hours per week, from 69.3 per cent in Illinois to 99.7 per cent in Tennessee. The wage earners working 72 or more hours per week constituted 78 per cent of the total in Texas, 77.7 per cent in Louisiana, 77.4 per cent in Indiana, 72.3 per cent in Missouri, 69.3 per cent in Pennsylvania, 65.9 per cent in Ohio, and 63.6 per cent in Kansas.

Character of ownership.—Table 8 presents statistics with respect to the character of ownership of the establishments engaged in the industry in 1909 and 1904.

The most important distinction shown is that between corporate and all other forms of ownership. In 1909, of the total number of establishments reported for the industry, 69.2 per cent were under corporate ownership, as compared with 67.6 per cent in 1904. The value of products of these establishments repre-

sented a still greater proportion of the total for the industry, constituting 85.4 per cent of the total in 1909 and 81.5 per cent in 1904. All of the remaining forms of ownership decreased in relative importance during the period.

CHARACTER OF OWNERSHIP.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	2,004	1,320	\$42,953,055	\$23,790,045
Individual.....	330	230	3,495,344	2,498,549
Firm.....	284	198	2,743,245	1,912,460
Corporation.....	1,387	892	36,701,422	19,379,007
Other.....	3		13,044	
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	16.5	17.4	8.1	10.5
Firm.....	14.2	15.0	6.4	8.0
Corporation.....	69.2	67.6	85.4	81.5
Other.....	0.1		( <sup>2</sup> )	

<sup>1</sup> Includes two establishments under "other" ownership, to avoid disclosure of individual operations.

<sup>2</sup> Less than one-tenth of 1 per cent.

Table 9 gives statistics for establishments classified according to form of ownership in each state for which an average of more than 500 wage earners were reported at the census of 1909. The three establishments under "other" ownership have been combined in this table with those under corporate ownership.

STATE.	NUMBER OF ESTABLISHMENTS OWNED BY—			WAGE EARNERS IN ESTABLISHMENTS OWNED BY—			VALUE OF PRODUCTS OF ESTABLISHMENTS OWNED BY—			VALUE ADDED BY MANUFACTURE IN ESTABLISHMENTS OWNED BY—		
	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.	Individuals.	Firms.	Corporations.
United States.....	330	284	1,390	1,471	1,176	13,467	\$3,495,344	\$2,743,245	\$36,714,466	\$2,019,518	\$2,035,326	\$26,980,713
California.....	13	10	54	16	9	641	50,050	30,804	2,241,448	48,955	23,744	1,695,561
Illinois.....	11	6	66	56	34	714	138,740	66,726	1,722,857	112,225	52,841	1,320,327
Indiana.....	17	17	51	69	48	446	156,947	132,395	1,021,214	118,702	94,601	771,447
Kansas.....	12	15	59	37	62	494	98,460	129,238	1,234,144	73,930	97,027	947,147
Louisiana.....	12	2	54	72	(X)	561	166,116	(X)	1,344,869	102,690	(X)	866,767
Missouri.....	13	9	71	33	34	694	79,622	59,425	1,944,839	62,469	38,198	1,316,007
New York.....	13	8	68	104	76	944	246,860	168,861	3,392,549	196,495	127,548	2,439,759
Ohio.....	14	11	72	42	27	823	118,645	79,150	2,072,314	89,240	62,104	1,554,384
Pennsylvania.....	31	26	113	154	120	1,332	375,385	356,583	4,090,916	271,010	269,795	3,056,829
Tennessee.....	5	13	39	41	105	633	48,489	161,442	1,114,469	38,964	119,743	887,655
Texas.....	37	17	128	210	75	1,152	519,927	249,837	3,074,356	383,701	167,588	2,195,988

NOTE.—In Louisiana, in order to avoid disclosing the returns for individual establishments, the figures for firms have been consolidated with those for individuals. An (X) is placed in the column from which the figures have been omitted, and the figures for the group with which they have been combined are printed in italics.

In each of the states shown in Table 9 the number of establishments controlled by corporations greatly exceeded the number of those owned by individuals and firms combined, the number owned by corporations being over three times the combined number of the latter in four of the leading states. Of the total number of wage earners reported, 9.1 per cent were employed in establishments under individual ownership, 7.3 per cent in those under firm ownership, and 83.6 per cent in those owned by corporations. In value of products the establishments owned by corporations largely predominated in each of the states shown in Table 9, their proportion of the total ranging from 77.9 per cent in Indiana to 96.1 per cent in California.

Size of establishments.—Table 10 presents statistics for 1909 and 1904 for establishments in the industry grouped according to the value of their products.

VALUE OF PRODUCTS PER ESTABLISHMENT.	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	2,004	1,320	\$42,953,055	\$23,790,045
Less than \$5,000.....	403	256	1,204,290	809,207
\$5,000 and less than \$20,000.....	973	716	10,748,796	7,575,195
\$20,000 and less than \$100,000.....	587	327	23,741,981	12,095,210
\$100,000 and less than \$1,000,000..	41	21	7,257,979	3,310,433
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	20.1	19.4	2.8	3.4
\$5,000 and less than \$20,000.....	48.6	54.2	25.0	31.8
\$20,000 and less than \$100,000.....	29.3	24.8	55.3	50.8
\$100,000 and less than \$1,000,000..	2.0	1.6	16.9	13.9

More than half of the total value of products for the industry was reported at each census by establishments having products valued at from \$20,000 to \$100,000. This group and that composed of establishments reporting products valued at more than \$100,000 showed a gain in relative importance in 1909

as compared with 1904, whereas the relative importance of establishments with products valued at less than \$20,000 declined.

The average value of products per establishment increased from \$18,023 in 1904 to \$21,434 in 1909, and the average value added by manufacture, as calcu-

lated from Table 1, increased from \$13,469 to \$15,786, but the average number of wage earners per establishment increased only from 7.7 in 1904 to 8 in 1909.

Table 11 classifies the establishments in 11 of the leading states in the industry according to the number of wage earners employed.

STATE.	TOTAL.		ESTABLISHMENTS EMPLOYING IN 1909—										
			No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.	
	Estab-lish-ments.	Wage earners (average number).	Estab-lish-ments.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.	Estab-lish-ments.	Wage earners.
United States.....	2,004	16,114	12	1,178	3,440	664	7,033	130	4,044	19	1,391	1	206
California.....	77	666	3	47	109	21	198	5	153	.....	.....	1	206
Illinois.....	83	804	.....	41	120	34	384	6	174	2	126	.....	.....
Indiana.....	85	593	1	53	157	26	254	5	152	.....	.....	.....	.....
Kansas.....	86	593	2	56	178	24	277	4	133	.....	.....	.....	.....
Louisiana.....	60	633	.....	32	113	20	256	8	264	.....	.....	.....	.....
Missouri.....	92	781	.....	55	147	29	304	7	218	1	92	.....	.....
New York.....	80	1,124	.....	41	138	32	387	14	451	2	148	.....	.....
Ohio.....	97	892	.....	56	166	32	309	7	265	2	152	.....	.....
Pennsylvania.....	170	1,606	.....	87	243	65	725	16	491	2	147	.....	.....
Tennessee.....	57	779	.....	33	107	12	137	9	274	3	261	.....	.....
Texas.....	182	1,437	.....	104	314	63	652	15	471	.....	.....	.....	.....

Of the 2,004 establishments engaged primarily in the manufacture of ice for sale in 1909, 12 reported no wage earners, 58.8 per cent reported from 1 to 5 wage earners, 33.1 per cent from 6 to 20, and 7.4 per cent from 21 to 100, while only 1 establishment employed more than 100 wage earners. Of the total number of wage earners, 21.3 per cent were reported by establishments employing from 1 to 5, 43.6 per cent by establishments employing from 6 to 20, and 35 per cent by those employing over 20.

**Expenses.**—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of interest or depreciation. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses for the industry in 1909 to have been \$31,614,653, distributed as follows: Cost of materials, \$11,317,498, or 35.8 per cent; wages, \$9,778,970, or 30.9 per cent; salaries, \$3,867,911, or 12.2 per cent; and miscellaneous expenses, made up of ordinary repairs of buildings and machinery, insurance, traveling expenses, advertising, and other sundry expenses, \$6,650,274, or 21 per cent. For the states shown separately in Table 21 the proportion of the total expenses represented by salaries ranged from 2.6 per cent in Massachusetts to 28.6 per cent in Nebraska; the proportion for wages, from 20.6 per cent in Nebraska to 50.2 per cent in Michigan; that for materials, from 24.7 per cent in Idaho to 49.4 per cent in Delaware; and that for miscellaneous expenses, from 9.9 per cent in Delaware to 26.9 per cent in Maryland. The cost of fuel forms much the greater part of the cost of materials in this industry.

**Engines and power.**—Table 12 shows the statistics of power as reported at the censuses of 1909, 1904, and 1899.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	4,635	2,670	1,463	317,789	191,660	100,421	100.0	100.0	100.0
Owned.....	4,297	2,620	1,463	310,211	188,242	99,722	97.6	98.2	99.3
Steam.....	4,170	2,580	1,431	304,572	184,570	95,937	95.8	98.3	95.5
Gas.....	82	22	9	3,264	618	193	1.0	0.3	0.2
Water wheels.....	40	18	23	2,229	1,075	807	0.7	0.6	0.8
Water motors.....	5	.....	(1)	33	.....	(1)	(2)	.....	.....
Other.....	.....	.....	.....	113	1,979	2,785	(2)	1.0	2.8
Rented.....	338	50	(1)	7,578	3,418	690	2.4	1.8	0.7
Electric.....	338	50	(1)	5,414	1,068	389	1.7	0.6	0.4
Other.....	.....	.....	.....	2,164	2,350	310	0.7	1.2	0.3
Electric motors.....	1,140	337	85	14,253	4,579	1,881	100.0	100.0	100.0
Run by current generated by establishment.....	802	287	85	8,839	3,511	1,492	62.0	76.7	79.3
Run by rented power.....	338	50	(1)	5,414	1,068	389	38.0	23.3	20.7

<sup>1</sup> Not reported.

<sup>2</sup> Less than one-tenth of 1 per cent.

The total primary horsepower used in the industry increased from 100,421 in 1899 to 317,789 in 1909, or 216.5 per cent. In 1909, as in 1904 and 1899, steam power constituted more than 95 per cent of the total primary power.

The horsepower of gas and other internal-combustion engines and of electric motors run by purchased current (rented electric power) increased considerably during the decade and formed a larger proportion of the total primary power in 1909 than at the earlier censuses. The number and horse-

power of electric motors used for distributing power by means of current generated in the establishments in the industry also show a decided increase.

Table 13 shows, for 1909, the amount of each of the several kinds of power and of the different kinds of fuel used in the ice plants of the 11 leading states.

STATE.	PRIMARY HORSEPOWER.									ELECTRIC HORSEPOWER.		FUEL USED.					
	Number of establishments reporting.	Total horsepower	Owned by establishments reporting.					Rented.		Total rented and generated by establishments reporting.	Generated in the establishments reporting.	Coal.		Coko (short tons).	Wood (cords).	Oil, including gasoline (barrels).	Gas (1,000 feet).
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Oth-er.	Elec-tric.	Oth-er.			Anthra-cite (long tons).	Bitumi-nous (short tons).				
United States...	1,890	317,789	310,211	304,572	3,264	2,282	113	5,414	2,164	14,253	8,839	244,396	2,430,454	6,872	133,984	905,952	4,348,329
California.....	76	9,971	8,923	8,621	110	192	.....	818	230	1,417	599	.....	.....	.....	797	380,724	.....
Illinois.....	83	13,288	13,208	13,008	200	.....	.....	55	25	664	609	1,786	198,077	.....	.....	20	14,603
Indiana.....	80	7,726	7,570	7,477	18	.....	75	56	100	261	205	1,630	127,317	.....	500	5	10,119
Kansas.....	85	14,636	14,410	14,298	112	.....	.....	81	145	434	353	4,721	57,443	125	.....	15,208	1,366,227
Louisiana.....	69	10,556	10,343	9,990	347	0	.....	148	65	388	240	8,850	72,509	.....	7,203	52,969	265,928
Missouri.....	92	22,904	22,460	22,446	4	.....	.....	98	356	1,382	1,284	224,495	.....	1,437	60,373	280,374	
New York.....	89	21,375	20,339	19,949	220	170	.....	1,036	.....	1,597	561	126,332	102,384	.....	542	364	
Ohio.....	97	19,058	18,986	18,701	285	.....	.....	72	.....	635	463	186,012	5,246	.....	95	307,032	
Pennsylvania.....	170	35,890	35,544	35,217	152	175	.....	250	90	1,259	1,009	39,995	300,192	.....	62	505,782	
Tennessee.....	56	9,327	9,251	9,241	10	.....	.....	76	.....	263	187	.....	99,165	.....	850	129	
Texas.....	180	29,905	29,807	28,631	1,034	142	.....	98	.....	1,021	923	6,781	191,604	.....	19,112	310,032	
All other states.....	913	123,153	119,380	116,993	772	1,577	38	2,626	1,147	5,032	2,406	54,801	871,256	1,501	154,035	85,793	1,520,195

Pennsylvania ranked first in 1909 in total primary power used, followed in order by Texas, Missouri, New York, and Ohio. The aggregate horsepower reported for this industry by these five states was 129,132, or 40.6 per cent of the total for the industry.

Fuel consumed.—The ice plants of New York led in

the consumption of anthracite coal; those of Pennsylvania, in that of bituminous coal; of Ohio, in that of coke; of California, in that of oil; and of Kansas, in that of gas. Expenditures for fuel and rent of power constituted 68.7 per cent of the cost of all materials in 1909.

SPECIAL STATISTICS RELATING TO MATERIALS, PRODUCTS, AND METHODS OF MANUFACTURE.

Materials.—Table 14 shows the quantity and cost of the ammonia used in the manufacture of ice in 1909, 1904, and 1899.

MATERIAL.	1909	1904	1899
Ammonia used, total cost.....	\$1,021,913	\$613,138	\$359,549
Anhydrous:			
Pounds.....	3,466,284	1,932,497	1,056,535
Cost.....	\$926,505	\$522,275	\$279,680
Aqua:			
Pounds.....	1,670,698	1,495,934	1,323,454
Cost.....	\$95,408	\$90,863	\$79,869

The cost of the ammonia used in the manufacture of ice for sale increased from \$359,549 in 1899 to \$1,021,913 in 1909, or 184.2 per cent for the decade. The average cost of ammonia per pound varied but slightly from census to census, that for anhydrous ammonia being 26.5 cents in 1899 and 26.7 cents in 1909 and that of aqua ammonia 6 cents in 1899 and 5.7 cents in 1909. The quantity of anhydrous ammonia used increased from 1,056,535 pounds in 1899 to 3,466,284 in 1909, or 228.1 per cent; and that of aqua ammonia increased from 1,323,454 pounds to 1,670,698 pounds, or 26.2 per cent, during the same time. In 1909 the cost of ammonia represented but 9 per cent of the total amount (\$11,317,498) expended for materials.

Products.—Table 15 shows the quantity and value of the ice manufactured, with separate figures for can ice and plate ice, and the value of all other products, for 1909, 1904, and 1899. Can ice is made in metal cans placed in tanks containing chilled brine, and plate ice in tanks having hollow partitions through which the refrigerating fluid runs, the water solidifying in plates on the outer surfaces of the partitions.

PRODUCT.	1909	1904	1899
<b>Total value.....</b>	<b>\$42,953,055</b>	<b>\$23,790,045</b>	<b>\$13,874,513</b>
Ice:			
Tons (2,000 pounds).....	12,647,949	7,199,448	4,294,439
Value.....	\$39,889,263	\$22,450,503	\$13,303,874
Can—			
Tons (2,000 pounds).....	11,671,547	6,695,789	4,139,764
Value.....	\$37,085,533	\$21,020,547	\$12,863,160
Plate—			
Tons (2,000 pounds).....	976,402	503,659	154,675
Value.....	\$2,803,730	\$1,429,956	\$440,714
All other products.....	\$3,063,792	\$1,339,542	\$870,639

<sup>1</sup> In addition, in 1909, 1,582,259 tons of ice, valued at \$4,249,790, and in 1904, 814,689 tons, valued at \$1,890,912, were produced by establishments engaged primarily in the manufacture of products other than ice.  
<sup>2</sup> Includes, for purposes of comparison, products valued at \$93,535, for 12 establishments whose reports were received too late to be included in the general statistics for that year.

The total quantity of ice reported in 1909 by establishments in the industry was nearly three times as great as that reported for 1899—12,647,949 tons, as compared with 4,294,439 tons. From 1899 to 1909 can ice showed a gain of 181.9 per cent in quantity

and 188.3 per cent in value, and plate ice showed a gain of 531.3 per cent in quantity and 536.2 per cent in value. Plate ice, however, formed but a small proportion of the total quantity at either census—7.7 per cent in 1909 and 3.6 per cent in 1899.

Table 16 shows, by states, the number of establishments in the industry and the quantity of ice manufactured in 1909 and 1899, the states being arranged in the order of their production in 1909.

STATE.	NUMBER OF ESTABLISHMENTS.		QUANTITY OF ICE MANUFACTURED (TONS).	
	1909	1899 <sup>1</sup>	1909	1899 <sup>1</sup>
United States.....	2,004	787	12,647,949	4,294,439
Pennsylvania.....	170	73	1,639,936	735,018
New York.....	80	41	1,393,327	457,779
Missouri.....	92	31	849,527	285,796
Ohio.....	97	42	806,663	237,750
Texas.....	182	77	796,166	231,450
Illinois.....	83	29	662,519	249,813
California.....	77	20	593,186	90,679
Indiana.....	85	47	462,704	199,184
Louisiana.....	09	36	454,362	170,716
New Jersey.....	59	26	439,421	169,755
Kansas.....	86	19	402,685	62,486
Maryland.....	42	18	394,453	120,740
Kentucky.....	78	31	337,446	137,472
Georgia.....	61	32	331,708	131,236
Tennessee.....	57	27	315,838	158,931
Virginia.....	74	30	286,832	118,240
Florida.....	70	35	276,159	125,184
Oklahoma <sup>2</sup> .....	77	10	230,988	25,278
Alabama.....	45	23	216,299	56,908
Arkansas.....	49	18	210,161	51,236
Mississippi.....	51	23	180,991	57,207
District of Columbia.....	7	4	161,443	64,950
North Carolina.....	45	23	161,358	61,338
Colorado.....	30	6	153,789	51,545
West Virginia.....	35	8	127,036	36,734
South Carolina.....	32	13	116,304	45,228
Washington.....	25	4	111,661	17,300
Massachusetts.....	7	.....	78,736	.....
Iowa.....	18	3	75,924	13,500
Arizona.....	23	9	67,968	14,709
Michigan.....	5	.....	64,549	.....
Delaware.....	15	7	58,714	26,738
Connecticut.....	7	5	41,848	25,950
Oregon.....	25	9	40,184	17,165
Nebraska.....	7	( <sup>3</sup> )	36,861	( <sup>3</sup> )
New Mexico.....	10	*4	30,696	10,915
Utah.....	4	( <sup>3</sup> )	25,446	( <sup>3</sup> )
Rhode Island.....	5	( <sup>3</sup> )	16,112	( <sup>3</sup> )
Nevada.....	3	.....	11,285	.....
Idaho.....	4	.....	6,876	.....
All other states.....	4	4	11,300	28,509

<sup>1</sup> See footnote 2, Table 15.  
<sup>2</sup> Includes Indian Territory in 1899.  
<sup>3</sup> Included in "all other states," to avoid disclosure of individual operations.

In 1909 the production of the seven leading states, each of which reported more than 500,000 tons, aggregated 6,701,324 tons, or 53 per cent of the total production. The largest absolute increase for the decade (935,548 tons) is shown by New York, and the next largest (904,918 tons) by Pennsylvania. Many of the states of smaller production, however, show very large relative gains.

Table 17 shows for 1909 the quantity and value of can ice and of plate ice made by the establishments in the industry and of that reported as a subsidiary product by establishments in other industries.

Can ice represented more than nine-tenths (92.6 per cent) of the total quantity of ice manufactured in 1909.

The quantity of ice reported by establishments manufacturing ice as a subsidiary product constituted 11.1 per cent of the total production. Plate ice constituted 7.7 per cent of the total quantity made by establishments engaged primarily in ice manufacture, and 4.8 per cent of the total made in establishments reporting ice as a subsidiary product.

PRODUCT.	TOTAL.		ICE MADE IN ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF—			
			Ice.		Products other than ice.	
	Quantity (tons).	Value.	Quantity (tons).	Value.	Quantity (tons).	Value.
Ice, total.....	14,230,208	\$44,139,053	12,647,949	\$39,889,263	1,582,259	\$4,249,790
Can.....	13,177,901	41,123,901	11,671,547	37,085,533	1,505,444	4,038,368
Plate.....	1,052,217	3,015,152	976,402	2,803,730	75,815	211,422

Table 18 shows, for 1909, by states, the number of establishments in the ice industry, the number of establishments in other industries reporting ice as a subsidiary product, and the total quantity and value of ice made by the establishments of each class.

The total number of establishments reporting ice made for sale as a secondary product in 1909 was 338, and the quantity of ice reported was 1,582,259 tons, with a value of \$4,249,790. Thus the aggregate quantity of ice manufactured, exclusive of that made by establishments for their own use, was 14,230,208 tons, and its aggregate value \$44,139,053. The relative importance of the several states in the production of ice, as shown in Table 16, is but slightly affected by the addition of the ice reported as a subsidiary product of other industries.

The average value per ton of ice manufactured by establishments in the industry, as computed from Table 18, was \$3.15. In most of the leading states the average value per ton was somewhat less than the average for the country as a whole; thus in Missouri the value per ton was \$2.33; in New York, \$2.55; in Ohio, \$2.56; in Pennsylvania, \$2.76; in Illinois, \$2.85; and in California, \$3.04. In Texas, however, the average value was \$4.70. In most of the Southern states, in fact, and in those Western states (except California) which reported establishments in the industry, the value per ton was greater than the average for the country as a whole, reaching \$5.26 in Oregon and \$6.08 in Idaho.

For the ice made as a secondary product in other industries the average value per ton was \$2.68, this average being lower in most of the states than that for ice made as a primary product.

## MANUFACTURES.

STATE.	NUMBER OF ESTABLISHMENTS MANUFACTURING ICE.			ICE MANUFACTURED.					
	Total.	In ice indus- try.	In other indus- tries.	Total.		By establishments in the ice industry.		By establishments in other industries.	
				Quantity (tons).	Value.	Quantity (tons).	Value.	Quantity (tons).	Value.
United States.....	2,342	2,004	338	14,230,208	\$44,130,063	12,647,949	\$39,889,263	1,582,259	\$4,249,790
Alabama.....	52	45	7	234,256	847,582	216,299	775,631	17,957	71,951
Arkansas.....	54	49	5	218,924	814,510	210,161	779,364	8,763	35,140
California.....	87	77	10	614,382	1,892,065	593,186	1,803,200	21,196	88,865
Colorado.....	33	30	3	188,450	566,478	153,789	530,576	14,661	35,002
Connecticut.....	10	7	3	59,579	180,315	41,848	141,076	17,731	89,239
District of Columbia.....	11	7	4	210,015	458,483	161,443	345,643	48,572	112,840
Georgia.....	67	61	6	363,433	1,196,324	331,708	1,095,388	31,725	109,636
Idaho.....	7	4	3	8,361	49,924	6,576	39,979	1,785	9,945
Illinois.....	110	83	27	737,168	2,083,676	652,519	1,861,262	84,649	222,414
Indiana.....	102	86	17	550,741	1,393,193	462,704	1,188,137	88,037	206,056
Kansas.....	99	86	13	443,730	1,426,560	402,685	1,311,156	41,045	115,404
Kentucky.....	84	78	6	378,644	1,108,673	337,446	1,024,085	36,198	84,588
Louisiana.....	72	69	3	461,134	1,482,938	454,362	1,450,592	6,772	32,346
Maryland.....	45	42	3	411,371	1,051,731	394,453	1,020,218	16,918	31,513
Michigan.....	8	5	3	79,274	179,401	64,549	152,354	14,725	27,047
Mississippi.....	57	51	6	191,506	860,464	180,991	817,093	10,515	49,371
Missouri.....	115	92	23	992,252	2,333,276	349,527	1,978,741	142,725	354,535
New Jersey.....	64	59	5	458,068	1,497,750	439,421	1,440,543	18,647	37,207
New York.....	111	89	22	1,643,339	4,207,641	1,393,327	3,552,942	250,012	654,699
North Carolina.....	48	45	3	164,358	655,400	161,358	639,400	3,000	15,910
Ohio.....	151	97	54	1,085,752	2,613,316	306,063	2,065,689	279,059	547,627
Oregon.....	38	25	13	60,176	296,228	40,184	211,507	19,092	84,721
Pennsylvania.....	193	170	23	1,702,377	4,686,747	1,639,936	4,527,085	62,441	159,662
South Carolina.....	35	32	3	124,794	446,308	116,394	415,306	8,400	31,002
Tennessee.....	61	57	4	341,292	1,347,632	315,838	1,281,710	26,494	65,922
Texas.....	202	182	20	929,479	4,142,793	766,166	3,601,968	163,313	540,825
Virginia.....	82	74	8	320,060	1,193,129	286,832	1,080,396	33,228	112,733
Washington.....	38	25	13	132,513	535,642	111,661	468,835	20,852	66,807
West Virginia.....	47	35	12	174,366	536,127	127,036	442,314	47,330	93,813
All other states.....	259	243	16	975,414	4,054,747	928,887	3,840,983	40,527	207,764

Methods of manufacture.—Table 19 shows, by states and geographic divisions, the number of establishments using the compressor system of ice manufacture and the number using the absorption system.

DIVISION AND STATE.	NUMBER OF ESTABLISHMENTS IN THE MANUFACTURED ICE INDUSTRY.							DIVISION AND STATE.	NUMBER OF ESTABLISHMENTS IN THE MANUFACTURED ICE INDUSTRY.						
	Total.		Using compressor system.		Using absorption system.		Using both systems.		Total.		Using compressor system.		Using absorption system.		Using both systems.
	1909	1899 <sup>1</sup>	1909	1899 <sup>1</sup>	1909	1899 <sup>1</sup>	1909		1909	1899 <sup>1</sup>	1909	1899 <sup>1</sup>	1909	1899 <sup>1</sup>	1909
United States.....	2,004	787	1,616	571	357	215	31	South Atlantic—Continued							
New England.....	20	7	18	7	4			West Virginia.....	35	8	33	4	2	4	
Vermont.....	1		1					North Carolina.....	45	23	37	19	7	4	1
Massachusetts.....	7		6		1			South Carolina.....	32	13	27	7	4	6	1
Rhode Island.....	5	2	4	2	1			Georgia.....	61	32	39	16	22	16	
Connecticut.....	7	5	5	5	2			Florida.....	70	35	30	14	38	21	2
Middle Atlantic.....	318	140	283	129	32	11	3	East South Central.....	231	104	144	61	80	43	7
New York.....	89	41	77	37	10	4	2	Kentucky.....	78	31	33	12	41	19	4
New Jersey.....	59	26	49	24	10	2		Tennessee.....	57	27	42	22	15	5	
Pennsylvania.....	170	73	157	68	12	5	1	Alabama.....	45	23	27	14	16	9	2
East North Central.....	273	118	189	75	77	43	7	Mississippi.....	51	23	42	13	8	10	1
Ohio.....	97	42	75	30	19	12	3	West South Central.....	377	141	337	104	39	37	1
Indiana.....	85	47	40	25	43	22	2	Arkansas.....	49	18	42	18	7		
Illinois.....	83	29	68	20	13	9	2	Louisiana.....	69	36	53	13	15	23	1
Michigan.....	5		4		1			Oklahoma <sup>2</sup> .....	77	10	72	8	5	2	
Wisconsin.....	7		2		1			Texas.....	182	77	170	65	12	12	
West North Central.....	203	54	178	41	22	13	3	Mountain.....	74	20	65	14	7	6	2
Iowa.....	18	3	15	2	3	1		Idaho.....	4		4				
Missouri.....	92	31	83	28	8	3	1	Colorado.....	30	6	24	2	5	4	1
Nebraska.....	7	1	6	1	1			New Mexico.....	10	4	9	2	1	2	
Kansas.....	86	19	74	10	10	9	2	Arizona.....	23	9	22	9			1
South Atlantic.....	381	170	283	111	93	59	5	Utah.....	4	1	3	1	1		
Delaware.....	15	7	15	7				Nevada.....	3		3				
Maryland.....	42	18	36	18	5		1	Pacific.....	127	33	121	29	3	4	3
District of Columbia.....	7	4	7	4				Washington.....	25	4	23	4	2		
Virginia.....	74	30	59	22	15	8		Oregon.....	25	9	24	9	1		
								California.....	77	20	74	16		4	3

<sup>1</sup> See footnote 2, Table 15.

<sup>2</sup> Includes Indian Territory in 1899.

Of the 2,004 establishments engaged primarily in the manufacture of ice for sale in 1909, 1,616, or 80.6 per cent, used only the compressor system; 357, or 17.8 per cent, used the absorption system only; while 31 establishments used both systems. The compressor system predominated in all states except Indiana, Ken-

tucky, and Florida, in which states 50.6, 52.6, and 54.3 per cent, respectively, of the establishments used the absorption system. The increase in the number of establishments using the compressor system between 1899 and 1909 was 1,045, or 183 per cent, and in the number using the absorption system, 141, or 65.3 per cent.

DETAILED STATE TABLES.

The principal data secured concerning the establishments engaged primarily in the manufacture of ice for sale are presented, by states, in Tables 20 and 21.

Table 20 shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in

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

Table 21 gives the statistics of the industry in somewhat greater detail for 1909 only.

MANUFACTURES.

ICE, MANUFACTURED—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

Table 20	STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
				Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
	United States.....	1909	2,004	21,107	1,068	3,927	16,114	317,789	\$118,642	\$3,868	\$9,779	\$11,317	\$42,953	\$31,636
		1904	1,320	13,179	746	2,332	10,101	191,660	66,592	2,001	5,549	6,011	23,790	17,778
		1899	775	8,858	447	1,531	6,880	100,421	38,020	1,226	3,403	3,312	13,781	10,469
	Alabama.....	1909	45	469	26	100	343	6,117	2,281	85	138	201	777	576
		1904	39	336	32	61	243	3,784	1,480	52	104	122	532	410
		1899	21	212	11	41	160	1,792	611	33	53	51	242	191
	Arizona.....	1909	23	152	9	26	117	2,569	1,080	28	112	144	501	357
		1904	13	97	12	13	72	1,190	420	12	55	58	259	201
		1899	9	67	11	12	44	009	229	10	31	42	133	91
	Arkansas.....	1909	49	458	17	89	352	8,281	1,905	77	192	207	820	613
		1904	38	333	7	65	261	4,622	1,317	45	123	106	488	382
		1899	15	178	8	21	149	2,207	569	22	50	46	215	160
	California.....	1909	77	854	35	153	666	9,971	7,781	212	572	564	2,331	1,767
		1904	54	517	35	67	415	5,788	3,550	71	335	299	1,307	1,068
		1899	20	261	7	64	190	1,983	1,303	63	132	120	511	391
	Colorado.....	1909	30	315	11	53	251	4,361	2,415	65	190	126	570	444
		1904	16	182	9	35	138	2,187	1,240	35	93	71	376	305
		1899	6	117	0	18	93	292	664	21	54	31	204	173
	Connecticut.....	1909	7	69	5	18	66	1,029	558	18	42	43	159	116
		1904	7	68	6	20	42	780	363	14	31	24	121	97
		1899	5	58	5	15	38	779	317	18	21	16	95	79
	Delaware.....	1909	15	102	16	15	71	1,028	393	9	31	49	153	104
		1904	10	87	6	17	64	705	316	10	31	26	142	116
		1899	7	38	2	8	28	621	260	4	12	14	71	57
	District of Columbia.....	1909	7	122	2	27	93	2,683	1,485	27	78	90	350	260
		1904	6	108	1	13	94	2,770	700	12	46	71	261	190
		1899	4	101	2	16	83	1,460	630	14	41	61	183	122
	Florida.....	1909	70	634	61	112	401	8,585	2,459	143	224	384	1,207	823
		1904	47	405	41	69	295	2,943	1,360	60	151	171	684	513
		1899	33	285	24	24	237	2,971	726	21	96	129	428	299
	Georgia.....	1909	61	651	27	130	404	8,125	3,360	133	210	275	1,163	888
		1904	48	522	18	105	399	5,353	1,705	76	142	200	858	658
		1899	32	313	14	48	251	3,555	975	43	86	127	457	330
	Illinois.....	1909	83	1,013	25	184	804	13,288	5,575	192	534	442	1,928	1,486
		1904	43	648	29	134	485	6,509	2,162	110	269	247	940	693
		1899	29	738	22	92	624	4,083	1,689	75	303	174	991	817
	Indiana.....	1909	85	765	62	140	563	7,726	3,318	109	304	326	1,311	985
		1904	66	547	52	104	391	5,611	2,204	73	199	161	748	587
		1899	47	439	35	61	343	3,612	1,631	44	162	121	544	423
	Iowa.....	1909	18	190	9	30	151	2,045	626	26	101	64	290	226
		1904	4	26	3	6	20	784	187	5	12	16	51	35
		1899	3	46	3	10	33	450	165	3	15	11	38	27
	Kansas.....	1909	86	789	45	151	593	14,636	4,200	129	380	342	1,400	1,118
		1904	44	337	33	67	287	5,569	1,373	55	145	141	585	444
		1899	19	152	18	20	114	2,142	425	13	55	56	196	140
	Kentucky.....	1909	78	645	45	128	472	9,040	4,108	116	243	307	1,135	828
		1904	48	444	33	66	345	8,760	1,816	55	152	139	703	564
		1899	31	260	22	52	192	3,201	1,200	33	84	82	454	372
	Louisiana.....	1909	69	798	16	149	633	10,556	5,333	146	357	499	1,501	1,002
		1904	62	586	27	101	458	8,276	3,490	87	236	333	1,100	767
		1899	34	378	15	74	289	4,827	2,233	66	122	186	571	385
	Maryland.....	1909	42	466	31	80	355	7,192	2,552	83	230	300	1,022	722
		1904	27	318	15	50	253	4,280	1,688	46	126	180	730	550
		1899	18	103	6	19	138	2,140	650	15	75	84	359	275
	Mississippi.....	1909	51	477	25	111	341	7,003	1,851	85	189	213	866	653
		1904	37	376	23	79	274	4,171	1,266	64	119	145	603	458
		1899	21	192	12	26	154	1,874	570	23	55	65	274	209
	Missouri.....	1909	92	975	32	182	761	22,904	6,947	183	472	667	2,084	1,417
		1904	53	559	30	96	433	13,546	3,318	94	272	399	1,130	731
		1899	31	357	13	65	279	7,207	1,835	66	157	226	641	415
	New Jersey.....	1909	59	581	27	98	456	10,121	3,648	98	317	386	1,497	1,111
		1904	39	338	18	52	268	6,677	2,749	47	159	172	648	476
		1899	26	247	12	52	183	3,995	1,653	38	94	108	392	284
	New Mexico.....	1909	10	69	4	15	59	1,378	424	16	33	42	144	102
		1904	7	32	5	4	23	462	190	5	20	16	84	63
		1899	4	27	3	2	22	75	118	2	15	15	78	63
	New York.....	1909	89	1,372	34	214	1,124	21,375	7,766	287	835	1,044	3,808	2,764
		1904	58	723	21	99	603	15,958	5,972	100	424	577	1,749	1,172
		1899	41	399	17	63	319	5,422	2,555	52	201	269	1,051	782
	North Carolina.....	1909	45	426	16	92	318	5,386	1,514	80	127	180	659	479
		1904	32	317	13	69	235	2,991	860	58	83	97	418	321
		1899	23	211	13	37	161	2,275	523	32	53	66	228	162

# THE MANUFACTURED ICE INDUSTRY.

447

ICE, MANUFACTURED—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899—Continued.

Table 20—Continued.	STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).							
				Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).								Expressed in thousands.						
	Ohio.....	1909	97	1,176	43	241	892	19,058	\$8,381	\$220	\$550	\$564	\$2,270	\$1,706							
		1904	69	692	31	141	520	11,882	4,495	111	296	292	1,217	925							
		1899	42	395	17	79	299	6,150	1,777	53	155	138	583	445							
	Oklahoma.....	1909	77	614	30	135	449	10,359	2,719	101	270	307	1,273	966							
		<sup>1</sup> 1904	44	283	23	65	197	5,348	1,341	48	107	121	528	407							
		<sup>1</sup> 1899	9	81	7	19	55	760	227	13	29	31	112	81							
	Oregon.....	1909	25	122	27	26	69	1,569	632	29	53	76	257	181							
		1904	20	107	14	18	75	1,416	451	15	57	41	217	176							
		1899	9	51	7	9	35	720	173	14	25	19	116	97							
	Pennsylvania.....	1909	170	2,086	116	304	1,606	35,890	14,404	338	1,023	1,225	4,823	3,598							
		1904	109	1,577	57	234	1,236	23,576	9,712	282	732	711	2,936	2,225							
		1899	73	1,227	51	246	930	10,646	8,260	170	538	392	2,039	1,647							
	Rhode Island.....	1909	5	23	2	4	17	349	141	3	10	19	57	38							
		1904	3	11	2	3	6	290	68	1	4	3	19	16							
	<sup>2</sup> 1899																				
	South Carolina.....	1909	32	287	22	47	218	2,964	1,041	44	85	120	483	304							
		1904	18	144	8	25	111	1,835	712	23	45	75	244	169							
		1899	13	93	7	13	73	1,074	407	10	24	37	116	79							
	Tennessee.....	1909	57	986	46	161	779	9,327	2,748	154	362	281	1,324	1,043							
		1904	37	487	26	79	382	6,312	1,125	67	191	123	684	561							
		1899	27	472	20	67	385	3,589	1,104	59	177	110	538	428							
	Texas.....	1909	182	1,874	82	355	1,437	29,905	8,397	354	839	1,092	3,844	2,752							
		1904	125	1,144	59	216	809	18,458	5,140	197	451	573	2,084	1,511							
		1899	77	824	35	171	618	8,940	2,564	125	305	320	1,184	864							
	Virginia.....	1909	74	652	67	110	475	8,553	3,090	93	220	268	1,143	875							
		1904	48	445	43	56	346	4,604	1,805	41	138	172	636	464							
		1899	30	271	20	46	205	3,494	1,190	35	87	106	428	322							
	Washington.....	1909	25	231	10	58	163	2,210	1,487	64	140	141	558	417							
		1904	12	119	9	11	99	905	486	14	78	41	243	202							
		1899	4	49	1	13	35	425	252	14	26	17	104	87							
	West Virginia.....	1909	35	305	23	49	233	5,554	1,595	41	113	111	476	365							
		1904	30	217	5	36	176	2,764	1,287	28	94	61	353	292							
		1899	8	100	1	19	80	607	413	14	40	22	119	97							
	All other states.....	1909	34	339	18	80	241	6,652	2,419	80	194	209	759	550							
		1904	7	45	3	6	36	554	238	8	29	27	112	85							
		1899	4	50		9	41	475	201	8	24	20	86	66							

<sup>1</sup> Includes Indian Territory.

<sup>2</sup> Figures can not be shown without disclosing individual operations.

MANUFACTURES.

ICE, MANUFACTURED—DETAILED

Table 21		PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.				Pri- mary horse- power.
STATE.	Number of establishments.	Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Average number.	Wage earners.		Total.	16 and over.		Under 16.			
					Male.	Female.		Number, 15th day of—			Male.	Female.	Male.	Female.		
								Maximum month.	Minimum month.							
1	United States .....	2,004	21,107	1,066	2,339	1,302	286	16,114	Jy 22,872	Ja 9,847	15,589	15,452	22	115	317,789	
2	Alabama .....	45	469	26	67	27	6	343	Jy 517	De 193	339	333	6		6,117	
3	Arizona .....	23	152	9	16	9	1	117	Jy 165	Ja 70	190	100			2,569	
4	Arkansas .....	49	458	17	53	34	2	352	Jy 575	Ja 158	304	364			8,281	
5	California .....	77	854	35	79	60	14	666	Jy 807	Fe 524	645	635	1	9	9,971	
6	Colorado .....	30	315	11	24	28	1	251	Au 416	De 165	181	180		1	4,361	
7	Connecticut .....	7	89	5	10	5	3	66	Jy 84	Ja 44	63	68			1,029	
8	Delaware .....	15	102	10	9	6		71	Je 142	Ja 32	70	70			1,028	
9	District of Columbia .....	7	122	2	10	15	2	93	Jy <sup>1</sup> 111	Fe 75	79	79			2,683	
10	Florida .....	70	634	61	82	29	1	461	Ap <sup>1</sup> 482	Ja 426	480	480			8,535	
11	Georgia .....	61	651	27	87	42	1	494	Jy 673	Ja 320	561	547		14	8,125	
12	Idaho .....	4	30	1	6	3	1	19	Au 28	Ja <sup>1</sup> 12	18	17	1		355	
13	Illinois .....	83	1,013	25	106	52	26	804	Au 1,134	Ja 479	730	728	1	1	13,288	
14	Indiana .....	85	765	62	86	33	21	503	Au 812	Ja 315	495	492	2	1	7,726	
15	Iowa .....	18	190	9	19	6	5	151	Au 237	Fe 75	121	119	2		2,045	
16	Kansas .....	86	789	45	98	33	20	593	Au 926	Ja 350	491	487	2	2	14,636	
17	Kentucky .....	78	645	45	96	34	8	472	Jy 708	Ja 257	463	460	1	2	9,040	
18	Louisiana .....	69	798	16	82	65	2	633	Au 827	Fe 451	618	610	1	7	10,556	
19	Maryland .....	42	466	31	60	16	4	355	Au 489	Ja 196	271	270		1	7,192	
20	Massachusetts .....	7	64	5	2	2	2	55	Jy <sup>1</sup> 75	Ja 13	54	54			2,034	
21	Michigan .....	5	113	2	10	11	3	87	Au 142	Ja 53	67	67			1,959	
22	Mississippi .....	51	477	25	68	37	6	341	Au 500	Ja 185	409	388		21	7,003	
23	Missouri .....	92	975	32	114	56	12	761	Au 1,109	Ja 401	836	834	1	1	22,904	
24	Nebraska .....	7	62	2	11	18	1	30	Jy 42	Ja <sup>1</sup> 12	34	34			1,193	
25	Nevada .....	3	22	6	2	2		14	Jy 41	Ja <sup>1</sup> 1	13	13			2,337	
26	New Jersey .....	59	581	27	62	30	6	456	Au 662	Ja 234	415	415			10,121	
27	New Mexico .....	10	69	4	9	6		50	Jy 78	Fe 21	39	39			1,378	
28	New York .....	89	1,372	34	115	86	13	1,124	Jy 1,485	Ja 753	1,091	1,091			21,375	
29	North Carolina .....	45	426	16	61	29	2	318	Jy 474	Ja 188	346	340		6	5,386	
30	Ohio .....	97	1,176	43	139	69	33	892	Jy 1,308	Ja 525	810	802	8		19,058	
31	Oklahoma .....	77	614	30	81	45	9	449	Jy 745	Fe 195	475	470		5	10,359	
32	Oregon .....	25	122	27	12	11	3	69	Au 111	Ja <sup>1</sup> 42	70	70			1,569	
33	Pennsylvania .....	170	2,086	116	199	120	45	1,608	Jy 2,107	Ja 1,044	1,492	1,489	1	2	35,890	
34	Rhode Island .....	5	23	2	3	1	1	17	Jy 35	Ja <sup>1</sup> 0	25	25			349	
35	South Carolina .....	32	287	22	36	8	3	218	Jy 339	Ja 121	250	243		7	2,664	
36	Tennessee .....	57	936	46	96	56	9	779	Jy 1,143	Ja 440	749	742		7	9,327	
37	Texas .....	182	1,874	82	200	144	11	1,437	Jy 2,130	Ja 808	1,424	1,418	1	7	29,905	
38	Utah .....	4	28	1	7			20	Jy 32	Ja <sup>1</sup> 13	26	26			474	
39	Virginia .....	74	652	67	69	38	3	475	Jy 685	Ja 281	481	467		14	8,553	
40	Washington .....	25	231	10	31	23	4	163	Jy 198	Ja 120	162	162			2,210	
41	West Virginia .....	35	305	23	30	17	2	233	Jy 351	Ja 130	214	213		1	5,554	
42	All other states <sup>1</sup> .....	4	20	1	2	1		10			18	18			400	

<sup>1</sup> Same number reported for one or more other months.

# THE MANUFACTURED ICE INDUSTRY.

449

STATISTICS, BY STATES: 1909.

	Capital.	EXPENSES.									Value of products.	Value added by manufacture (value of products less cost of materials).	
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.			Other.
1	\$118,641,538	\$31,614,653	\$2,798,366	\$1,069,545	\$9,778,970	\$7,780,397	\$3,537,101	\$413,673	\$840,887	\$32,386	\$5,313,428	\$42,953,055	\$31,635,557
2	2,281,453	536,562	68,242	16,981	138,189	130,687	70,451	6,816	13,841	15	86,340	770,645	675,607
3	1,079,907	350,768	21,060	6,692	111,711	118,965	24,621		10,243		57,466	501,228	357,642
4	1,904,571	604,048	54,385	22,435	191,800	158,526	48,060	17,617	16,971	405	93,849	819,938	613,352
5	7,781,176	1,724,352	145,324	66,788	572,460	430,375	133,267	7,250	46,466	8,618	313,784	2,331,302	1,767,960
6	2,415,090	446,382	36,830	28,209	189,803	93,163	32,942	1,510	15,270		47,655	569,839	443,734
7	558,152	121,168	13,537	4,702	42,264	27,740	15,770	1,000	2,980		13,115	159,346	115,836
8	392,846	100,227	6,370	2,966	31,436	32,981	16,502		1,508	147	8,269	153,138	103,655
9	1,485,235	249,825	17,090	9,712	78,320	67,122	33,375	1,600	4,249		48,357	349,547	259,050
10	2,459,103	892,995	116,961	26,280	223,645	236,634	147,406	2,190	17,530	7,555	114,794	1,206,874	822,334
11	3,360,459	789,070	106,317	26,857	209,872	203,469	71,611	3,977	31,083	2,475	130,389	1,162,636	887,536
12	188,597	47,174	9,060	2,245	13,953	10,031	1,611		1,558	1,788	6,923	64,828	53,186
13	5,574,739	1,424,435	145,830	46,246	534,166	291,192	160,738	7,298	26,012	3,682	219,271	1,928,323	1,486,393
14	3,318,646	961,914	84,105	24,469	304,197	213,131	112,675	5,810	24,068	19,771	173,658	1,310,556	984,750
15	268,197	218,502	20,025	5,605	101,335	44,172	19,778	1,800	4,073		21,914	289,642	225,692
16	4,208,797	1,060,309	102,343	26,418	379,704	248,224	93,514	203	34,704	1,725	173,474	1,459,842	1,118,104
17	4,108,436	840,477	94,241	21,702	243,338	193,775	113,080	6,700	21,775	419	145,447	1,134,500	827,735
18	5,332,868	1,252,575	97,719	48,034	356,573	361,464	137,074	111	35,098	900	215,902	1,500,985	1,002,447
19	2,552,240	835,017	70,199	13,194	229,676	197,530	102,039	4,729	14,377	6,757	199,516	1,022,360	722,791
20	344,125	136,223	3,000	569	41,822	46,209	21,832		3,780		19,916	202,915	135,784
21	676,553	153,788	10,200	9,720	77,174	20,622	20,440		3,915		12,255	199,105	158,643
22	1,850,644	602,083	54,190	31,158	188,610	135,985	70,708	1,115	22,544	1,004	90,769	866,358	653,665
23	6,947,040	1,612,565	132,245	60,901	471,583	471,106	196,106	70,800	33,317	7	186,500	2,038,880	1,416,674
24	413,648	102,250	8,595	20,658	21,066	20,455	13,552	40	1,145		10,739	124,887	84,880
25	299,199	33,719	2,400	12,430	10,019	2,122	2,122		1,509		5,233	39,117	26,976
26	3,647,701	1,009,602	73,953	24,066	317,015	264,731	121,345	8,484	23,674	3,499	172,865	1,496,555	1,110,479
27	424,336	111,344	10,872	5,166	32,605	32,877	9,124	50	4,155	22	16,373	144,164	102,063
28	7,765,592	2,936,243	212,628	74,222	834,547	760,287	283,981	161,302	66,386	5,301	537,589	3,808,070	2,763,802
29	1,514,394	482,496	60,445	19,704	127,046	121,572	68,246	12,925	16,906		65,662	659,377	479,559
30	8,380,852	1,786,257	163,192	60,538	558,758	414,763	149,621	15,499	59,052	453	318,376	2,270,112	1,705,728
31	2,719,197	902,240	73,841	27,372	270,051	195,236	111,760	1,287	32,626	8,147	181,880	1,272,515	965,459
32	631,775	183,502	19,700	9,542	52,568	53,678	21,899	4,370	4,396	125	22,524	256,966	181,389
33	14,404,140	3,362,417	223,032	115,075	1,022,959	743,951	481,309	41,117	87,930		647,044	4,822,384	3,597,624
34	140,616	42,489	2,740	300	10,301	9,015	9,773	4,000	379		5,885	57,446	38,658
35	1,040,746	307,834	38,565	5,747	84,882	89,520	30,043	212	8,330	2,051	39,484	432,666	304,103
36	2,747,664	1,023,451	109,988	43,527	362,167	189,814	91,224	235	28,293		203,203	1,324,400	1,043,362
37	8,386,828	2,799,161	238,873	114,702	839,087	797,542	294,301	8,221	72,255	6,358	427,822	3,844,120	2,752,277
38	402,491	67,733	10,600		15,998	21,420	7,600		3,310		8,805	93,190	64,170
39	3,090,340	754,961	68,758	23,888	220,163	185,196	82,712	5,110	20,051	18	149,065	1,143,358	875,450
40	1,486,894	437,785	39,540	24,903	139,576	70,261	70,867	8,031	9,658		74,343	557,711	416,583
41	1,594,863	319,950	29,499	11,877	113,181	62,718	47,887	2,164	8,566	1,069	42,989	475,527	364,922
42	93,238	30,892	1,800	225	12,878	9,569	1,135		1,276		4,009	36,107	25,403

\* All other states embrace: Vermont, 1 establishment; Wisconsin, 3.

This page was intentionally left blank.

---

---

# RICE CLEANING AND POLISHING

---

---

This page was intentionally left blank.

## RICE CLEANING AND POLISHING.

**Scope of the industry.**—The establishments assigned to this industry are engaged in cleaning the rough rice of dirt and other foreign substances, removing the outer shell or hull, and the inner cuticle or bran, and, in most instances, polishing the grain by friction so as to give it a pearly luster. There are two methods of conducting the business—merchant milling, in which the rough rice is purchased, milled, and the products sold; and custom milling, in which the rough rice belonging to others is treated on a contract basis for a stipulated price or for a portion of the rice itself. Table 1 distinguishes the quantities of rough rice and its several products according to the basis upon which the rice was treated.

Of the 71 establishments reported for 1909, 41 were engaged exclusively in merchant milling, 8 exclusively in custom milling, and 22 in both merchant and custom milling. Where mills employed both methods, merchant milling, as a rule, constituted the greater proportion of the business, only 18.3 per cent of the rice milled by such establishments being treated on a custom basis. In recent years there has been a decided change in the relative importance of the two methods of conducting business. In 1904 there were 12 mills engaged exclusively in merchant milling, 31 exclusively in custom milling, and 31 in both merchant and custom milling, the larger part

of the operations of mills of the last class being custom milling. Of the total quantity of rough rice treated in 1909, 90.2 per cent was handled on a merchant basis and 9.8 per cent on a custom basis. The quantities of whole rice obtained by merchant milling and by custom milling were equal to 49.5 per cent and 44.1 per cent of the gross weight of the rough rice treated on these respective bases. The corresponding percentages for broken rice were 15.2 and 15.4, respectively.

	RICE MILLING: 1909			PER CENT OF TOTAL.	
	Total.	Merchant.	Custom.	Merchant milling.	Custom milling.
<b>Rough rice treated, pounds</b>	<b>874,747,475</b>	<b>879,596,100</b>	<b>95,151,375</b>	<b>90.2</b>	<b>9.8</b>
Domestic.....	970,873,740	875,722,365	95,151,375	90.2	9.8
Foreign.....	8,873,735	3,873,735	.....	100.0	.....
<b>Products, total value.....</b>	<b>\$22,371,457</b>	<b>\$20,276,214</b>	<b>\$2,095,243</b>	<b>90.6</b>	<b>9.4</b>
Clean rice.....	628,089,489	569,522,512	56,566,977	91.0	9.0
value.....	\$20,685,982	\$18,854,958	\$1,831,024	91.1	8.9
pounds.....	477,589,004	435,648,814	41,940,190	91.2	8.8
value.....	\$17,398,736	\$15,888,560	\$1,510,176	91.3	8.7
pounds.....	148,500,485	133,873,098	14,626,787	90.2	9.8
value.....	\$3,287,246	\$2,960,398	\$320,848	90.2	9.8
pounds.....	23,821,513	26,963,710	2,853,103	90.4	9.6
value.....	\$362,052	\$334,200	\$27,852	92.3	7.7
Polish.....	23,821,513	26,963,710	2,853,103	90.4	9.6
value.....	\$362,052	\$334,200	\$27,852	92.3	7.7
All other products.....	\$1,323,423	\$1,087,056	\$236,367	82.1	17.9

**Summary and comparison with earlier censuses.**—Table 2 summarizes the statistics of the industry, as a whole, for each census from 1879 to 1909, inclusive.

	NUMBER OR AMOUNT.					PER CENT OF INCREASE. <sup>1</sup>				
	1909	1904	1899	1889	1879	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889
Number of establishments.....	71	74	80	32	22	-11.2	-4.1	-7.5	150.0	45.5
Persons engaged in the industry.....	1,777	1,961	891	(2)	(2)	99.4	-9.4	120.1	.....	.....
Proprietors and firm members.....	38	33	71	(2)	(2)	-46.5	15.2	-53.5	.....	.....
Salaried employees.....	500	436	169	(2)	(2)	195.9	14.7	158.0	.....	.....
Wage earners (average number).....	1,239	1,492	651	647	516	90.3	-17.0	129.2	0.6	25.4
Primary horsepower.....	19,519	15,866	7,546	4,120	(2)	158.7	23.0	110.3	83.2	.....
Capital.....	\$13,347,144	\$8,821,099	\$2,601,352	\$2,073,884	\$562,200	413.1	51.3	239.1	25.4	268.0
Expenses.....	21,548,545	15,119,842	8,253,343	(2)	(2)	161.1	42.5	83.2	.....	.....
Services.....	1,178,623	1,189,194	47,618	(2)	(2)	162.0	-1.1	165.7	.....	.....
Salaries.....	613,085	548,562	182,033	(2)	(2)	236.8	11.8	201.4	.....	.....
Wages.....	563,538	640,632	265,585	223,433	110,407	112.2	-12.0	141.2	18.9	102.3
Materials.....	19,501,080	13,315,065	7,575,522	5,601,206	2,666,497	157.4	46.5	75.8	35.2	110.1
Miscellaneous.....	870,842	615,583	230,203	147,992	(2)	278.3	41.5	167.4	55.6	.....
Value of products.....	22,371,457	16,296,916	8,723,726	6,693,196	3,133,324	156.4	37.3	86.8	30.3	113.6
Value added by manufacture (value of products less cost of materials).....	2,870,377	2,981,851	1,148,204	1,091,990	466,827	150.0	-3.7	159.7	5.1	133.9

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Comparable figures not available.

In 1909 there were 71 establishments engaged in cleaning and polishing rice. In these establishments 1,777 persons were engaged, of whom 1,239 were wage earners. The value of products was \$22,371,457, but the value added by manufacture was only \$2,870,377, the cost of materials being equal to 87.2 per cent of the total value of products.

Rice has been cultivated in the United States for more than 200 years, and prior to the Civil War had reached considerable proportions. The largest gain, however, has occurred during the last decade, during which period the production quadrupled. The first census statistics of rice cleaning and polishing were secured in 1880; they covered the year 1879 and

## MANUFACTURES.

showed 22 establishments engaged in the industry. At the census of 1889 there were 32 establishments, and in 1899, 80 establishments. The total value of products in 1909, \$22,371,457, was more than seven times the value reported for 1879. This total represents an increase of 234.2 per cent over the value of products reported in 1889, 156.4 per cent over that in 1899, and 37.3 per cent over that in 1904.

The statistics of persons engaged in the industry at the censuses of 1879 and 1889 are not strictly comparable with those for the later years. It is apparent, however, that the improvements in machinery and in methods of treatment have resulted in a disproportionate growth in value of products as compared with

number of wage earners, since the use of more elaborate machinery tends to increase the size or capacity of establishments without proportionately increasing the number of employees. The number of wage earners in the industry increased greatly between 1899 and 1904, but decreased somewhat in the period 1904-1909.

General statistics, by states.—The principal data secured by the census inquiry concerning the rice cleaning and polishing industry are presented by states in Table 3, which shows, for 1909, 1904, and 1899, the number of establishments, number of persons engaged in the industry, primary horsepower, capital invested, principal items of expense, value of products, and value added by manufacture.

RICE CLEANING AND POLISHING—COMPARATIVE SUMMARY, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horsepower.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Expressed in thousands.													
United States.....	1909	71	1,777	38	500	1,239	19,519	\$13,347	\$613	\$564	\$19,501	\$22,371	\$2,870
	1904	74	1,961	33	436	1,492	15,866	8,821	549	641	13,315	16,297	2,982
	1899	80	891	71	169	651	7,546	2,601	182	266	7,676	8,724	1,148
Arkansas.....	1909	5	64		27	37	1,610	575	23	23	852	945	93
	1904												
	1899												
Louisiana.....	1909	37	960	10	257	693	10,706	8,385	388	327	10,971	12,520	1,558
	1904	43	1,167	12	232	923	10,333	6,138	288	400	8,973	10,718	1,745
	1899	37	504	26	126	412	5,079	1,818	141	181	4,964	5,736	782
South Carolina.....	1909	3	69	3	13	53	490	352	14	10	381	466	85
	1904	4	114	3	19	92	707	317	19	15	505	555	60
	1899	18	152	22	18	112	913	293	16	25	857	973	116
Texas.....	1909	19	643	22	191	430	6,274	3,820	224	189	7,122	8,142	1,020
	1904	17	609	6	171	432	4,509	2,139	225	212	3,508	4,640	1,132
	1899												
Washington.....	1909	3	8	2	1	5	20	15	1	3	44	62	18
	1904	4	16	10		6	27	15		3	34	40	6
	1899												
All other states <sup>2</sup> .....	1909	4	33	1	11	21	419	200	13	6	131	227	66
	1904	6	55	2	14	39	290	212	17	11	295	344	49
	1899	25	175	23	25	127	1,554	490	25	60	1,765	2,015	280

<sup>1</sup> Figures included under "all other states."

<sup>2</sup> All other states embrace: In 1909—Georgia, 2 establishments; North Carolina, 1; Oregon, 1. In 1904—California, 1; Georgia, 3; North Carolina, 1; Oregon, 1. In 1899—Alabama, 4; California, 1; Florida, 4; Georgia, 4; Mississippi, 2; New York, 2; North Carolina, 4; Oregon, 1; Texas, 1; Washington, 2.

With the exception of Oregon and Washington, where only foreign-grown rice was treated, the industry of rice cleaning and polishing was confined in 1909 to six Southern states. The establishments in these states treated domestic rice exclusively. Louisiana reported 56 per cent of the total value of products, and Texas 36.4 per cent, leaving only 7.6 per cent for all other states combined. These two states employed 90.6 per cent of the average number of wage earners. Louisiana reported 65.7 per cent of the total value of products in 1899, South Carolina 11.2 per cent, while Texas, with one establishment, was included under "all other states."

There was thus between 1899 and 1909 considerable change in the relative importance of the different states in the industry. The number of establishments in Georgia, North Carolina, and South Carolina decreased greatly, while Alabama, California, Florida, Mississippi, and New York, each of which reported one or more establishments in 1899, returned none in 1909. The number of establishments in Texas increased from 1 in 1899 to 19 in 1909, and Arkansas, which had none in 1899, had 5 establishments in 1909.

This shift in the industry was due to the very general abandonment of rice growing on the lowlands near the Atlantic and Gulf coasts, and to its introduction

with irrigation on the level prairie lands of Louisiana, Texas, and Arkansas, where machinery can be used in planting and harvesting. According to the census of agriculture, the acreage in rice in these three states in 1899 was 210,421, or 61.5 per cent of the total for the country, and the production of rough rice in them was 6,472,227 bushels, or 71.9 per cent of the total. In 1909 these states reported 582,523 acres out of a total of 610,175 acres for the country, while their production, 21,114,548 bushels, formed 96.7 per cent of the total. During the intervening period the acreage devoted to rice in Louisiana, Texas, and Arkansas increased 176.8

per cent and the production 226.2 per cent, while in all other states combined the acreage decreased 79 per cent and the production 71.4 per cent.

With the shift in the industry has come the abandonment of many small custom mills and the erection of large mills equipped with the latest improved machinery for cleaning and polishing the grain. The horsepower for running the mills was 7,546 in 1899, or an average of 94 per establishment; it had increased to 19,519 in 1909, an average of 275 per establishment.

Table 4 gives more detailed statistics, by states, for 1909.

RICE CLEANING AND POLISHING—DETAILED STATISTICS, BY STATES: 1909.

Table 4	United States.	Arkansas.	Louisiana.	South Carolina.	Texas.	Washington.	All other states. <sup>1</sup>
Number of establishments.....	71	5	37	3	19	3	4
Persons engaged in the industry.....	1,777	64	960	69	643	2	33
Proprietors and firm members.....	33	10	10	3	22	2	1
Salaries officers, superintendents, and managers.....	144	8	72	6	51	1	6
Clerks.....	356	19	185	7	140	.....	5
Male.....	340	19	172	6	139	.....	4
Female.....	16	.....	13	1	1	.....	1
Wage earners:							
Average number.....	1,230	37	603	53	430	5	21
Number, 15th day of month:							
Maximum—							
Month.....	October.	October.	October.	October.	November.	<sup>2</sup> May.	.....
Number.....	2,017	117	1,180	93	624	8	.....
Minimum—							
Month.....	July.	<sup>2</sup> April.	June.	April.	July.	<sup>2</sup> January.	.....
Number.....	436	0	188	26	115	4	.....
Wage earners, Dec. 15, or nearest representative day.....	1,719	96	939	90	562	8	24
16 years of age and over.....	1,713	96	935	88	562	8	24
Male.....	1,707	96	929	88	562	8	24
Female.....	6	.....	6	.....	.....	.....	.....
Under 16 years of age.....	6	.....	4	2	.....	.....	.....
Male.....	6	.....	4	2	.....	.....	.....
Female.....	.....	.....	.....	.....	.....	.....	.....
Primary horsepower.....	19,519	1,610	10,706	490	6,274	20	419
Capital.....	\$13,347,144	\$575,312	\$8,385,212	\$351,649	\$3,820,027	\$15,458	\$199,486
Expenses.....	21,548,545	940,524	12,099,348	420,361	7,868,582	48,595	171,135
Services.....	1,176,623	46,134	664,503	30,461	412,709	3,620	19,196
Officials.....	296,385	11,975	165,850	8,320	99,680	1,000	9,560
Clerks.....	316,700	11,311	172,116	5,660	124,007	.....	3,606
Wage earners.....	563,538	22,848	326,537	16,481	189,022	2,020	6,030
Materials.....	19,501,080	851,693	10,970,862	380,789	7,122,417	44,356	130,963
Fuel and rent of power.....	124,736	2,446	68,141	2,944	47,481	556	3,168
Other.....	19,376,344	849,247	10,902,721	377,845	7,074,936	43,800	127,795
Miscellaneous.....	870,842	42,697	463,983	9,111	333,456	619	20,976
Rent of factory.....	18,934	.....	6,320	.....	4,650	564	7,400
Taxes.....	71,335	421	41,778	5,445	21,939	35	1,717
Other.....	780,573	42,276	415,885	3,666	306,867	20	11,850
Value of products.....	23,371,457	944,726	12,528,656	406,344	8,142,438	62,505	226,788
Value added by manufacture (value of products less cost of materials).....	2,870,377	93,033	1,557,794	85,555	1,020,021	18,149	95,825

<sup>1</sup> All other states embrace: Georgia, 2 establishments; North Carolina, 1; Oregon, 1.

<sup>2</sup> Same number reported for one or more other months.

<sup>3</sup> None reported for one or more other months.

Persons engaged in the industry.—Table 5 shows, by classes, for 1909, the number of persons engaged in the rice cleaning and polishing industry, classified according to occupational status and sex, and, in the case of wage earners, according to age. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

The average number of persons engaged in the rice cleaning and polishing industry in 1909 was 1,777, of whom 1,239, or 69.7 per cent, were wage earners; 182, or 10.2 per cent, proprietors and officials; and 356, or 20 per cent, clerks. Of the total number of persons engaged in the industry, 1,756, or 98.8 per cent, were

males. The number of women and children employed as wage earners was insignificant.

The average number of wage earners for each state, as reported at the censuses of 1909, 1904, and 1899, is given in Table 3. Table 4 shows, by states, the sex and age distribution of the wage earners employed on December 15, 1909, or the nearest representative day.

The largest number of wage earners employed in the rice cleaning and polishing industry during any month in 1909 was 2,017, in October, and the smallest number, 436, in July, the minimum number forming 21.6 per cent of the maximum. The height of the rice cleaning and polishing season extends from September to December, inclusive, during which period the number of wage earners fluctuated from 1,750 to 2,017.

CLASS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	1,777	1,756	21
Proprietors and officials.....	182	181	1
Proprietors and firm members.....	38	37	1
Salaries officers of corporations.....	43	43	.....
Superintendents and managers.....	101	101	.....
Clerks.....	356	340	16
Wage earners (average number).....	1,239	1,235	4
16 years of age and over.....	1,235	1,231	4
Under 16 years of age.....	4	4	.....

**Character of ownership.**—Of the establishments engaged in the rice cleaning and polishing industry in 1909, 57 were operated by corporations, 5 by firms, and 9 by individuals. Of the wage earners, 1,063, or 85.8 per cent, were employed by corporations; 73, or 5.9 per cent, by firms; and 103, or 8.3 per cent, by individuals. The proportions of the value of products reported by establishments under each form of ownership were as follows: Corporations, 89 per cent; firms, 4.6 per cent; and individuals, 6.4 per cent.

**Establishments classified according to size.**—Of the establishments engaged in cleaning and polishing rice in 1909, three had a value of products in excess of \$1,000,000 each. They reported products valued at \$4,715,441, or 21.1 per cent of the total for the industry. Fifty-one establishments, reporting an aggregate value of products of \$16,957,715, or 75.8 per cent of the total, each returned a value of products of \$100,000 but less than \$1,000,000. The mills of these two groups combined, those reporting products valued at \$100,000 or more, constituted 76.1 per cent of the total number of establishments, employed 93 per cent of the average number of wage earners, and reported 96.9 per cent of the total value of products. The smaller mills, those reporting products valued at less than \$100,000, while constituting almost one-fourth of the number of establishments, milled only a very small proportion of the total rice treated.

The classification of establishments according to the quantity of rice treated, is, of course, closely related to their classification according to value of products. Eighteen establishments treated each less than 100,000 bushels (45 pounds to the bushel) in 1909; 23 treated between 100,000 and 300,000 bushels; 19, between 300,000 and 500,000 bushels; and 11, over 500,000 bushels. Of the 11 largest mills, 4 in Louisiana treated 4,254,451 bushels of rough rice in the aggregate, and 7 in Texas, 4,699,500 bushels.

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

of depreciation, and consequently they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 2 shows the total reported expenses in 1909 to have been \$21,548,545, divided as follows: Materials, \$19,501,080, or 90.5 per cent; wages, \$563,538, or 2.6 per cent; salaries, \$613,085, or 2.8 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$870,842, or 4 per cent. The processes in this industry are so simple that the items of expense other than cost of materials are comparatively small. There are only slight variations among the different states in the distribution of expenses.

**Engines and power.**—Table 6 shows, for the rice cleaning and polishing industry, the number of engines or other motors, according to their character, employed in generating power (including electric motors operated by purchased current) and their total horsepower, as reported at the censuses of 1909, 1904, and 1899. It also shows separately the number and horsepower of electric motors, including those operated by current generated in the establishments using them.

POWER.	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	154	112	99	19,519	15,866	7,546	100.0	100.0	100.0
Owued.....	130	106	99	18,404	15,774	7,266	94.3	99.4	96.3
Steam.....	125	106*	90	18,252	15,774	7,002	93.5	99.4	92.8
Gas.....	4	.....	9	137	.....	264	0.7	.....	3.5
Water wheels.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Water motors.....	1	.....	.....	15	.....	.....	0.1	.....	.....
Rented — Electric motors.....	24	6	(1)	1,115	92	280	5.7	0.6	3.7
Electric motors.....	54	24	2	1,738	477	307	100.0	100.0	100.0
Run by current generated by establishment.....	30	18	2	623	385	27	35.8	80.7	8.8
Run by rented power.....	24	6	(1)	1,115	92	280	64.2	19.3	91.2

<sup>1</sup> Not reported.

The total primary power reported for the industry was 7,546 in 1899 and 19,519 in 1909, an increase of 11,973 horsepower, or 158.7 per cent. Steam power constituted 92.8 per cent of the total in 1899, 99.4 per cent in 1904, and 93.5 per cent in 1909. The decrease in the proportion of steam power during the period 1904–1909 was due to the introduction of gas and other internal-combustion engines and the relatively large increase in the horsepower of electric motors run by purchased current (rented electric power).

**Fuel.**—Closely related to the question of the kind of power employed is that of the fuel consumed in generating the power. The total cost of fuel and of rented power for the industry in 1909, as shown by Table 4, was \$124,736. The fuel consumed consisted of 10,049 tons of coal, 3,148 cords of wood, and 56,873 barrels of oil, the entire quantity of the last named being returned for Louisiana and Texas, where it is generally used in generating steam power. The hulls obtained

in cleaning rough rice are extensively used as fuel, but no data were collected as to the quantity so used.

**Materials and products.**—The special schedule used in collecting the statistics for the rice cleaning and polishing industry required a statement of the quantity of rough rice treated, whether domestic or foreign, and of the quantities and values of the different products manufactured. Table 7 shows these statistics, by states, for 1909 and 1904 and so far as available for 1899.

RICE CLEANING AND POLISHING—MATERIALS AND PRODUCTS, BY STATES: 1909, 1904, AND 1899.

Table 7	Census.	United States.	Arkansas.	Louisiana.	South Carolina.	Texas.	Washington.	All other states. <sup>1</sup>
Number of establishments.....	1909	71	5	37	3	19	3	4
	1904	74		43	4	17	4	6
	1899	80		37	18	1	2	22
Rough rice treated, pounds.....	1909	974,747,475	37,014,075	540,002,250	17,175,015	371,810,370	1,360,170	7,379,595
	1904	999,727,050		635,010,885	28,552,860	316,170,405	788,985	19,204,515
	1899	398,602,018		290,165,708	42,405,795	( <sup>2</sup> )	( <sup>2</sup> )	66,030,515
Products, aggregate value.....	1909	\$22,371,457	\$944,726	\$12,528,650	\$466,344	\$8,142,438	\$62,505	\$226,738
	1904	16,296,916		10,718,311	554,575	4,040,269	40,300	343,461
	1899	8,723,726		5,736,451	973,132	( <sup>2</sup> )	( <sup>2</sup> )	2,014,143
Clean rice— Total pounds.....	1909	626,089,489	23,197,442	351,302,414	9,466,200	236,117,295	1,229,000	4,777,138
	1904	623,900,245		394,744,386	17,825,732	197,433,320	713,913	13,182,894
	1899	243,031,200		173,632,724	24,864,112	( <sup>2</sup> )	( <sup>2</sup> )	44,534,364
Total value.....	1909	\$20,685,982	\$810,421	\$11,640,318	\$396,459	\$7,571,780	\$61,043	\$205,961
	1904	15,357,133		10,110,144	527,686	4,352,058	40,155	327,090
Whole rice— Pounds.....	1909	477,589,004	15,789,890	291,604,848	8,299,800	156,877,308	1,209,000	3,811,158
	1904	411,208,943		287,460,640	13,677,357	102,812,839	713,713	6,544,394
Value.....	1909	\$17,398,736	\$679,455	\$10,080,627	\$373,325	\$6,029,514	\$60,718	\$175,097
	1904	12,077,124		8,520,090	447,721	2,851,807	40,153	217,353
Broken rice— Pounds.....	1909	148,500,485	7,410,552	59,697,566	1,166,400	79,239,987	20,000	965,980
	1904	212,691,302		107,283,746	4,143,375	94,620,481	200	6,638,500
Value.....	1909	\$3,287,246	\$130,066	\$1,559,691	\$23,134	\$1,542,266	\$325	\$30,864
	1904	3,280,009		1,590,054	79,965	1,500,251	2	109,737
Polish— Pounds.....	1909	29,821,813	1,105,072	17,558,068	612,753	10,402,638		143,282
	1904	33,290,331		22,526,750	701,260	9,690,830		561,491
	1899	15,134,648		11,491,319	1,648,211	( <sup>2</sup> )	( <sup>2</sup> )	1,995,118
Value.....	1909	\$362,052	\$12,275	\$207,317	\$7,329	\$132,258		\$2,873
	1904	267,647		178,608	6,915	77,578		4,540
All other products.....	1909	\$1,323,423	\$122,030	\$681,021	\$62,556	\$438,400	\$1,462	\$17,954
	1904	672,136		429,559	19,974	210,633	145	11,825

<sup>1</sup> All other states embrace: In 1909—Georgia, 2 establishments; North Carolina, 1; Oregon, 1. In 1904—California, 1; Georgia, 3; North Carolina, 1; Oregon, 1. In 1899—Alabama, 4; California, 1; Florida, 4; Georgia, 4; Mississippi, 2; New York, 2; North Carolina, 4; Oregon, 1; Texas, 1; Washington, 2.

<sup>2</sup> Figures included under "all other states."

The quantity of rough rice treated increased from 398,602,018 pounds in 1899 to 974,747,475 pounds in 1909, although the quantity in the later year was 24,980,175 pounds less than that returned in 1904. This decrease in the quantity milled during the second five-year period was due, in part, to the falling off in foreign rice treated, and in part to the fact that the supply of domestic rough rice available for this purpose was not as large. There was, between 1904 and 1909, a decrease in rough rice treated of 95,008,635 pounds in Louisiana, of 11,377,845 pounds in South Carolina, and of 11,824,920 pounds in "all other states," and an increase of 55,645,965 pounds in Texas and of 571,185 pounds in Washington, while Arkansas returned 37,014,075 pounds in 1909 and none in 1904.

Notwithstanding the decrease in quantity of rough rice treated, there was an increase of 2,189,244 pounds

in the aggregate quantity of clean rice obtained in 1909, as compared with 1904. In 1899 the weight of clean rice obtained was 61 per cent of the weight of the rough rice treated; in 1904, 62.4 per cent; and in 1909, 64.2 per cent. The gain in the proportion of clean rice obtained, while due to some extent to improvements in mill equipment and better methods of treatment, was also caused in part by changes in the proportions of the different varieties of rough rice treated. In recent years much attention has been given to the selection of seed, with special reference to the yield and to the milling qualities, and this naturally has increased the proportion of clean rice obtained, as well as the proportion of whole rice as distinguished from broken rice and polish.

The proportion of clean rice obtained varies considerably in different states. In Arkansas the proportion

in 1909 was 62.7 per cent; in Louisiana, 65.1 per cent; in South Carolina, 55.1 per cent; in Texas, 63.5 per cent; and in Washington, 90.4 per cent. The rice treated in Washington, however, was imported hulled rice, and the rice was not polished by the mills, the only substance removed being the bran. The proportions of clean rice for the several states in 1904 were as follows: Louisiana, 62.2 per cent; South Carolina, 62.4 per cent; Texas, 62.4 per cent; and Washington, 90.5 per cent.

Of the total clean rice obtained in 1909 (626,089,489 pounds) 477,589,004 pounds, or 76.3 per cent, was whole rice, as compared with 411,208,943 pounds, or 65.9 per cent of the total (623,900,245 pounds), in 1904. Thus in 1904, 34.1 per cent of the clean rice was broken, as compared with only 23.7 per cent in 1909, an undoubted evidence of the greater efficiency of the mills and of improvement in the varieties of the grain. With the increase in the proportion of clean rice obtained has come a decrease in quantity of polish and bran. In view of the fact that hulls are generally used for fuel and that only a small proportion is sold, accurate data as to the total production are not available. Hulls are used to some extent in the manufacture of feed and for packing ice, crockery ware, and other articles of commerce. The exportation of hulls amounts to about \$100,000 per year, Germany taking more than one-half of the total.

The value of products increased \$13,647,731, or 156.4 per cent, from 1899 to 1909, and \$6,074,541, or 37.3 per cent, from 1904 to 1909. The increase during the latter period is due not to an increase in the quantity of rice milled, but to the increase in the proportion of clean rice obtained and to the enhanced value of rice products. The increase in value of

products from 1904 to 1909 in Louisiana was \$1,810,345; in Texas, \$3,502,169; and in Washington, \$22,205; while South Carolina shows a decrease of \$88,231, and "all other states" a decrease of \$116,673.

**Equipment and capacity.**—Table 8 shows, by states, the number of hulling and polishing machines in rice mills in 1909 and the estimated maximum capacity of rough rice per day of 24 hours.

STATE.	Hulling machines (number).	Polishing machines (number).	Estimated maximum capacity of rough rice per day of 24 hours (bushels of 45 pounds).
United States .....	521	150	341,409
Arkansas.....	21	8	23,520
Louisiana.....	308	86	190,025
South Carolina.....	44	9	9,500
Texas.....	120	45	112,220
Washington.....	16	.....	484
All other states.....	12	2	5,660

The hulling machines used are of many varieties, varying from the mechanically operated mortar and pestle to the highest type of rotary hulling machines. The polishing machines are as diversified as the hulling machines, some of them being skin pads operated in such a manner that the rice grains are treated by rubbing them against each other and against the pads.

In 1909 for all mills combined the estimated maximum capacity of rough rice per day of 24 hours was 341,409 bushels of 45 pounds each. This compares with 301,545 bushels in 1904, an increase of 39,864 bushels, or 13.2 per cent. Had all the mills been operated continuously to their maximum capacity it would have required approximately 63 days to treat the total quantity of rough rice actually reported for the year.

## HAWAII.

None of the statistics heretofore presented include data for the rice cleaning and polishing industry in Hawaii, where it is largely in the hands of the Chinese and Japanese. Some of the mills treat only the rice grown on the plantation where the mill is situated, some treat only foreign rice, while a number handle Hawaiian rice largely on a custom basis. The first census in Hawaii, following the annexation to the United States, covered the year 1899 and the next related to 1909, no data having been collected there for 1904.

Table 9 summarizes the statistics for the rice cleaning and polishing industry in Hawaii for 1899 and 1909.

Table 9	NUMBER OR AMOUNT.		Per cent of increase. <sup>1</sup>
	1909	1899	
Number of establishments.....	74	41	80.5
Persons engaged in the industry.....	518	267	94.0
Proprietors and firm members.....	346	76	355.3
Salaried employees.....	34	18	88.9
Wage earners (average number).....	138	173	-20.2
Primary horsepower.....	1,428	609	134.5
Capital.....	\$715,735	\$381,025	87.5
Expenses.....	\$1,092,997	\$560,478	198.9
Services.....	\$40,777	\$01,224	-23.6
Salaries.....	\$11,255	\$12,100	-7.0
Wages.....	\$35,522	\$49,124	-27.7
Materials.....	\$1,000,743	\$481,025	232.2
Fuel and rent of power.....	\$14,520	\$4,857	198.9
Other.....	\$1,580,228	\$477,068	232.5
Miscellaneous.....	\$45,472	\$23,329	94.9
Rent of factory or works.....	\$6,087	\$8,610	-29.3
Taxes.....	\$4,982	\$2,174	129.2
Other.....	\$34,403	\$12,545	174.2
Products, total value.....	\$2,238,667	\$664,300	237.0
Clean rice..... (pounds).....	51,967,465	15,001,020	246.4
Whole..... (pounds).....	\$2,134,167	(?)	.....
Broken..... (pounds).....	51,381,561	(?)	.....
Bran..... (pounds).....	\$2,122,510	(?)	.....
All other..... (value).....	585,904	(?)	.....
Value added by manufacture (value of products less cost of materials).....	\$11,641	(?)	.....
	6,415,232	(?)	.....
	\$67,689	(?)	.....
	\$30,821	(?)	.....
	\$637,919	\$182,375	249.8

<sup>1</sup> A minus sign (-) denotes decrease.

<sup>2</sup> Comparable figures not available.

The number of establishments engaged in rice cleaning and polishing in Hawaii, as enumerated in 1909, was 74, of which 35, with products valued at \$1,032,904, were engaged exclusively in merchant milling; 7, with products valued at \$737,848, exclusively in custom milling; and 32, with products valued at \$467,915, in both merchant and custom milling. In addition to these there were a number of very small mills, with a

product valued at less than \$500 each, for which reports were not secured. During the decade 1899-1909 the number of establishments increased 33; the value of products increased from \$664,300 to \$2,238,667, or 237 per cent; and the value added by manufacture (value of products less cost of materials) from \$182,375 to \$637,919, or 249.8 per cent.

The number of persons engaged in the industry increased from 267 to 518. This increase, however, was almost entirely the result of an increase in the number of proprietors and firm members, which increased from 76 to 346. In recent years the partnership form of ownership in its several variations has been in great favor, sometimes as many as 30 or 40 persons being interested in a single establishment. The decrease in the number of wage earners is probably due to the increase in the number of proprietors who actually performed services. The largest number of wage earners, 153, was employed in December, and the smallest number, 121, was employed in June. The most active period in the industry was from July to December, though marked activity is shown in March, due to the fact that in each year two crops of rice are produced—one in the spring and one in the fall.

Materials and products.—The census of agriculture in 1909 shows that the production of rough rice in Hawaii was 41,827,900 pounds. Some of this rice was exported, but nearly the entire amount was used for local consumption. Large quantities of foreign rice—practically all of it from Japan—are imported and milled each year. The amount of this foreign rice, which is hulled before importation, treated in Hawaii in 1909 was 28,749,015 pounds. The total production of clean rice in 1909 was 51,967,465 pounds, of which all but 585,904 pounds was whole rice. This large proportion of whole rice may be accounted for, in part, by the fact that very little polishing was done to the grains, with the result that the breakage was only slight. In this regard the practice in Hawaii is very different from that prevalent in the United States, where the trade demands rice which has been highly polished. Bran is practically the only product other than clean rice obtained by the Hawaiian mills, this item amounting to 6,415,232 pounds in 1909.

This page was intentionally left blank.

---

---

SALT

---

---

(461)

This page was intentionally left blank.

# THE MANUFACTURE OF SALT.

## GENERAL STATISTICS.

**Scope of the industry.**—The salt industry, as defined by the Census Bureau, covers both establishments engaged in making salt by the evaporation of brine obtained either from subterranean sources by means of wells, from the sea, or from saline springs and lakes, and those which manufacture merchantable salt from natural deposits of rock salt. This latter portion of the business is partly a mining industry, but for the purposes of the census reports it seemed better to combine all branches of the salt industry, without distinguishing between mining and manufacturing. The statistics shown in this report, therefore, cover the work of extracting the crude material from its original source, as well as its subsequent manufacture into the finished product.

Several establishments engaged in the manufacture of soda products use as material salt brine obtained on their own premises, but the returns of such concerns, except as explained in the discussion of Table 10, are included in census statistics with those for the

industry covered by the designation "chemicals." Those establishments whose principal product is salt, but which sell brine to establishments engaged in the manufacture of soda, or make bromine or other chemicals as by-products, are classed with the salt industry and the statistics for such establishments are included in all the tables in this report. In 1849, 340 establishments were reported as engaged in the manufacture of salt, these establishments giving employment to an average of 2,786 hands and turning out products valued at \$2,177,945. In 1859, 399 establishments were reported, employing an average of 2,213 hands and turning out products to the value of \$2,289,504.

**Comparison with earlier censuses.**—Table 1 summarizes the statistics of the salt industry for each census from 1869 to 1909, inclusive. The financial figures for 1869 are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

Table 1	NUMBER OR AMOUNT.						PER CENT OF INCREASE. <sup>1</sup>					
	1909	1904	1899	1889	1879	1869	1899-1909	1904-1909	1899-1904	1889-1899	1879-1889	1869-1879
Number of establishments.....	124	146	159	200	268	282	-22.0	-15.1	-8.2	-20.5	-25.4	-5.0
Persons engaged in the industry.....	5,580	5,171	5,261	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	6.1	7.9	-1.7	.....	.....	.....
Proprietors and firm members.....	74	87	81	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	-8.6	-14.9	7.4	.....	.....	.....
Salaried employees.....	570	418	406	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	40.4	36.4	3.0	.....	.....	.....
Wage earners (average number).....	4,936	4,666	4,774	4,255	4,289	2,953	3.4	5.8	-2.3	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Primary horsepower.....	27,263	19,434	23,865	11,552	8,476	3,322	14.2	40.3	-16.6	106.6	36.3	155.1
Capital.....	\$29,011,793	\$25,586,282	\$27,123,364	\$13,437,749	\$8,225,740	\$6,501,615	7.0	13.4	-5.7	101.8	63.4	25.4
Expenses.....	9,632,738	7,955,540	6,507,349	4,283,444	( <sup>2</sup> )	( <sup>2</sup> )	48.0	21.1	22.3	51.9	.....	.....
Services.....	3,250,176	2,553,824	2,410,888	1,782,491	1,260,023	1,146,910	34.8	27.3	5.9	35.3	41.5	9.9
Salaries.....	718,730	487,425	499,748	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	43.8	47.5	-2.5	.....	.....	.....
Wages.....	2,531,446	2,066,399	1,911,140	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	32.5	22.5	8.1	.....	.....	.....
Materials.....	5,203,354	4,166,137	3,335,922	1,826,770	2,074,049	1,760,670	56.0	24.9	24.9	82.6	-11.9	17.8
Miscellaneous.....	1,179,208	1,235,579	760,539	674,183	( <sup>2</sup> )	( <sup>2</sup> )	55.0	-4.6	62.5	12.8	.....	.....
Value of products.....	11,327,834	9,437,662	7,966,897	5,484,618	4,829,566	4,818,229	42.2	20.0	18.5	45.3	13.6	0.2
Value added by manufacture (value of products less cost of materials).....	6,124,480	5,271,525	4,630,975	3,657,848	2,755,517	3,057,559	32.2	16.2	13.8	26.6	32.7	-0.9

<sup>1</sup> A minus sign (—) denotes decrease. Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Figures not strictly comparable.

Table 1 shows that there has been a constant decrease from census to census in the number of establishments engaged in the industry, and, on the other hand, an increase in the value of products, indicating that there has been a marked increase in the average productive capacity of the plants.

In 1909 the value of products was \$11,327,834, of which amount 45.9 per cent represented the cost of materials. Although, as noted in the Introduction, the statistics of capital are not entirely satisfactory, they are of sufficient accuracy to show that the value of products was remarkably small in proportion to the

total capital employed in the industry. The number of wage earners in 1909 was 4,936, an increase for the decade of only 3.3 per cent; the absolute increase was two less than for the salaried employees. The amount paid in wages showed a much greater relative increase (32.5 per cent) than was shown for the number of wage earners (3.3 per cent).

**Summary, by states.**—Table 2 summarizes the more important statistics by states, the states being arranged according to the value of products reported for 1909. Some states for which data can not be shown separately ranked higher than some named in the table.

MANUFACTURES.

**Table 2**

STATE.	Number of establishments: 1909	WAGE EARNERS.				VALUE OF PRODUCTS.				VALUE ADDED BY MANUFACTURE.			PER CENT OF INCREASE. <sup>1</sup>									
		Average number: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Amount: 1909	Per cent of total: 1909	Rank.		Wage earners (average number).			Value of products.			Value added by manufacture.		
				1909	1904			1909	1904			1909	1904	1909	1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904
United States...	124	4,936	100.0	.....	.....	\$11,327,834	100.0	.....	.....	\$6,124,480	100.0	.....	.....	3.4	5.8	-2.2	42.2	20.0	18.5	32.2	16.2	13.8
Michigan.....	27	1,363	27.6	2	1	3,652,990	32.2	1	2	2,009,646	32.8	1	2	-5.9	-1.8	-4.2	48.5	51.9	-2.3	47.3	65.6	-11.1
New York.....	33	1,525	30.9	1	2	2,896,826	25.6	2	1	1,701,635	27.8	2	1	19.2	11.1	7.3	7.3	-8.5	17.4	-2.2	-14.1	13.9
Ohio.....	8	648	13.1	3	3	1,807,347	16.0	3	3	1,716,992	11.7	3	4	-4.4	20.2	-20.5	120.9	54.8	42.7	81.8	42.0	28.1
Kansas.....	10	451	9.1	4	4	1,106,820	9.8	4	4	586,666	9.6	4	3	0.2	-14.3	16.9	54.1	-1.5	56.5	50.6	-0.5	51.3
California.....	19	402	8.1	5	5	746,211	6.6	5	5	503,866	8.2	5	5	50.6	28.4	17.2	96.3	74.1	12.7	91.2	63.1	17.2
Texas.....	6	162	3.3	7	6	407,160	3.6	6	6	190,707	3.1	6	8	-15.2	-5.8	-9.9	58.5	16.0	36.6	65.0	22.1	35.2
Utah.....	9	56	1.1	9	9	183,843	1.6	8	8	130,574	2.1	8	7	.....	.....	.....	31.8	-22.4	69.9	21.2	-29.7	72.3
West Virginia.....	3	110	2.2	8	8	131,414	1.2	9	9	62,265	1.0	9	9	-42.1	.....	-57.9	-12.6	13.6	-23.0	.....	.....	.....
Nevada.....	4	13	0.3	11	11	23,879	0.2	11	11	17,986	0.3	11	11	.....	.....	.....	.....	.....	.....	.....	.....	.....
All other states.....	5	200	4.2	.....	.....	372,238	3.3	.....	.....	204,143	3.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

<sup>1</sup> A minus sign (-) denotes decrease. Percentages are omitted where base is less than 100 for wage earners or less than \$100,000 for value of products or value added by manufacture.

The manufacture of salt is a localized industry, being confined to places where the salt brine or deposits of salt are found. It was reported from only 13 states in 1909. Michigan was the leading state in the industry, as measured by value of products and value added by manufacture, but in number of wage earners it was second to New York. In 1904 these conditions were reversed, New York ranking first in value of products and value added by manufacture, and ranking second to Michigan in number of wage earners. The number of wage earners employed in the industry in Michigan decreased 5.9 per cent during the decade ending with 1909, while the value of products increased 48.5 per cent, representing in 1909 almost one-third of the total for the industry. The combined value of the products of the three leading states, Michigan, New York, and Ohio, constituted almost three-fourths of the total for the industry. Of the states shown separately, Ohio and California reported the greatest relative increase in value of products from 1899 to 1909, 120.9 per cent and 96.3 per cent, respectively.

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

**Table 3**

CLASS.	PERSONS ENGAGED IN THE INDUSTRY: 1909		
	Total.	Male.	Female.
All classes.....	5,580	5,132	448
Proprietors and officials.....	291	276	15
Proprietors and firm members.....	74	59	15
Salaried officers of corporations.....	94	94	.....
Superintendents and managers.....	123	123	.....
Clerks.....	353	276	77
Wage earners (average number).....	4,936	4,580	356
16 years of age and over.....	4,929	4,575	354
Under 16 years of age.....	7	5	2

The average number of persons engaged in the salt industry during 1909 was 5,580, of whom 4,936, or 88.5 per cent, were wage earners, 291, or 5.2 per cent, were proprietors and officials, and 353, or 6.3 per cent, were clerks, this class including other subordinate salaried employees. Of the total number of persons in the industry, 92 per cent were males and 8 per cent females. Only 7 children were employed as wage earners.

**Wage earners employed, by months.**—Table 4 gives the number of wage earners employed in the salt industry on the 15th (or nearest representative day) of each month during the year 1909.

**Table 4**

MONTH.	WAGE EARNERS IN THE INDUSTRY: 1909	
	Number.	Per cent of maximum.
January.....	4,340	83.0
February.....	4,462	85.3
March.....	4,846	92.7
April.....	4,977	95.2
May.....	4,984	95.3
June.....	5,132	98.1
July.....	5,229	100.0
August.....	5,198	99.4
September.....	5,192	99.3
October.....	5,158	98.6
November.....	5,070	97.0
December.....	4,636	88.7

In the industry as a whole the largest number of wage earners employed during any month of 1909 was 5,229 in July, and the smallest number, 4,340, in January, the minimum number being equal to 63.9 per cent of the maximum. In 1904 the maximum number was 5,247, in October, and the minimum, 4,023, in February, the latter number being equal to 76.7 per cent of the former.

**Prevailing hours of labor.**—In Table 5 the wage earners in the salt industry have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even

though a few employees worked a greater or smaller number of hours.

	WAGE EARNERS IN THE INDUSTRY: 1909	
	Average number.	Per cent of total.
Total.....	4,936	100.0
48 and under.....	214	4.3
54.....	459	9.3
Between 54 and 60.....	135	2.7
60.....	2,991	60.6
Between 60 and 72.....	550	11.1
72.....	431	8.7
Over 72.....	156	3.2

Of the 4,936 wage earners reported for 1909, 2,991, or 60.6 per cent, were employed in establishments where the prevailing hours of labor were 60 per week; 808, or 16.3 per cent, in establishments where the prevailing hours were less than 60 per week; and 1,137, or 23 per cent, in establishments where they were more than 60 per week.

**Character of ownership.**—Table 6 presents statistics with respect to the character of ownership of the establishments in the salt industry.

	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	124	146	\$11,327,834	\$9,437,662
Individual.....	25	134	637,438	1,353,921
Firm.....	15	13	344,982	305,801
Corporation.....	84	94	10,345,414	8,777,940
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	20.2	23.3	5.6	3.8
Firm.....	12.1	12.3	3.0	3.2
Corporation.....	67.7	64.4	91.3	93.0

<sup>1</sup> Includes one establishment under an unclassified form of ownership.

The number of establishments under each form of ownership decreased from 1904 to 1909, the relative decrease being greatest for those owned by individuals. In 1909 corporations controlled over two-thirds of the total establishments, and the value of the products of these establishments represented more than nine-tenths of the total for the industry.

**Size of establishments.**—Table 7 presents statistics for establishments in the salt industry in 1909 and 1904 grouped according to the value of products.

	NUMBER OF ESTABLISHMENTS.		VALUE OF PRODUCTS.	
	1909	1904	1909	1904
Total.....	124	146	\$11,327,834	\$9,437,662
Less than \$5,000.....	29	32	81,444	62,561
\$5,000 and less than \$20,000.....	20	41	205,747	430,155
\$20,000 and less than \$100,000.....	41	45	2,097,195	2,124,420
\$100,000 and less than \$1,000,000.....	34	28	8,943,448	6,820,526
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	23.4	21.9	0.7	0.7
\$5,000 and less than \$20,000.....	16.1	28.1	1.8	4.6
\$20,000 and less than \$100,000.....	33.1	30.8	18.5	22.5
\$100,000 and less than \$1,000,000.....	27.4	19.2	79.0	72.3

In 1909 only 34 of the 124 establishments manufactured products valued at \$100,000 or over, but such establishments reported almost four-fifths (79 per cent) of the total value of products. The average value of products per establishment increased from \$64,642 in 1904 to \$91,354 in 1909, and the average value added by manufacture, as computed from the figures in Table 1, from \$36,106 to \$49,391. The average number of wage earners per establishment shows an increase from 32 in 1904 to 39.8 in 1909.

**Expenses.**—As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses in the salt industry in 1909 to have been \$9,632,738, distributed as follows: Cost of materials, \$5,203,354, or 54 per cent; wages, \$2,531,446, or 26.3 per cent; salaries, \$718,730, or 7.5 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$1,179,208, or 12.2 per cent.

**Engines and power.**—Table 1 shows that the total amount of power used increased from 3,322 horsepower in 1869 to 27,263 in 1909. Table 8 shows the statistics of power as reported at the censuses of 1909, 1904, and 1899.

	NUMBER OF ENGINES OR MOTORS.			HORSEPOWER.			PER CENT DISTRIBUTION OF HORSEPOWER.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
Primary power, total.....	478	366	394	27,263	19,434	23,865	100.0	100.0	100.0
Owned.....	307	348	394	26,008	19,025	23,815	95.4	97.9	99.8
Steam.....	345	316	380	24,930	18,169	23,104	91.4	93.5	96.8
Gas.....	51	30	13	782	489	182	2.9	2.2	0.8
Water wheels.....	1	2	1	108	33	8	0.4	0.2	( <sup>1</sup> )
Other.....				188	387	521	0.7	2.0	2.2
Rented.....	81	18	( <sup>2</sup> )	1,255	406	50	4.6	2.1	0.2
Electric.....	81	18	( <sup>2</sup> )	1,241	196	25	4.5	1.0	0.1
Other.....				14	210	25	0.1	1.1	0.1
Electric motors.....	239	37	8	3,425	664	220	100.0	100.0	100.0
Run by current generated by establishment.....	158	19	8	2,184	408	195	63.8	70.5	88.6
Run by rented power.....	81	18	( <sup>2</sup> )	1,241	196	25	36.2	29.5	11.4

<sup>1</sup> Less than one-tenth of 1 per cent.

<sup>2</sup> Not reported.

The total primary power used in the salt manufacturing establishments increased 14.2 per cent from 1899 to 1909. In 1909, as in 1904 and 1899, power generated by steam engines constituted more than nine-tenths of the total primary power, although the proportion of such power had decreased from 96.8

per cent in 1899 to 91.4 per cent in 1909. The increased use of rented electric power caused its relative importance to increase from one-tenth of 1 per cent of the total primary horsepower in 1899 to 4.5 per cent in 1909. The number and horsepower of electric motors run by means of current generated in the establishments in the industry also show a decided increase.

Fuel consumed.—Except where salt is produced by solar evaporation of brine in open vats or tanks, fuel is a very important factor in the process of salt manufacture, and Table 9 shows the quantity of each kind of

fuel consumed in the industry in 1909. In 1909 the amount expended for fuel and rent of power, as shown in Table 11, was \$1,590,746.

KIND.	FUEL USED: 1909	
	Unit.	Quantity.
Anthracite coal.....	Long tons.....	108,816
Bituminous coal.....	Short tons.....	642,373
Coke.....	Short tons.....	15
Wood.....	Cords.....	9,441
Oil, including gasoline.....	Barrels.....	85,074
Gas.....	1,000 feet.....	1,688,731

### SPECIAL STATISTICS RELATING TO PRODUCTS AND PROCESSES.

Summary for the United States.—Table 10 shows, for 1909, 1904, and 1899, statistics as to the quantity and value of the different products, the grades of salt manufactured, and the processes employed.

PRODUCT.	1909	1904	1899
<b>Total value.....</b>	<b>\$11,327,834</b>	<b>\$9,437,662</b>	<b>\$7,966,897</b>
Salt, including brine:			
Barrels.....	29,933,090	17,128,572	15,187,819
Value.....	\$8,311,729	\$6,956,734	\$5,899,362
Salt—			
Barrels.....	21,162,253	17,128,572	15,187,819
Value.....	\$7,873,189	\$6,956,734	\$5,899,362
Brine (intermediate product in the manufacture of sodas)—			
Barrels.....	8,770,807	( <sup>4</sup> )	( <sup>4</sup> )
Value.....	\$438,540	( <sup>4</sup> )	( <sup>4</sup> )
Bromine:			
Pounds.....	569,725	261,665	279,437
Value.....	\$37,600	\$72,584	\$64,921
All other products.....	\$2,958,505	\$2,409,344	\$2,032,614
<i>Salt, classified by grade (barrels).</i>			
Table and dairy.....	3,042,824	3,119,091	1,866,058
Common fine.....	7,745,204	6,254,293	6,806,126
Common coarse.....	2,843,393	1,878,666	2,635,282
Packers.....	385,802	498,943	182,930
Coarse solar.....	1,169,396	1,677,182	910,974
Rock salt, mined.....	5,938,721	3,416,835	2,543,679
Milling, and other grades.....	96,913	283,562	182,770
<i>Processes employed.</i>			
Total number of establishments.....	124	146	159
Number reporting:			
Solar.....	46	63	( <sup>4</sup> )
Kettle.....	1	7	( <sup>4</sup> )
Grainer.....	50	70	( <sup>4</sup> )
Open pan.....	11	12	( <sup>4</sup> )
Vacuum pan.....	21	20	( <sup>4</sup> )

<sup>1</sup> In addition, salt to the value of \$191,431 was produced in establishments engaged primarily in the manufacture of chemicals, ice, lumber and timber products, and soap.

<sup>2</sup> In addition, 25,043 barrels of salt, valued at \$8,415, were produced by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

<sup>3</sup> Does not include brine.

<sup>4</sup> Not reported.

<sup>5</sup> Includes potassium bromide, reduced to the equivalent of bromine.

In order to avoid a duplicate canvass, the United States Geological Survey, which annually collects statistics of the production of salt, and the Bureau of the Census cooperated in collecting data for the year 1909. Excluding the production of salt for Hawaii and Porto Rico, the reports of the two bureaus agree for 1909. The variation in the reports for other census years may be attributed to differences in the methods employed by the two bureaus. These differences, especially in the quantities of the different grades of salt, are sufficient to affect to a certain extent the comparability of the totals for 1909 with those for 1904 and 1899.

The value of salt, as shown in the table, does not include the value of the containers, which is included under "all other products" for each census. The barrel of 280 pounds is used for showing quantities of salt.

The value of all products of the salt industry, according to the statistics shown in Table 10, increased from \$7,966,897 in 1899 to \$11,327,834 in 1909, or 42.2 per cent. The production of salt, not including brine, increased from 15,187,819 barrels in 1899 to 21,162,253 barrels in 1909, or 39.3 per cent.

The grades of salt, the quantity of each of which is shown in Table 10, are described by the United States Geological Survey, in its report for 1909 on salt production,<sup>1</sup> as follows:

For convenience salt is classified according to the grades by which it is sold by the producer, the grades being determined by the amount of refining, the methods employed in refining, and the purposes for which the salt is used. These grades are "table and dairy," "common fine," "common coarse," "packers," "solar," "rock," "milling," "brine," and "other grades." The "table and dairy" salt includes extra fine and fancy grades prepared for family use, and all grades artificially dried, used for butter and cheese making, and such special brands. Under "common fine" salt are included all other grades of fine salt of first quality, not artificially dried, such as those known to the trade as "C. F.," "No. 1 F.," "anthracite," etc. "Common coarse" salt includes all grades coarser than "common fine," made by artificial heat, such as "steam coarse," "No. 1 coarse," "pan solar," "G. A.," "Liverpool ground," "C. C.," etc. By "packers" salt is meant those grades prepared for the purpose of curing fish, meats, etc. "Coarse solar" includes all coarse salt made by solar evaporation. "Rock" salt includes all salt mined and shipped without special preparation. "Mill" salt is that used in gold and silver mills, and "other grades" includes all low-grade or No. 2 salt, used in salting cattle and for fertilizers, track purposes, etc. "Brine" includes all salt liquor used in the manufacture of soda ash, sodium bicarbonate, sodium hydrate (caustic soda), and other sodium salts or brine sold without being evaporated to dryness.

The statistics shown in Table 10 concerning the processes employed refer to the methods of evaporating the brine to the required dryness for salt manufacture. They do not apply to establishments producing rock salt, of which there are several in the United States. The solar process of salt manufacture, according to the returns, was used exclusively in

<sup>1</sup> Mineral Resources of the United States, Part II, page 662.

THE MANUFACTURE OF SALT.

Nevada and New Mexico, largely in California and Utah, and in part in New York and Texas. In all other states in which salt was made from brine, arti-

ficial heat was the only means used for the evaporation of the brine. The grainer process of evaporation was more frequently reported than any other.

DETAILED STATE TABLE.

The principal statistics secured by the census inquiry concerning salt manufacture are presented by states in Table 11, showing for 1909 the number of establishments reporting, the number of persons engaged in

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

SALT—DETAILED STATISTICS, BY STATES: 1909.

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.									WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horsepower.
		Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.			
					Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.		
								Maximum month.	Minimum month.							
United States...	124	5,580	74	217	276	77	4,936	Jy 5,229	Ja 4,340	4,987	4,622	358	5	2	27,263	
California.....	19	469	22	23	18	4	402	No 519	Fe 313	468	464	4			1,228	
Kansas.....	10	505	3	19	25	7	451	Oc 499	Ja 387	462	443	19			3,387	
Michigan.....	27	1,567	12	57	98	37	1,363	Jo 1,463	Ja 1,200	1,288	1,204	84			6,628	
Nevada.....	4	17	2	2			13	Se 16	Fe 10	11	10	1			82	
New York.....	33	1,686	20	59	72	10	1,525	Au 1,677	Ja 1,274	1,507	1,356	151			9,923	
Ohio.....	8	722		23	36	15	648	Ja <sup>1</sup> 675	Au 609	677	596	80	1		4,034	
Texas.....	6	181	3	11	4	1	162	Se 181	Ja 142	163	150	11	2		447	
Utah.....	9	75	7	9	3		56	Jy 103	Ja 14	80	74	0			474	
West Virginia.....	3	123	1	5	5	2	110	No 120	Au 91	116	116				335	
All other states <sup>2</sup> .....	5	235	4	9	15	1	206			215	209	2	2	2	725	

STATE.	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
United States..	\$29,011,793	\$9,632,738	\$423,107	\$295,623	\$2,531,446	\$1,590,746	\$3,612,608	\$39,755	\$109,970	\$122,407	\$907,076	\$11,327,834	\$6,124,480
California.....	2,022,663	579,661	34,960	20,670	211,672	26,925	215,420	21,675	3,656	950	43,733	746,211	503,806
Kansas.....	2,544,199	926,098	49,940	30,306	188,123	170,092	349,162		13,547	17,801	106,977	1,105,920	586,666
Michigan.....	5,166,679	3,058,708	92,050	105,414	745,401	555,244	1,088,106		38,277	32,899	401,317	3,652,966	2,009,646
Nevada.....	38,174	16,289	2,220		7,644	542	5,351		282		250	23,879	17,986
New York.....	14,552,287	2,467,250	143,440	85,214	765,132	416,178	779,013		35,167	52,716	190,400	2,896,826	1,701,635
Ohio.....	1,980,873	1,640,212	45,650	32,144	360,534	250,292	840,063		8,791		102,738	1,807,347	716,992
Texas.....	506,222	338,404	14,447	3,634	81,908	92,582	123,871	1,500	3,544	5,544	11,374	407,160	190,707
Utah.....	837,975	144,394	15,400	3,820	37,535	13,352	39,917	900	1,138	12,497	19,835	183,843	130,574
West Virginia.....	150,934	126,732	6,000	3,540	45,533	27,632	41,517		1,325		1,185	131,414	62,265
All other states <sup>2</sup> .....	1,211,787	335,080	19,000	10,821	87,964	37,907	130,188	15,680	4,253		29,267	372,238	204,143

<sup>1</sup> Same number reported for one or more other months.

<sup>2</sup> All other states embrace: Idaho, 1 establishment; Louisiana, 2; New Mexico, 1; Pennsylvania, 1.

This page was intentionally left blank.

---

---

# THE SUGAR INDUSTRY

---

---

(469)

This page was intentionally left blank.

## THE SUGAR INDUSTRY.

Summary for the three industries combined: 1909.—Table 1 presents a summary of the more important statistics for the sugar industries as a group for 1909. The establishments in the group constitute three industries, designated in the census statistics of manufactures as "beet sugar," "sugar and molasses," and "sugar refining, not including beet sugar." The sugar industry includes establishments manufacturing sugar or sirup from sugar cane, except that the product of mills located on farms and using only the cane grown on the farms where they are situated has been included in the statistics of agriculture. In the aggregate large quantities of sugar cane are crushed in these small farm mills, but the output is practically all sirup, so that the omission of their sugar product does not appreciably affect the statistics relating to the total production of cane sugar in the United States. The sugar refining industry comprises only those establishments which were engaged exclusively (or practically so) in the refining of cane sugar. There is some duplication in the cost of materials and the value of products shown for the three industries combined, by reason of the fact that a large part of the raw sugar, which constitutes the principal product of the "sugar and molasses" branch, is used as material by the refineries. Of the total amount of cane sugar refined, however, by far the larger part is imported.

ufacture of sugar from beets, 214 in the manufacture of sugar or sirup from cane, and 19 in the refining of cane sugar. The total number of persons engaged in these three industries was 24,047, of whom 34.9 per cent were employed in the beet sugar factories, 22.1 per cent in the cane mills, and 43 per cent in the refineries. Although large mills with expensive equipment are required for the manufacture of sugar from beets, it may be stated that in a number of cases the value of the land on which the beets were grown, being owned by the companies, was included in the capital reported. On the other hand, many of the mills which manufacture sugar from cane ("sugar and molasses") are comparatively small and without very expensive machinery. It should be noted also that the greater part of the beet sugar produced is refined, whereas the sugar from the cane mills is largely raw sugar. The cane sugar refineries, although few in number, have very expensive plants and require a large capital investment, the capital reported averaging over \$6,000,000 per establishment. The processes used in the sugar refining branch are comparatively simple, however, and the value added by manufacture in this industry formed only 9 per cent of the value of products, as compared with 43.3 per cent in the beet sugar industry, and 30.5 per cent in the cane sugar industry ("sugar and molasses").

The quantity of beet sugar reported in 1909 was 501,682 tons, valued at \$45,937,629, and that of cane sugar 326,858 tons, valued at \$26,095,673. The quantity of refined sugar turned out by the refineries, which would include the product made from foreign raw sugar as well as from domestic cane sugar, was not reported. In both the beet sugar industry and the industry producing raw cane sugar the value of sugar manufactured represents by far the greater part of the total value of products, the value of other products representing only 4.5 per cent of the total in the beet sugar industry, and 14.8 per cent in the sugar and molasses industry, the higher percentage in the latter case being due to the considerable amount of molasses and sirup reported as a product.

According to the census of agriculture, the farm production of sugar and sirup in 1909 amounted to 125,647 pounds of cane sugar, 14,060,206 pounds of maple sugar, 21,633,579 gallons of cane sirup, 16,532,000 gallons of sorghum, and 4,106,418 gallons of maple sirup. In this connection attention is called to the fact that the glucose factories produced, in 1909, 769,660,210 pounds of glucose, valued at \$17,922,514, and 159,060,478 pounds of grape sugar, valued at \$3,620,816.

**Table 1**

	THE SUGAR INDUSTRIES COMBINED: 1909			
	Total.	Beet-sugar industry.	Cane sugar and molasses industry.	Cane sugar refining industry.
Number of establishments....	291	58	214	19
Persons engaged in the industry.....	24,047	8,389	5,313	10,345
Proprietors and firm members.....	205	1	193	6
Salaried employees.....	3,112	1,184	988	940
Wage earners (average number).....	20,730	7,204	4,127	9,399
Primary horsepower.....	217,805	57,202	122,189	38,414
Capital.....	\$282,795,499	\$129,628,938	\$37,925,770	\$115,240,791
Expenses.....	\$304,831,067	\$37,353,066	\$26,165,626	\$241,312,475
Services.....	\$16,453,198	\$6,577,900	\$2,600,172	\$7,275,126
Salaries.....	\$4,161,030	\$1,769,454	\$737,421	\$1,654,155
Wages.....	\$12,292,168	\$4,808,446	\$1,862,751	\$5,620,971
Materials.....	\$274,847,974	\$27,265,170	\$21,294,844	\$226,287,960
Miscellaneous.....	\$13,529,895	\$3,509,996	\$2,270,510	\$7,749,389
Value of products.....	\$327,371,780	\$48,122,383	\$30,620,738	\$248,628,659
Value added by manufacture (value of products less cost of materials).....	\$52,523,806	\$20,857,213	\$9,325,894	\$22,340,699
Sugar manufactured:				
Quantity (tons).....	(1)	501,682	328,858	(2)
Value.....	(1)	\$45,937,629	\$26,095,673	(2)

<sup>1</sup> Figures for the total quantity of sugar manufactured are not available. The combined output of the beet sugar industry and the sugar and molasses industry, which is approximately equal to the total production of domestic sugar, was 828,549 tons, valued at \$72,033,302.

<sup>2</sup> Not reported.

There were 291 establishments in the United States engaged in the manufacture and refining of sugar and sirup in 1909. Of these, 58 were engaged in the man-

MANUFACTURES.

THE BEET SUGAR INDUSTRY.

Scope of the industry.—This industry includes all establishments making sugar from sugar beets. The work done includes not only the extraction of the sugar from the beets, but the refining of the greater part of the sugar, a fact which should be borne in mind in comparing the statistics for the beet sugar industry with those for the cane sugar and molasses industry, in which the processes of manufacturing do not include the refining of the raw sugar produced.

Comparative summary.—Table 2 summarizes the statistics of the beet sugar industry in the United States for the censuses of 1909, 1904, and 1899. It also presents the statistics for 1904 and 1909 for three groups of states.

Except for the state of Michigan, it is impossible to publish statistics for the beet sugar industry by states without disclosing the operations of individual establishments. For this reason, and also to permit of a more detailed presentation of the statistics, the states

have been arranged in three groups, a method of presentation which, in addition to preventing the disclosure of individual operations, brings under the same heading factories operated to a greater or less extent under similar conditions. Group I includes Arizona, California, Oregon, and Washington. In Arizona, and to a less degree in the other states of this group, the growers of beets depend upon irrigation, and, as a rule, planting and harvesting are earlier in these states than elsewhere in this country. Group II is made up of the states of Colorado, Idaho, Kansas, Montana, Nebraska, and Utah. In this group also the beets are grown almost entirely upon irrigated land. Group III includes the remaining states in the industry—Illinois, Iowa, Michigan, Minnesota, New York, Ohio, and Wisconsin. While the conditions in this group are not so uniform as are those in the other two, they have this feature in common, that the beets are grown on nonirrigated land.

Table 2

	BEET SUGAR INDUSTRY.														
	Number or amount.									Per cent of increase. <sup>1</sup>					
	United States.			Group I. <sup>2</sup>		Group II. <sup>3</sup>		Group III. <sup>4</sup>		United States.			Grp. I.	Grp. II.	Grp. III.
	1909	1904	1899	1909	1904	1909	1904	1909	1904	1899-1909	1904-1909	1899-1904	1904-1909	1904-1909	1904-1909
Number of establishments..	58	51	30	12	7	26	19	20	25	93.3	13.7	70.0	71.4	36.8	-20.0
Persons engaged in the industry.....	8,389	4,726	2,321	2,173	782	3,888	1,972	2,328	1,972	201.0	77.5	103.0	177.9	97.2	18.1
Proprietors and firm members.....	1	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Salaried employees.....	1,184	763	350	265	112	493	294	426	357	238.3	55.2	118.0	130.0	67.7	19.3
Wage earners (average number).....	7,204	3,963	1,970	1,908	670	3,395	1,678	1,901	1,615	265.7	81.8	101.2	184.8	102.3	17.7
Primary horsepower.....	57,202	35,490	14,460	13,551	11,411	30,149	13,248	13,502	10,831	295.0	61.2	145.4	18.8	127.0	24.7
Capital.....	\$129,628,938	\$55,923,459	\$20,141,718	\$37,029,771	\$12,013,280	\$64,236,216	\$27,067,550	\$27,762,951	\$16,842,614	543.0	131.8	177.0	213.2	137.0	64.8
Expenses.....	\$37,353,066	\$19,977,769	\$6,694,062	\$8,728,732	\$3,089,456	\$17,830,908	\$9,145,603	\$10,787,426	\$7,142,711	458.0	87.0	108.4	130.0	95.0	51.0
Services.....	\$6,577,900	\$3,491,338	\$1,448,882	\$1,750,621	\$649,818	\$3,115,763	\$1,033,278	\$1,711,516	\$1,208,242	354.0	88.4	141.0	109.4	90.8	41.7
Salaries.....	\$1,769,454	\$1,004,636	\$356,675	\$453,666	\$181,030	\$769,307	\$415,479	\$546,481	\$407,527	396.1	76.1	181.7	149.8	85.2	34.1
Wages.....	\$4,808,446	\$2,486,702	\$1,092,207	\$1,296,955	\$468,188	\$2,346,456	\$1,217,790	\$1,166,035	\$800,715	340.3	93.4	127.7	177.0	92.7	45.5
Materials.....	\$27,265,170	\$14,486,876	\$4,803,796	\$6,198,751	\$2,710,398	\$13,241,895	\$6,727,004	\$7,824,524	\$5,049,474	467.0	88.2	201.0	128.7	96.8	55.0
Miscellaneous.....	\$3,509,996	\$1,999,555	\$441,384	\$779,300	\$320,239	\$1,479,200	\$785,321	\$1,251,380	\$894,995	495.2	75.5	353.0	136.7	88.4	41.4
Value of products.....	\$48,122,383	\$24,393,794	\$7,323,857	\$12,499,279	\$4,830,446	\$22,651,903	\$12,034,599	\$12,971,201	\$7,628,749	557.1	97.3	233.1	168.8	88.2	72.3
Value added by manufacture (value of products less cost of materials).....	\$20,857,213	\$9,906,918	\$2,520,061	\$6,300,528	\$2,120,048	\$9,410,008	\$5,307,595	\$5,146,027	\$2,479,275	727.0	110.5	203.1	197.2	77.3	107.6
Beets used (tons).....	3,905,356	2,175,417	794,658	901,855	442,892	2,035,337	1,010,202	1,027,004	722,323	399.0	82.3	173.8	103.6	101.0	42.2
Sugar produced:															
Tons.....	501,682	253,021	81,729	131,605	50,432	241,333	120,623	128,744	82,866	513.8	97.0	210.7	161.0	100.1	55.4
Value.....	\$45,937,629	\$23,924,002	\$7,222,581	\$12,216,616	\$4,720,002	\$21,631,709	\$11,809,557	\$12,089,304	\$7,396,043	536.0	92.0	231.2	158.8	83.2	63.5

<sup>1</sup> A minus sign (-) denotes decrease.  
<sup>2</sup> Group I embraces Arizona, 1 establishment; California, 9; Oregon, 1; Washington, 1.  
<sup>3</sup> Group II embraces Colorado, 15 establishments; Idaho, 3; Kansas, 1; Montana, 1; Nebraska, 1; Utah, 5.  
<sup>4</sup> Group III embraces Illinois, 1 establishment; Iowa, 1; Michigan, 11; Minnesota, 1; New York, 1; Ohio, 1; Wisconsin, 4.

In 1909 there were 3 companies which operated 2 or more factories located in the same state, the plants under their control, 10 in all, being reported as 3 establishments. There were, therefore, 65 separate factories in operation during 1909, and in addition 3 were reported as idle during the entire year.

The manufacture of beet sugar is an industry of comparatively recent development in the United States. At the census of 1869, 2 establishments, with 116 wage earners and products valued at \$119,720, were reported under the heading of "sugar and molasses, beet and grape," the greater part of the product doubtless being beet sugar. The industry

was first shown separately in the reports for the census of 1879, when there were 4 establishments, giving employment to 350 wage earners and having products valued at \$282,572. In 1889 but 2 establishments were reported and the statistics for the industry could not be presented without disclosing the operations of individual establishments. In 1899 there were 30 establishments, with products valued at \$7,323,857, and in 1909, 58 establishments, with products valued at \$48,122,383. During the decade ending with 1909 the value of products increased 557.1 per cent, the increase during the five years from 1899 to 1904 being 233.1 per cent, as compared with 97.3 per cent for the

last half of the decade. The absolute increase, however, was larger during the later period than during the earlier. The value of products is made up almost entirely of the value of sugar, the molasses, beet pulp, and other by-products being of relatively little importance. The quantity of beets used increased during the decade from 794,658 tons to 3,965,356 tons, or 399 per cent, and the quantity of sugar manufactured from 81,729 tons to 501,682 tons, or 513.8 per cent.

Of the 58 establishments reporting for 1909, 12 were in the states of Group I, 26 in those of Group II, and 20 in those of Group III. The actual number of active factories in each of these groups, however, was 13, 27, and 25, respectively. The factories in the states of Group I employed 26.5 per cent of the total number of wage earners in the industry; those in the states of Group II, 47.1 per cent; and those in the states of Group III, 26.4 per cent. Of the total value of products, Group I reported 26 per cent; Group II, 47.1 per cent; and Group III, 27 per cent. The distribution of the value added by manufacture is somewhat different, Group I showing 30.2 per cent of the total; Group II, 45.1 per cent; and Group III, 24.7 per cent. The higher ratio between value added by manufacture and value of products in Group I is accounted for in part by the fact that the beets used in the factories of this group in 1909 were of a higher quality than those used in the other groups.

**Capacity of establishments.**—The growth of the industry is further illustrated by Table 3, which has been compiled from unofficial but reliable sources. The table shows for each state the total number of factories and their total daily slicing capacity for the years 1909, 1904, and 1899.

STATE.	1909 <sup>1</sup>		1904 <sup>2</sup>		1899	
	Number of factories.	Daily capacity (tons of beets).	Number of factories.	Daily capacity (tons of beets).	Number of factories.	Daily capacity (tons of beets).
United States	68	52,750	51	35,900	31	19,110
Arizona	1	800				
California	11	11,700	5	7,300	8	9,900
Colorado	16	12,200	9	6,350	1	350
Idaho	4	3,750	3	1,800		
Illinois	1	350			1	700
Iowa	1	500				
Kansas	1	1,200				
Michigan	17	11,900	10	12,550	9	4,100
Minnesota	1	600	1	400	1	400
Montana	1	1,200				
Nebraska	1	350	3	1,200	3	1,260
New Mexico					1	200
New York	1	600	1	600	2	400
Ohio	1	400	1	400		
Oregon	1	400	1	350	1	350
Utah	5	4,000	4	2,850	3	1,100
Washington	1	500	1	400	1	350
Wisconsin	4	2,300	3	1,700		

<sup>1</sup> The American Sugar Industry and Beet Sugar Gazette, January, 1910.

<sup>2</sup> Willett & Gray's Weekly Statistical Sugar Trade Journal.

<sup>3</sup> Includes 3 idle factories.

<sup>4</sup> Includes 1 idle factory.

The list of states having beet sugar factories in 1909 includes five that do not appear in the list of 1904 and seven not represented in that of 1899, while one state, New Mexico, is shown only for 1899. The total daily slicing capacity of the factories in 1909 was

52,750 tons, as compared with 35,900 tons in 1904 and 19,110 tons in 1899, the increase during the decade being 176 per cent. Based on the daily slicing capacity of their mills, as reported for 1909, the three leading states in the beet sugar industry are Colorado, Michigan, and California, in the order named. These states reported a combined slicing capacity equal to 67.9 per cent of the total for the United States, which is about the same as their proportion of the total number of factories.

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

CLASS.	PERSONS ENGAGED IN THE BEET SUGAR INDUSTRY: 1909		
	Total.	Male.	Female.
All classes	8,389	8,281	108
Proprietors and officials	320	320	
Proprietors and firm members	1	1	
Salaried officers of corporations	91	91	
Superintendents and managers	228	228	
Clerks	865	772	93
Wage earners (average number)	7,204	7,189	15
19 years of age and over	7,198	7,183	15
Under 16 years of age	6	6	

The average number of persons engaged in the beet sugar industry during 1909 was 8,389, of whom 7,204, or 85.9 per cent, were wage earners; 320, or 3.8 per cent, proprietors and officials; and 865, or 10.3 per cent, clerks, this class including other subordinate salaried employees. Of the few females employed, practically the entire number were clerks. The proportions which the three classes represent of the total number of persons engaged in the industry are practically the same in the three groups as for the industry as a whole.

**Wage earners employed, by months.**—Table 5 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each month during the year 1909.

MONTH.	WAGE EARNERS EMPLOYED IN THE BEET SUGAR INDUSTRY: 1909	
	Number.	Per cent of maximum.
January	6,465	38.5
February	2,206	13.1
March	2,750	16.4
April	3,057	18.2
May	3,432	20.4
June	3,943	23.5
July	4,508	26.8
August	6,045	36.0
September	7,215	42.9
October	15,815	94.1
November	16,807	100.0
December	14,233	84.7

Because the best results are obtained by utilizing the crop promptly, the beet sugar industry is a seasonal one, exhibiting a wide divergence in the numbers of wage earners for the several months. The minimum number in 1909 was reported for February, when 2,206 wage earners, equal to only 13.1 per cent of the maximum for the year, were employed. During the "campaign," as the active period in the sugar industry is termed, nearly all the factories were operated continuously, the wage earners working in shifts of from 11½ to 12 hours each, seven days in the week. With the exception of two states, the busy season for the industry covers the three months of October, November, and December, the months immediately following the beet harvest. In Arizona the campaign begins in June, and in California in August.

**Character of ownership and size of establishment.**—With a single exception, all of the beet sugar factories are owned by corporations. Only 2 of the establishments reported a value of products amounting to less than \$100,000, while 42 reported a value in excess of \$100,000 but less than \$1,000,000, and 14 a value in excess of \$1,000,000. This last group gave employment to an average of 3,430 wage earners, or 47.6 per cent of the total for the industry.

**Expenses.**—As stated in the Introduction, the census figures for expenses do not purport to represent the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 1 shows the total expenses in the beet sugar industry in 1909 to have been \$37,353,066, distributed as follows: Cost of materials, \$27,265,170, or 73 per cent; wages, \$4,808,446, or 12.9 per cent; salaries, \$1,769,454, or 4.7 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, traveling expenses, and other sundry expenses, \$3,509,996, or 9.4 per cent.

**Engines and power.**—Table 6 shows the statistics of power as reported at the censuses of 1909, 1904, and 1899.

The total primary horsepower used in the beet sugar factories at the census of 1909 was 57,202, as compared with 35,490 in 1904, and 14,460 in 1899, almost the en-

tire amount at each census being steam power. The amount of rented electric power increased from 5 horsepower in 1904 to 2,090 in 1909, while the horsepower of electric motors used for the distribution of power by means of current generated in the same establishment also shows a marked increase for the decade.

Table 6

POWER.	BEET SUGAR INDUSTRY.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899	1909	1904	1899	1909	1904	1899
<b>Primary power, total.....</b>	807	347	145	57,202	35,490	14,460	100.0	100.0	100.0
Owned.....	716	345	145	55,112	35,485	14,460	96.3	100.0	100.0
Steam.....	679	274	142	54,369	35,016	14,442	95.0	98.7	99.9
Gas.....	26	7	3	543	40	18	0.9	0.1	0.1
Water wheels and motors....	11	64	.....	200	429	.....	0.3	1.2	.....
Rented—Electric ..	91	2	.....	2,090	5	.....	3.7	( <sup>1</sup> )	.....
<b>Electric motors.</b>	388	186	45	8,868	4,702	2,388	100.0	100.0	100.0
Run by current generated by establishment.....	297	184	45	6,778	4,697	2,388	76.4	99.9	100.0
Run by rented power.....	91	2	.....	2,090	5	.....	23.6	0.1	.....

<sup>1</sup> Less than one-tenth of 1 per cent.

**Fuel consumed.**—In the beet sugar industry the kind of fuel used depends very largely on the locality. In California, Arizona, and Kansas practically all the fuel used was oil, while in the other states it was largely bituminous coal, although some anthracite coal was used in Michigan and some wood in Oregon.

#### SPECIAL STATISTICS RELATING TO ACREAGE PLANTED, MATERIALS, AND PRODUCTS.

**Acreeage planted and beets used.**—The special schedule used in collecting the statistics for the beet sugar industry required a detailed statement regarding the quantity of beets used and the acreage planted to beets, and of the quantity and value of the different products manufactured. Table 7 gives the acreage planted to beets, the quantity of beets used in the manufacture of sugar, the average percentage of sucrose, and the average coefficient of purity for the United States, as reported for the years 1909, 1904, and 1899, and for the three groups of states separately, as reported for 1909 and 1904.

Table 7

	BEET SUGAR INDUSTRY.									
	United States.			Group I. <sup>1</sup>		Group II. <sup>2</sup>		Group III. <sup>3</sup>		
	1909	1904	1899	1909	1904	1909	1904	1909	1904	
Total acreage of beets planted .....	415,964	240,757	135,305	86,094	38,257	198,816	97,102	131,054	105,398	
By proprietors of factories.....	29,459	20,484	10,239	21,511	6,169	6,609	6,622	1,240	7,693	
By tenants of factories.....	18,166	20,223	13,074	10,362	9,637	7,804	3,753	.....	6,933	
By independent growers.....	368,339	200,050	111,992	54,221	22,551	184,313	86,727	129,805	90,772	
Total quantity of beets treated, tons....	3,965,356	2,175,417	794,658	901,855	442,892	2,036,437	1,010,202	1,027,064	722,323	
Grown by proprietors.....	266,768	169,839	23,241	206,858	65,274	52,158	63,127	7,762	41,438	
Grown by tenants.....	163,843	210,247	95,071	101,885	114,353	61,058	38,239	.....	57,055	
Grown by independent growers.....	3,534,745	1,795,331	676,346	593,112	263,265	1,922,321	908,836	1,019,312	623,280	
Quality of beets used:										
Average percentage of sucrose.....	16.1	15.0	14.3	18.0	15.1	15.1	15.5	16.6	14.4	
Average coefficient of purity.....	84.1	83.2	81.2	84.8	82.3	83.1	83.4	85.8	84.2	

<sup>1</sup> Group I embraces Arizona, 1 establishment; California, 9; Oregon, 1; Washington, 1.  
<sup>2</sup> Group II embraces Colorado, 15 establishments; Idaho, 3; Kansas, 1; Montana, 1; Nebraska, 1; Utah, 5.  
<sup>3</sup> Group III embraces Illinois, 1 establishment; Iowa, 1; Michigan, 11; Minnesota, 1; New York, 1; Ohio, 1; Wisconsin, 4.

The total number of acres planted to beets for factory use in 1909 was 415,964. Of these, 29,459 acres, or 7.1 per cent, were planted directly by factories; 18,166 acres, or 4.4 per cent, by tenants of factories; and 368,339 acres, or 88.6 per cent, by independent growers. The total quantity of beets used in the industry was 3,965,356 tons. Of this total, 266,768 tons, or 6.7 per cent, were grown directly by the manufacturing establishments; 163,843 tons, or 4.1 per cent, by tenants of these establishments; and 3,534,745 tons, or 89.1 per cent, by independent growers. In the past some beet sugar manufacturers have found it necessary, in order to assure a supply of beets sufficient for the economical operation of their factories, to purchase or lease farm land and either cultivate it themselves or sublet it for beet growing. The proportion of the total acreage of sugar beets controlled by the manufacturers, however, was considerably smaller in 1909 than in 1904 or 1899.

The production of sugar beets in 1909, as returned on the farm schedules, was 3,932,857 tons, which was 32,499 tons less than the quantity returned on the manufacturers' schedules. This slight difference may be due to a number of causes, among others, to the reporting of sugar beets, in some instances, under the heading of root forage crops on the farm schedule.

The average yield of beets per acre for the United States in 1909 was 9.5 tons. The highest average shown by any single report was 22.5 tons, the area yielding that average being 13 acres located in Utah, owned and operated by a beet sugar establishment. Yields as low as 5 tons per acre were reported by some of the establishments in each of the three groups.

The increase for the decade in the total area planted covered by the table was 280,659 acres, or 207.4 per cent. For the five-year period 1904-1909 the increase was 175,207 acres, or 72.8 per cent. The increase in the states of Group I during the five-year period amounted to 125 per cent, that in the states of Group II to 104.7 per cent, and that in the states of Group III to 24.3 per cent.

The total production of beets for any specified year depends very much upon weather conditions, and consideration must be given to this fact in drawing conclusions from comparisons between the figures for different years. The figures in the table do not purport to show the production of sugar beets in the country, but only the quantity used in the manufacture of beet sugar. In 1909 some fields which had produced well were caught by an early frost and the crop was either entirely abandoned or only partially harvested. In spite of this fact the average tonnage of beets per acre planted in the United States shows an increase of half a ton over the figure for 1904, indicating the efficiency of improved methods of cultivation.

The quality of the sugar beet is indicated by the "percentage of sucrose" and the "coefficient of purity." Both these terms relate to the sugar content, the former being the ratio of the weight of sugar to the weight of the whole beet, and the latter the ratio of sugar to the solid content of the beet.

As shown in the table, the average percentage of sucrose for the United States was 16.1 in 1909, as compared with 15 per cent in 1904 and 14.3 per cent in 1899. These percentages show a steady increase in the sugar content of the beets produced. Considerable variation in quality of beets is shown for the different localities, the average sugar content in the states of Group I being 18 per cent; in those of Group II, 15.1 per cent; and in those of Group III, 16.6 per cent. In the operation of the beet sugar factory the coefficient of purity of the beets used is of great importance, as upon this depends to a considerable extent the cost of the separation of the sugar from the other solids. The average for the United States was 84.1 per cent in 1909, as compared with 83.2 per cent in 1904, and 81.2 per cent in 1899. The coefficient of purity for the states of Group I was 84.8 per cent; for those of Group II, 83.1 per cent; and for those of Group III, 85.8 per cent. The total sugar content of the 3,965,356 tons of beets used in 1909, based on the average of 16.1 per cent, was 638,422

tons. The amount of sugar manufactured, however, according to the returns, was only 501,682 tons, or 78.6 per cent of the theoretically possible total. Thus more than one-fifth of the total sugar content of the beets did not reach the form of sugar. This difference represents the loss from deterioration in the beets before being used, the loss in the various processes of manufacture, and the amount left in the pulp and in the residual molasses.

**Methods of payment for beets purchased.**—Two methods are employed in determining the price to be paid for the beets purchased by the sugar factories. One is the payment of a fixed price per ton, with a proviso, in some instances, that the beets must average not less than a certain percentage of sucrose. The other is the sliding scale, where a stipulated price is paid for beets analyzing a specified percentage of sucrose, with an added amount for every additional per cent or a fraction of a per cent of sucrose.

Of the 65 factories operated by the 58 establishments reporting for 1909, 30 purchased their entire supply of beets on the fixed-price basis and 8 on the sliding-scale basis, while 27 used both methods, the reports indicating that about two-thirds of the total quantity of beets

were purchased on the first basis. Where the sliding scale was used in the purchase of beets, \$4.50 per ton for beets analyzing 12 per cent sucrose was, in most instances, the basis, 33½ cents per ton being added for every additional per cent of sucrose. In the states comprising Groups I and II nearly the entire supply of beets was purchased on the fixed-price basis, while in those of Group III the sliding-scale basis was most generally used.

**Products.**—In the early history of the beet sugar industry in the United States, sugar was the only product of commercial value, but with the development of the industry attention has been paid to the utilization of the by-products. The few factories reporting no value for the pulp and molasses produced in 1909 generally returned these by-products to the producers of the beets, probably with some concession in the price paid for the beets, or as an additional inducement for their cultivation.

Table 8 shows the quantity and value of the different products manufactured in 1909, 1904, and 1899 for the United States, and the quantity and value of the different products in 1909 and 1904 for the three groups of states separately.

PRODUCT.	BEET SUGAR INDUSTRY.								
	United States.			Group I. <sup>1</sup>		Group II. <sup>2</sup>		Group III. <sup>3</sup>	
	1909	1904	1899	1909	1904	1909	1904	1909	1904
Total value.....	\$48,122,383	\$24,393,794	\$7,323,857	\$12,499,279	\$4,830,446	\$22,651,903	\$12,034,599	\$12,971,201	\$7,528,749
Sugar:									
Quantity (tons).....	501,682	253,922	81,729	131,605	50,432	241,332	120,624	128,745	82,866
Value.....	\$45,937,629	\$23,924,602	\$7,222,581	\$12,216,016	\$4,720,002	\$21,631,709	\$11,809,557	\$12,089,304	\$7,395,043
Granulated—									
Quantity (tons).....	496,807	248,309	57,843	131,218	49,702	237,040	117,966	127,049	80,641
Value.....	\$45,645,810	\$23,493,373	\$5,580,527	\$12,197,526	\$4,668,086	\$21,420,196	\$11,607,353	\$12,028,088	\$7,217,934
Raw—									
Quantity (tons).....	4,875	5,613	23,886	387	730	3,692	2,658	796	2,225
Value.....	\$201,819	\$431,229	\$1,642,054	\$19,090	\$51,916	\$211,513	\$202,204	\$61,216	\$177,109
Molasses:									
Quantity (gallons).....	20,812,747	9,609,542	3,551,856	2,715,776	2,994,500	11,563,537	4,693,993	6,533,434	1,921,049
Value.....	\$1,129,905	\$221,097	\$25,102	\$95,790	\$62,491	\$583,130	\$105,223	\$450,085	\$53,383
Pulp.....	\$795,900	\$202,070	\$21,822	\$66,723	\$37,152	\$305,202	\$91,569	\$423,975	\$73,349
All other products.....	\$258,949	\$46,025	\$54,352	\$120,150	\$10,801	\$131,862	\$28,250	\$6,937	\$6,974

<sup>1</sup> Group I embraces Arizona, 1 establishment; California, 9; Oregon, 1; Washington, 1.

<sup>2</sup> Group II embraces Colorado, 15 establishments; Idaho, 3; Kansas, 1; Montana, 1; Nebraska, 3; Utah, 5.

<sup>3</sup> Group III embraces Illinois, 1 establishment; Iowa, 1; Michigan, 11; Minnesota, 1; New York, 1; Ohio, 1; Wisconsin, 4.

<sup>4</sup> Includes quantities for which no value was given.

The total production of beet sugar in the United States in 1909 was 501,682 tons, of which the states of Group I reported 26.2 per cent; those of Group II, 48.1 per cent; and those of Group III, 25.7 per cent. The average quantity of sugar obtained per ton of beets used in the United States in 1909 was 253 pounds, as compared with 233 pounds in 1904, and 206 in 1899. The corresponding figures for the three groups of states for 1909 and 1904, respectively, were as follows: For Group I, 292 pounds and 228 pounds; for Group II, 237 pounds and 239 pounds; and for Group III, 251 pounds and 229 pounds. It thus appears that in

general not only was the greatest amount of sugar obtained from beets containing the highest percentage of sucrose, but also a larger percentage of the sugar content was recovered, showing the desirability of securing beets that will test as high in sucrose as possible. For this reason those engaged in the industry have found it fully as much to their advantage to direct their attention to the improvement of the beet as to the improvement of methods of sugar extraction. Molasses and pulp, the other important products of the industry, are used largely in the preparation of stock feed.

DETAILED STATISTICS FOR THE THREE GROUPS OF STATES.

The principal statistics secured by the census inquiry of 1909 concerning the beet sugar factories are presented for the United States and the several groups of

states in Table 9, which gives the number of establishments, the number of persons engaged in the industry, primary horsepower, capital invested, salaries, wages, cost of materials, miscellaneous expenses, value of products, and value added by manufacture.

BEEET SUGAR—DETAILED STATISTICS: 1909.

Table 9	United States.	Group I. <sup>1</sup>	Group II. <sup>2</sup>	Group III. <sup>3</sup>		United States.	Group I. <sup>1</sup>	Group II. <sup>2</sup>	Group III. <sup>3</sup>
Number of establishments..	58	12	26	20	Primary horsepower.....	57,202	13,551	30,149	13,502
Persons engaged in the industry.....	8,389	2,173	3,888	2,328	Capital.....	\$129,623,933	\$37,629,771	\$64,236,216	\$27,762,951
Proprietors and firm members.....	1			1	Expenses.....	37,353,066	8,728,732	17,836,908	10,787,426
Salaried officers, superintendents, and managers.....					Services.....	6,577,900	1,760,621	3,115,763	1,711,516
Clerks.....	319	73	156	90	Officials.....	1,007,490	251,148	469,178	287,164
Male.....	805	192	337	336	Clerks.....	761,964	202,518	300,129	259,317
Female.....	772	162	312	298	Wage earners.....	4,808,446	1,296,955	2,340,450	1,165,035
Wage earners:					Materials.....	27,265,170	6,198,751	13,241,895	7,824,524
Average number.....	7,204	1,908	3,395	1,901	Fuel and rent of power.....	1,899,468	430,010	958,613	510,845
Number 15th day of month—					Other.....	25,365,702	5,768,741	12,283,282	7,313,679
Maximum number—					Miscellaneous.....	3,509,998	779,360	1,479,250	1,251,386
October.....		3,552			Rent of factory.....	126,082	10,410	80,000	35,672
November.....	16,807		8,365	6,076	Taxes, including internal revenue.....	508,029	112,218	284,417	111,394
Minimum number—					Contract work.....	1,591			1,591
February.....	2,206	797	1,027	382	Other.....	2,874,294	656,732	1,114,833	1,102,729
Wage earners—Dec. 15, or nearest representative day.....	15,736	2,316	7,777	5,643	Value of products.....	48,122,383	12,499,279	22,651,903	12,971,201
10 years of age and over.....	15,722	2,308	7,771	5,643	Value added by manufacture (value of products less cost of materials).....	20,857,213	6,300,528	9,410,008	5,146,677
Male.....	15,690	2,300	7,760	5,630					
Female.....	32	8	11	13					
Under 16 years of age.....	14	8	6						
Male.....	14	8	6						
Female.....									

<sup>1</sup> Group I embraces Arizona, 1 establishment; California, 9; Oregon, 1; Washington, 1.  
<sup>2</sup> Group II embraces Colorado, 15 establishments; Idaho, 3; Kansas, 1; Nebraska, 1; Montana, 1; Utah, 5.  
<sup>3</sup> Group III embraces Illinois, 1 establishment; Iowa, 1; Michigan, 11; Minnesota, 1; New York, 1; Ohio, 1; Wisconsin, 4.

THE CANE SUGAR INDUSTRIES.

THE TWO INDUSTRIES COMBINED.

Comparative summary.—At the census of 1909 all establishments engaged in the manufacture of sugar and molasses from sugar cane were classified under the designation "sugar and molasses," while establishments engaged in the refining of cane sugar were classified under the designation "sugar refining, not including beet sugar." At previous censuses, however, these two classes of establishments were included as a single industry under the general classification "sugar and molasses, refining." In order that comparisons may be made with previous censuses, therefore, the combined statistics for the cane sugar mills and the sugar refineries for 1909 are presented in Table 10, together with the corresponding figures for 1904 and 1899.

Reports for establishments engaged in the manufacture or refining of cane sugar were obtained at censuses prior to 1899, but on such different bases that the figures are not comparable with those for the last three censuses, and for that reason are excluded from the table. In 1849, under the heading of "sugar refiners," 23 establishments were reported, with 1,656 hands and products valued at \$9,898,800; in 1859, 39, with 3,484 hands and products valued at \$42,143,234; in 1869, 59, with 4,597 hands and products valued at \$108,941,911; in 1879, 49, with 5,857 hands and products valued at \$155,484,915; and in

1889, 393, with 7,529 wage earners and products valued at \$123,118,259. In addition, in 1859 there were 2 establishments classified under the heading of "sugar and molasses," and 2 under the heading of "sugar evaporators," the former having 5 hands and products valued at \$2,280, and the latter, 27 hands and products valued at \$31,000. In 1869, 713 establishments were reported under the heading of "sugar and molasses, raw cane," employing 21,299 hands and having products valued at \$10,383,368. There were no classifications of this nature at succeeding censuses except at the census of 1909.

Table 10	CANE SUGAR AND MOLASSES AND CANE SUGAR REFINING COMBINED.		
	1909	1904	1899.
Number of establishments.....	233	344	657
Persons engaged in the industry.....	15,658	15,799	(1)
Proprietors and firm members.....	204	364	(1)
Salaried employees.....	1,928	1,836	1,867
Wage earners (average number).....	13,626	13,549	14,120
Primary horsepower.....	160,693	140,650	(1)
Capital.....	\$153,168,551	\$165,468,320	\$184,033,304
Expenses.....	207,478,001	263,082,835	236,997,444
Services.....	9,875,298	9,729,329	8,599,353
Salaries.....	2,391,576	2,153,679	1,681,524
Wages.....	7,483,722	7,575,650	6,917,829
Materials.....	247,682,804	244,752,802	221,384,769
Miscellaneous.....	10,019,899	8,600,754	7,013,322
Value of products.....	279,249,397	277,285,449	239,711,011
Value added by manufacture (value of products less cost of materials)....	31,666,593	32,532,647	18,326,242

<sup>1</sup> Comparable figures not available.

The statistics shown in Table 10 for censuses prior to 1909 include data for establishments engaged in the compounding of table sirups, which were assigned in 1909 to the classification "food preparations." This fact should be borne in mind in making any comparisons involving the 1909 figures. There were 38 establishments engaged in the manufacture of table sirups in 1904, the number of wage earners employed by them being 679, the amount of wages paid, \$295,442, the cost of materials, \$5,570,320, and the value of products, \$6,801,034.

The decrease in the number of establishments is due in part to the increasing use, especially in Louisiana, of large mills to crush the cane from a number of plantations, each of which formerly had its own mill, and partly to the discontinuance of small refineries.

#### THE MANUFACTURE OF SUGAR AND SIRUP FROM CANE.

Detailed statistics for 1909.—Table 11 gives the detailed statistics for 1909 for establishments engaged in the manufacture of sugar or sirup direct from the cane (the industry designated "sugar and molasses") for the United States as a whole, for Louisiana, and for "all other states."

SUGAR AND MOLASSES—DETAILED STATISTICS: 1909.

Table 11	United States, Louisiana, All other states.		
	United States.	Louisiana.	All other states.
Number of establishments.....	214	204	10
Persons engaged in the industry.....	5,313	5,077	236
Proprietors and firm members.....	198	193	5
Salaried officers, superintendents, and managers.....	392	377	15
Clerks.....	596	576	20
Male.....	567	552	15
Female.....	29	24	5
Wage earners:			
Average number.....	4,127	3,931	196
Number, 15th day of month—			
Maximum number, November.....	15,761	15,112	.....
Minimum number, February.....	559	419	.....
Wage earners, Dec. 15, or nearest representative day.....	15,369	14,717	652
16 years of age and over.....	15,283	14,631	652
Male.....	15,192	14,560	632
Female.....	91	71	20
Under 16 years of age.....	86	86	.....
Male.....	83	83	.....
Female.....	3	3	.....
Primary horsepower.....	122,189	118,162	4,027
Capital.....	\$37,925,770	\$34,642,802	\$3,282,968
Expenses.....	26,165,526	24,699,951	1,465,575
Services.....	2,090,172	2,442,000	158,172
Officials.....	523,598	487,433	36,165
Clerks.....	213,823	193,839	19,984
Wage earners.....	1,862,751	1,760,728	102,023
Materials.....	21,294,844	20,121,725	1,173,119
Fuel and rent of power.....	1,434,381	1,386,604	47,777
Other.....	19,860,463	18,735,121	1,125,342
Miscellaneous.....	2,270,610	2,136,226	134,384
Rent of factory.....	33,244	30,225	3,019
Taxes, including internal revenue.....	282,387	272,813	9,574
Contract work.....	43,068	40,268	2,800
Other.....	1,911,811	1,792,920	118,891
Value of products.....	39,620,738	29,001,027	1,619,711
Value added by manufacture (value of products less cost of materials).....	9,325,894	8,879,302	446,592

There were 214 establishments engaged in the manufacture of sugar or sirup from sugar cane in 1909, all but 10 of which were located in Louisiana. Of the total number, 192 manufactured sugar or sugar and sirup, and 22 sirup only. In addition to the establishments shown in the table there were 4 other estab-

lishments in that state that manufactured sugar from cane during the census year, 2 of these being classified as sugar refineries, while the other 2 were operated in connection with penal institutions, and consequently do not come within the scope of the census inquiry. Before the Civil War practically every planter had his own sugar mill, the number of these mills in 1849 in Louisiana alone being 1,490. The reduction in the number of mills has been brought about by various causes, among which the following may be mentioned: Changes in labor conditions; the considerable cost of the machinery necessary to fit up a modern plant; improved methods of transporting cane to the mills, many factories now operating small railways for this purpose; and the more economical operation possible in the larger plants.

Persons engaged in the industry.—Table 12 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

Table 12	PERSONS ENGAGED IN THE SUGAR AND MOLASSES INDUSTRY: 1909		
	CLASS.	Total.	Male.	Female.
All classes.....	5,313	5,213	100
Proprietors and officials.....	590	544	46
Proprietors and firm members.....	198	154	44
Salaried officers of corporations.....	105	103	2
Superintendents and managers.....	287	287	.....
Clerks.....	596	567	29
Wage earners (average number).....	4,127	4,102	25
16 years of age and over.....	4,104	4,080	24
Under 16 years of age.....	23	22	1

The average number of persons engaged in the industry during 1909 was 5,313, of whom 590, or 11.1 per cent, were proprietors and officials; 596, or 11.2 per cent, clerks, this class including other subordinate salaried employees; and 4,127, or 77.7 per cent, wage earners. Of the 198 proprietors and firm members reported, 154 were males and 44 females. The large proportion of female proprietors in this industry may be attributed to the fact that a number of the plantations which control sugar mills have passed by inheritance into the hands of female owners who have been returned as proprietors. Of the total number of employees in the industry, 95.6 per cent were reported by Louisiana.

Wage earners employed, by months.—Table 13 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each month during the year 1909 for the United States as a whole, for the state of Louisiana, and for all other states.

**Table 13**  
WAGE EARNERS EMPLOYED IN THE CANE SUGAR AND MOLASSES INDUSTRY: 1909

MONTH.	United States.		Louisiana.		All other states.	
	Number.	Per cent of maximum.	Number.	Per cent of maximum.	Number.	Per cent of maximum.
January.....	1,598	10.1	1,252	8.3	346	53.3
February.....	559	3.5	419	2.8	140	21.6
March.....	715	4.5	657	4.3	58	8.9
April.....	798	5.1	739	4.9	59	9.1
May.....	874	5.5	820	5.4	54	8.3
June.....	1,040	6.6	985	6.5	55	8.5
July.....	1,122	7.1	1,071	7.1	51	7.9
August.....	920	5.8	874	5.8	46	7.1
September.....	1,322	8.4	1,266	8.3	66	10.2
October.....	9,693	61.5	9,511	62.9	182	28.0
November.....	15,761	100.0	15,112	100.0	649	100.0
December.....	15,115	95.9	14,475	95.8	640	98.6

The industry is essentially a seasonal one. The cane sugar "campaign," as the time of harvesting and crushing the cane is termed, usually begins early in October and is at its height in November, continuing through December and to a limited extent into January. The maximum number of wage earners, 15,761, was reported for November, and the minimum number, 559, for February, the latter number being equal to only 3.5 per cent of the former.

**Prevailing hours of labor.**—The nature of the industry, affected as it is by the shortness of the season for harvesting the cane crop and the necessity of crushing it promptly to prevent deterioration, is such that many of the mills are operated day and night during the height of the campaign. The practice of having two sets of workmen alternate in shifts of six hours each is quite common. Of the total average number of wage earners, 3,920, or 95 per cent, were returned as working in establishments where the prevailing hours were 72 or more per week.

**Character of ownership.**—Table 14 presents statistics with respect to the character of ownership of establishments in the cane sugar and molasses industry for the census year 1909.

**Table 14**  
CANE SUGAR AND MOLASSES INDUSTRY: 1909

CHARACTER OF OWNERSHIP.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Total.....	214	4,127	\$30,620,738	\$9,325,894
Individual.....	73	949	6,701,121	1,927,335
Firm.....	43	610	4,558,841	1,330,342
Corporation.....	98	2,568	19,360,776	6,068,217
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	34.1	23.0	21.9	20.7
Firm.....	20.1	14.8	14.9	14.3
Corporation.....	45.8	62.2	63.2	65.1

The conditions regarding ownership of establishments in this industry are in general widely different from those obtaining in most other industries. Many of the sugar mills at the present time are owned by the interests which control the plantation on which the

mills are situated, and since a large proportion of the plantations are still owned by individuals and firms, it is not surprising that 54.2 per cent of the total number of establishments were reported as under these two classes of ownership, and that less than two-thirds of the total value of products was returned by establishments controlled by corporations.

**Size of Establishments.**—Table 15 presents statistics for 1909 for establishments grouped according to the value of their products.

**Table 15**  
CANE SUGAR AND MOLASSES INDUSTRY: 1909

VALUE OF PRODUCTS PER ESTABLISHMENT.	Number of establishments.	Average number of wage earners.	Value of products.	Value added by manufacture.
Total.....	214	4,127	\$30,620,738	\$9,325,894
Less than \$5,000.....	8	9	19,417	9,404
\$5,000 and less than \$20,000.....	7	30	60,182	23,997
\$20,000 and less than \$100,000.....	108	1,070	6,236,339	1,604,648
\$100,000 and over.....	91	3,018	24,274,800	7,627,845
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	3.7	0.2	0.1	0.3
\$5,000 and less than \$20,000.....	3.3	0.7	0.3	0.1
\$20,000 and less than \$100,000.....	50.5	25.9	20.4	17.8
\$100,000 and over.....	42.5	73.1	79.3	81.8

Of the 214 establishments in the sugar and molasses industry, 91 reported products to the value of \$100,000 or more in 1909. Of these, 38 reported a value of products between \$100,000 and \$200,000; 49, between \$200,000 and \$500,000; 3, between \$500,000 and \$1,000,000; and 1, a value exceeding \$1,000,000. These 91 establishments reported 3,018 wage earners, or 73.1 per cent of the total number, and products valued at \$24,274,800, or 79.3 per cent of the total. The establishments having products of less than \$20,000 in value were mostly those engaged in the manufacture of sirup only.

Of the 192 establishments which manufactured sugar from cane in 1909, 62 crushed less than 10,000 tons of cane; 59, between 10,000 and 20,000 tons; 51, between 20,000 and 50,000 tons; and 20 crushed 50,000 tons or over. Considerably more than half of the total number of establishments crushed less than 20,000 tons of cane, while the 20 establishments which crushed 50,000 tons or over handled about one-third of the total quantity of cane used.

**Expenses.**—Table 11 shows the total expenses in 1909 to have been \$26,165,526, distributed as follows: Cost of materials, \$21,294,844, or 81.4 per cent; wages, \$1,862,751, or 7.1 per cent; salaries, \$737,421, or 2.8 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$2,270,510, or 8.7 per cent.

**Engines and power.**—Table 16 shows statistics of power as reported at the census of 1909.

Practically all (99.2 per cent) of the 122,189 horsepower used in this industry is steam power.

POWER.	CANE SUGAR AND MOLASSES INDUSTRY: 1909		
	Number of engines or motors.	Horsepower.	Per cent distribution of horsepower.
Primary power, total.....	2,144	122,189	100.0
Owned.....	2,136	121,819	99.7
Steam.....	2,105	121,229	99.2
Gas.....	31	380	0.3
Other.....		210	0.2
Rented—Electric.....	8	370	0.3
Electric motors.....	121	3,995	100.0
Run by current generated by establishment..	113	3,625	90.7
Run by rented power.....	8	370	9.3

Fuel used.—There were consumed in this industry in 1909, for generating power and otherwise, 576,475 tons of coal, 500 tons of coke, 43,242 cords of wood, 2,040,309 barrels of oil, and 262,000 feet of gas. In addition, large quantities of bagasse, the pulp of the sugar cane from which the juice has been extracted, were also used for fuel. No data were collected with regard to the quantity of this refuse product utilized, but practically all of the important mills use it for fuel to a greater or less extent.

Materials used.—The special schedule used in collecting the statistics for the cane sugar industry required a detailed report of the quantity and cost (or value) of the cane used. Inquiry was also made as to the source of the cane supply—that is, whether it was grown on plantations controlled by the operators of the factories and cultivated either directly by them or by tenants, or was grown elsewhere. Table 17 gives this information with regard to the cane used, together with the cost of other materials, for the United States as a whole, for Louisiana, and for all other states combined.

MATERIAL.	CANE SUGAR AND MOLASSES INDUSTRY: 1909		
	United States.	Louisiana.	All other states.
Total cost.....	\$21,294,844	\$20,121,725	\$1,173,119
Cane crushed: <sup>1</sup>			
Quantity (tons).....	4,520,419	4,405,626	114,793
Cost.....	\$17,211,752	\$16,859,870	\$351,882
Grown on plantations controlled by mill owners—			
Quantity (tons).....	2,613,468	2,554,999	58,469
Cost.....	\$9,730,148	\$9,579,611	\$150,537
Purchased—			
Quantity (tons).....	1,906,951	1,850,627	56,324
Cost.....	\$7,481,604	\$7,280,259	\$201,345
Fuel and rent of power.....	\$1,434,381	\$1,386,604	\$47,777
All other materials <sup>2</sup> .....	\$2,648,711	\$1,875,251	\$773,460

<sup>1</sup> By sugar mills only; specific data were not secured for the 22 mills making sirup only.

<sup>2</sup> Includes cost of cane crushed by mills making sirup only.

Of the total quantity of cane crushed in the sugar mills, nearly three-fifths (57.8 per cent) was grown on plantations controlled by the operators of the mills. The cost of cane grown on plantations controlled by the operators, as returned by the latter, was based on current market prices and is not, therefore, the cost of

production. As thus reported, the cost of such cane was \$9,730,148, an average of \$3.72 per ton, while the cost of cane purchased was \$7,481,604, an average of \$3.92 per ton. Of the total cost of materials used, the cost of cane crushed by establishments which made sugar constituted 80.8 per cent; the cost of fuel and rent of power, 6.7 per cent; and the cost of all other materials, including the cost of cane treated by establishments which made sirup only, 12.4 per cent.

Products.—Supplementary data were obtained regarding the products made in the establishments which manufactured sugar. Table 18 gives the quantity and value of the different products of these establishments for the United States as a whole, for the state of Louisiana, and for all other states.

PRODUCT.	CANE SUGAR AND MOLASSES INDUSTRY: 1909		
	United States.	Louisiana.	All other states.
Total value.....	\$30,620,738	\$29,001,027	\$1,619,711
Sugar:			
Quantity (tons).....	1,326,858	320,507	6,351
Value.....	\$26,095,673	\$25,613,791	\$481,882
Brown or open kettle—			
Quantity (tons).....	3,678	3,678	
Value.....	\$301,386	\$301,386	
Vacuum pan—			
Quantity (tons).....	323,180	316,829	6,351
Value.....	\$25,794,287	\$25,312,405	\$481,882
First strike—			
Quantity (tons).....	272,111	267,509	4,602
Value.....	\$22,289,037	\$21,916,215	\$372,722
Second strike—			
Quantity (tons).....	41,975	40,658	1,317
Value.....	\$2,921,101	\$2,830,411	\$81,690
Third strike—			
Quantity (tons).....	9,094	8,662	432
Value.....	\$584,149	\$556,679	\$27,470
Molasses:			
Quantity (gallons).....	1,24,587,581	23,875,253	712,328
Value.....	\$2,845,559	\$2,797,919	\$47,640
Sirup: <sup>2</sup>			
Quantity (gallons).....	1,449,860	942,997	506,863
Value.....	\$365,632	\$246,881	\$118,751
All other products <sup>3</sup> .....	\$1,313,874	\$342,436	\$971,438

<sup>1</sup> In addition, 7,281 tons of raw cane sugar and 693,302 gallons of molasses were made by establishments connected with two penal institutions and two establishments engaged chiefly in the refining of sugar.

<sup>2</sup> Product of sugar mills only.

<sup>3</sup> Includes value of sirup reported by establishments which made no sugar.

The total value of products for the industry amounted to \$30,620,738, of which all but \$1,619,711 was reported for Louisiana. The total quantity of sugar manufactured amounted to 326,858 tons, valued at \$26,095,673, of which Louisiana produced 320,507 tons, valued at \$25,613,791. The manufacture of brown sugar by the open-kettle process has been almost entirely abandoned, although 18 establishments in Louisiana used this process in the manufacture of 3,678 tons, valued at \$301,386, or an average of 4.1 cents per pound. There were 323,180 tons of vacuum-pan sugar manufactured during the year, of which 272,111 tons, or 84.2 per cent, were obtained on first strike; 41,975 tons, or 13 per cent, on second strike; and 9,094 tons, or 2.8 per cent, on third strike. In this connection it should be stated that some mills did not carry the process of manufacture beyond the first—and many not beyond the second—strike, because of the lack of equipment to conduct further processes with profit.

The quantity and value of the molasses remaining as a by-product are affected by the quantity of the sugar content extracted. Some of the mills extracted practi-

cally the entire amount of the available sugar content, in which case the molasses was worth only from 4 to 6 cents a gallon. In many establishments, however, only a portion of the available sugar was extracted, and the molasses remaining was worth from 10 to 30 cents per gallon. The total quantity of molasses reported was 24,587,581 gallons, with a total value of \$2,845,559, or an average value of 11.6 cents per gallon. Some of the mills reporting sugar also reported sirup, the liquid product from which no sugar has been extracted. The total quantity of sirup reported by such mills was 1,449,860 gallons, valued at \$365,632, the average value being 25.2 cents a gallon. The quantity of sirup manufactured in the 22 mills which made no sugar was not obtained, and its value is included in the table under the heading "all other products."

THE CANE SUGAR REFINING INDUSTRY.

Detailed statistics for 1909.—This industry, which is formally designated "sugar refining, not including beet sugar," comprises those establishments which are engaged primarily in the refining of cane sugar. Separate statistics for these establishments are presented for the first time, as already stated, at the census of 1909. At prior censuses the statistics of establishments engaged in refining sugar were combined with those which manufactured sugar and molasses from cane and those engaged in the compounding of table sirups. The manufacturing operations in the cane mills and in the refineries are, however, so dissimilar and distinct that the statistics for each are shown separately for 1909.

CANE SUGAR REFINING, NOT INCLUDING BEET SUGAR—DETAILED STATISTICS: 1909.

Table 19	United States.
Number of establishments.....	1 19
Persons engaged in the industry.....	10,345
Proprietors and firm members.....	6
Salaried officers, superintendents, and managers.....	193
Clerks.....	747
Male.....	695
Female.....	52
Wage earners:	
Average number.....	9,399
Number, 15th day of month—	
Maximum number, July.....	9,952
Minimum number, January.....	7,935
Wage earners, Dec. 15, or nearest representative day.....	9,765
16 years of age and over.....	9,719
Male.....	9,434
Female.....	285
Under 16 years of age.....	46
Male.....	42
Female.....	4
Primary horsepower.....	38,414
Capital.....	\$115,240,791
Expenses.....	241,312,475
Services.....	7,275,126
Officials.....	820,755
Clerks.....	833,409
Wage earners.....	5,620,971
Materials.....	226,287,960
Fuel and rent of power.....	2,866,371
Other.....	223,421,589
Miscellaneous.....	7,749,389
Rent of factory.....	198,550
Taxes, including internal revenue.....	371,851
Other.....	7,178,988
Value of products.....	248,628,699
Value added by manufacture (value of products less cost of materials).....	22,340,699

<sup>1</sup> Includes establishments distributed as follows: California, 2; Louisiana, 5; Massachusetts, 2; New Jersey, 2; New York, 5; Pennsylvania, 2; Texas, 1.

Table 19 gives detailed statistics for the sugar refining industry for 1909. Corresponding figures can

not be given by states without disclosing individual operations.

The gross value of products amounted to \$248,628,659 and the value added by manufacture (value of products less cost of materials) to \$22,340,699. No data were collected showing the value of the different products manufactured, but practically the entire amount is represented by the value of refined sugar.

Persons engaged in the industry.—Table 20 shows, for 1909, the number of persons engaged in the industry, classified according to occupational status and sex, and, in the case of wage earners, according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners is an estimate obtained by the method described in the Introduction.

Table 20	CLASS.	PERSONS ENGAGED IN THE CANE SUGAR REFINING INDUSTRY: 1909		
		Total.	Male.	Female.
	All classes.....	10,345	10,015	330
	Proprietors and officials.....	199	199	.....
	Proprietors and firm members.....	6	6	.....
	Salaried officers of corporations.....	35	35	.....
	Superintendents and managers.....	158	158	.....
	Clerks.....	747	695	52
	Wage earners (average number).....	9,399	9,121	278
	16 years of age and over.....	9,354	9,080	274
	Under 16 years of age.....	45	41	4

The average number of persons engaged in the sugar refineries during 1909 was 10,345, of whom 9,399, or 90.9 per cent, were wage earners; 199, or 1.9 per cent, proprietors and officials; and 747, or 7.2 per cent, clerks, this class including other subordinate salaried employees. Of the total number of persons engaged in the industry, 10,015, or 96.8 per cent, were males, and 330, or 3.2 per cent, females. The average number of wage earners under 16 years of age was only 45. The number of wage earners employed on December 15, or the nearest representative day, distributed by age and sex, is given in Table 19.

Wage earners employed, by months.—Table 21 gives the number of wage earners employed in the industry on the 15th (or the nearest representative day) of each month during the year 1909.

Table 21	MONTH.	WAGE EARNERS EMPLOYED IN THE CANE SUGAR REFINING INDUSTRY: 1909	
		Number.	Per cent of maximum.
	January.....	7,935	79.7
	February.....	8,653	86.9
	March.....	9,590	99.4
	April.....	9,652	97.0
	May.....	9,492	95.4
	June.....	9,926	99.7
	July.....	9,952	100.0
	August.....	9,613	96.6
	September.....	9,680	97.3
	October.....	9,341	93.9
	November.....	9,588	96.3
	December.....	9,048	90.9

The largest number of wage earners reported for any month of 1909 was 9,952, in July, and the smallest number, 7,935, in January, the minimum number being equal to 79.7 per cent of the maximum.

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

No wage earners were reported as employed in establishments where the prevailing hours were less than 60 per week. Nearly one-half (48.5 per cent) of the wage earners in the industry in 1909 were in refineries where the prevailing hours were 60 per week. The second largest group was made up of those in establishments where the prevailing hours were 72 or over per week, which group formed 31.5 per cent of the total.

**Character of ownership and size of establishments.**—Sixteen of the 19 establishments reported for 1909 were under corporate ownership, and these establishments reported the great bulk of the value of products of the industry. The average value of products per establishment was \$13,085,719, and the average value added by manufacture, \$1,175,826. The average number of wage earners per establishment was 494.7. Of the 19 establishments reported, 52.6 per cent employed from 251 to 500 wage earners each. There were 5 establishments that employed more than 500 wage earners, and of these, 1 employed over 1,000.

**Expenses.**—Table 19 shows the total expenses for the industry in 1909 to have been \$241,312,475, distributed as follows: Cost of materials, \$226,287,960, or 93.8 per cent; wages, \$5,620,971, or 2.3 per cent; salaries, \$1,654,155, or seven-tenths of 1 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, insurance, traveling expenses, and other sundry expenses, \$7,749,389, or 3.2 per cent.

**Engines and power.**—Table 22 shows statistics of power as reported at the census of 1909.

Practically all (97.5 per cent) of the primary power used in the sugar refining industry in 1909 consisted of steam power, only 2.5 per cent of the total being rented electric power. Of the total electric power (14,735 horsepower), 13,789 horsepower, or 93.5 per cent, was generated in the establishments reporting.

**Fuel consumed.**—Coal was the principal kind of fuel used in the sugar refining industry in 1909, of which 542,148 short tons were bituminous and 511,640 long tons, anthracite. Of oil, including gasoline, 578,633 barrels were consumed. In addition, small quantities of coke, wood, and gas were reported.

Table 22

POWER.	CANE SUGAR REFINING INDUSTRY: 1909		
	Number of engines or motors.	Horse- power.	Per cent distribu- tion of horse- power.
Primary power, total.....	464	38,414	100.0
Owned.....	404	37,468	97.5
Steam.....	403	37,453	97.5
Gas.....	1	15	( <sup>1</sup> )
Rented—Electric.....	60	946	2.5
Electric motors.....	985	14,735	100.0
Run by current generated by establishment...	925	13,789	93.5
Run by rented power.....	60	946	6.5

<sup>1</sup> Less than one-tenth of 1 per cent.

#### THE SUGAR INDUSTRY IN HAWAII.

**General description of the industry.**—The manufacture of sugar from cane is the most important industry in Hawaii, contributing 75.8 per cent of the total value of products for all manufacturing industries in 1909. Only three countries—Cuba, British India, and Java—produce more cane sugar than Hawaii.

Practically every important cane growing plantation on the island has its own sugar mill, built primarily for crushing the cane grown on the plantation. In some instances, however, the plantation mills crush cane grown on other plantations, while a few mills are engaged exclusively in crushing cane grown by others. The most modern machinery and equipment have been installed in the mills and a high percentage of sugar is extracted, the molasses remaining as a by-product being practically worthless, except for fertilizer or cattle feed. Nearly 20 per cent of the raw sugar used by the refineries in continental United States is obtained from Hawaii, 491,545 tons having been imported during the fiscal year 1909. The statistics for Hawaii are not included in the preceding tables, which are confined to establishments in continental United States.

**Growth of the industry.**—Hawaii was annexed to the United States in 1898 and organized as a territory in 1900, and was included in the census of 1899, which was the first enumeration of its manufactures. The industrial census of 1904, however, was confined to continental United States and no canvass was made of Hawaii. Table 23 gives the more important figures relative to the sugar industry on the island, as returned at the censuses of 1909 and 1899, together with the percentages of increase for the 10-year period.

Notwithstanding the fact that practically the same number of establishments were reported for both censuses, 46 in 1909 and 44 in 1899, the value of products increased \$16,695,049, or 86.7 per cent, during the 10 years covered by the table, and the percentages of increase for most of the other items shown in Table 23 were correspondingly high.

**Table 23**

	CANE SUGAR AND MOLASSES INDUSTRY OF HAWAII.		
	1909	1899	Per cent of increase: <sup>1</sup> 1899-1909
Number of establishments.....	46	44	4.5
Persons engaged in the industry.....	2,709	2,759	-1.8
Proprietors and firm members.....	13	5	100.0
Salaried employees.....	179	385	-53.5
Wage earners (average number).....	2,517	2,369	6.2
Primary horsepower.....	36,426	17,774	104.9
Capital.....	\$13,724,308	\$7,991,642	71.7
Expenses.....	22,042,499	11,510,381	91.5
Services.....	1,047,496	1,111,726	-5.8
Salaries.....	206,216	303,610	-26.8
Wages.....	781,280	745,110	4.4
Materials.....	18,542,075	9,777,922	89.6
Miscellaneous.....	2,452,928	320,733	295.2
Value of products.....	35,649,822	19,254,773	86.7
Value added by manufacture (value of products less cost of materials).....	17,407,747	9,476,851	83.7

<sup>1</sup> A minus sign (-) denotes decrease.

As already stated, practically all of the sugar factories in Hawaii are located on and operated in connection with sugar plantations. The employees engaged on the plantations frequently work in the sugar factory and in many instances the expenses of the factory are so mingled with those for the operation of the plantation that it is impossible to obtain separate statistics of the number of employees or the expenses of the factory as distinct from those of the plantation. It is possible that at the census of 1899 a larger or smaller proportion of the number of employees and expenses for some plantations was assigned to the factories than was so assigned at the census of 1909, though it is probable that these differences are not sufficient seriously to affect the comparability of the figures reported for the two censuses.

**Exports of sugar.**—Practically all of the sugar production of Hawaii is exported to the United States in the form of raw sugar, the imports from Hawaii forming nearly one-fifth of the total amount of raw cane sugar used in the refineries of continental United States. The statistics of exports of sugar and molasses for specified years from 1875 to 1910, inclusive, as taken from the Hawaiian Annual, 1913, are summarized in Table 24.

**Table 24**

YEAR ENDING JUNE 30—	EXPORTS OF SUGAR AND MOLASSES FROM HAWAII.				
	Total value.	Sugar. <sup>1</sup>		Molasses.	
		Pounds.	Value.	Gallons.	Value.
1910.....	\$42,625,069	1,111,594,466	\$42,625,062	100	\$7
1909.....	37,632,821	1,022,883,027	37,632,742	728	70
1904.....	24,360,007	736,491,092	24,359,385	11,187	712
1899.....	21,898,550	545,370,537	21,898,191	11,455	350
1895.....	7,978,628	294,784,819	7,975,590	44,670	3,038
1890.....	12,167,188	259,789,462	12,159,585	74,926	7,603
1885.....	8,363,112	171,350,314	8,356,062	57,941	7,050
1880.....	4,352,465	63,584,871	4,322,711	198,355	29,754
1875.....	1,228,573	25,080,182	1,216,389	93,722	12,184

<sup>1</sup> Includes both raw and refined sugar.

Prior to 1905 there were no sugar refineries in Hawaii. In that year, however, one was established, and since that time sugar has been refined for the Hawaiian market as well as for export. The quantity

of refined sugar exported to the United States amounted to 10,559 tons in 1905 and to 19,887 tons in 1909.

**THE SUGAR INDUSTRY IN PORTO RICO.**

**Development of the industry.**—The sugar industry was first established in Porto Rico in 1548, but its growth was slow, the total production in 1830 being only 15,757 tons. While some establishments still employ the primitive open-kettle method of manufacture, a number have installed modern machinery and methods, with greatly increased economy in the production of sugar, and the total output in 1909 amounted to 283,223 tons. The census of manufactures of 1909 was the first taken in Porto Rico, and comparative statistics are, therefore, not available.

**Summary for 1909.**—Table 25 presents a summary of the statistics for the industry in 1909.

**Table 25**

	Sugar and molasses.
Number of establishments.....	108
Persons engaged in the industry.....	5,898
Proprietors and firm members.....	246
Salaried employees.....	590
Wage earners (average number).....	5,062
Primary horsepower.....	31,055
Capital.....	\$20,709,796
Expenses.....	16,003,922
Services.....	2,175,443
Salaries.....	947,858
Wages.....	1,227,585
Materials.....	12,273,555
Miscellaneous.....	2,154,924
Value of products.....	20,569,348
Value added by manufacture (value of products less cost of materials).....	8,295,793

There were 108 establishments engaged in the manufacture of sugar and molasses in Porto Rico in 1909. Of these, 85 were controlled by individuals and firms, thus accounting for the relatively large number of proprietors and firm members. The aggregate value of products was \$20,569,348, of which \$20,164,887 represented the value of sugar. Many of the mills are small, 48 of them reporting products valued at less than \$5,000. It is probable that, in the case of some of the mills located on plantations, the expenses were so interwoven with those for the operation of the plantation that they could not be segregated.

**Exports of sugar.**—Table 26 gives the quantity of sugar exported from Porto Rico for specified years. Practically the whole quantity exported in recent years has been taken by the United States.

**Table 26**

YEAR.	Sugar exported from Porto Rico (pounds). <sup>1</sup>	YEAR.	Sugar exported from Porto Rico (pounds). <sup>1</sup>
1910.....	569,045,148	1901.....	137,817,472
1909.....	488,512,440	1897.....	126,827,472
1908.....	469,213,567	1890.....	128,021,909
1907.....	408,157,696	1880.....	221,242,894
1906.....	410,553,706	1870.....	191,649,670
1905.....	271,325,118	1860.....	116,015,181
1904.....	259,294,060	1850.....	112,129,432
1903.....	226,215,132	1840.....	81,793,693
1902.....	183,822,636	1830.....	34,016,376

<sup>1</sup> The statistics for selected years from 1830 to 1897, inclusive, relate to the calendar year, and were taken from the report of the Military Governor of Porto Rico, 1900, while those for the years 1901 to 1910, inclusive, are for fiscal years ending June 30, and are taken from the reports of the Bureau of Foreign and Domestic Commerce, Department of Commerce.

This page was intentionally left blank.

---

---

# THE LUMBER INDUSTRY

---

---

(485)

This page was intentionally left blank.

# THE LUMBER INDUSTRY.

## GENERAL STATISTICS.

**Summary for the industry: 1909.**—Table 1 presents a summary of the statistics for the lumber industry as a whole for 1909. It distinguishes four classes of establishments: (1) Logging camps and merchant sawmills, including planing mills where operated in connection with sawmills; (2) independent planing mills; (3) wooden packing-box factories; and (4) custom sawmills. Small establishments engaged primarily in work on materials owned by others are classified as custom mills, while establishments manufacturing products from materials which they own and large establishments doing contract sawing are classified as merchant

mills. The establishments included in the first class comprise all merchant sawmills using logs or bolts as materials and also all logging camps, while those not using these materials are assigned to the second or the third group according to their product of chief value. So many of the merchant mills in the industry carry on two or all three classes of operations, however, that only the totals for all branches combined are shown in the general tables. Statistics for custom mills are given in Tables 1, 2, 22, and 25 of this report, all other tables showing statistics for merchant establishments exclusively.

**Table 1**

	LUMBER INDUSTRY, INCLUDING CUSTOM MILLS: 1909				
	Total.	Merchant establishments.			Custom sawmills.
		Sawmills and logging camps.	Independent planing mills.	Wooden packing-box factories.	
Number of establishments.....	44,804	33,090	6,402	1,179	4,133
Persons engaged in the industry.....	797,825	613,601	132,511	38,877	12,836
Proprietors and firm members.....	64,527	41,489	6,247	1,089	5,702
Salaried employees.....	41,189	24,934	13,872	2,339	44
Wage earners (average number).....	702,109	547,178	112,392	35,449	7,090
Primary horsepower.....	2,933,362	2,316,634	410,950	112,498	93,280
Capital.....	\$1,182,330,552	\$363,370,850	\$257,748,437	\$55,056,120	\$5,655,145
Expenses.....	997,783,110	833,005,947	293,743,084	68,873,808	2,160,271
Services.....	367,863,055	268,409,862	76,589,663	18,167,378	1,096,152
Salaries.....	47,436,596	29,543,056	15,053,254	2,831,386	8,900
Wages.....	320,426,459	238,866,806	64,536,409	15,335,992	1,087,252
Materials.....	508,215,153	265,559,595	196,079,522	46,478,462	97,574
Miscellaneous.....	121,704,902	99,036,490	18,073,899	4,237,968	366,545
Value of products.....	1,160,644,628	753,388,368	327,397,891	75,342,488	4,515,881
Value added by manufacture (value of products less cost of materials).....	652,429,475	487,828,773	131,318,369	28,864,026	4,418,307

The extent to which the first three classes of establishments shown in the table overlap is indicated by the fact that in 1909 the value of the dressed lumber and other planing-mill products reported by sawmills amounted to \$222,325,705, which is equal to 67.9 per cent of the total value of the products reported by independent planing mills. The cost of materials, labor, etc., involved in the manufacture of these products could not be separated from those for the production of rough lumber. In like manner many planing mills manufactured boxes, but the statistics for this branch of their business, or even the value of the boxes produced, could not be segregated.

The establishments in the industry as a whole in 1909 gave employment to an average of 797,825 persons, of whom 702,109 were wage earners, and paid out \$367,863,055 in salaries and wages. The cost of the materials used in the industry as a whole in 1909 was \$508,215,153, which is equal to 43.8 per cent of the total value of products (\$1,160,644,628), and the value

added by manufacture (that is, the value of products less cost of materials) was \$652,429,475. The figures for cost of materials and value of products involve a considerable amount of duplication for the reason that the same lumber may undergo manufacturing processes in two or three different establishments, its value figuring both in the cost of materials and in the value of products for each establishment. Where logging operations are concerned, the cost of materials includes the value of the standing timber even when owned by the operator.

In addition to the products for which figures are given in Table 1, lumber and its more elementary products to the value of \$5,667,950 were reported for 1909 by establishments engaged primarily in the manufacture of other products, chiefly furniture and refrigerators, fancy and paper boxes, and pianos and organs and materials. These products, however, are not included in the product whose value is given in Table 1. On the other hand, the value of products shown in

Table 1 includes \$1,002,731 representing receipts from the custom grinding of flour-mill and gristmill products and \$5,730,556 representing the value of foundry and machine-shop products, cooperage and wooden goods, and other subsidiary products reported for 1909 by establishments in the lumber industry.

Of the 44,804 establishments canvassed for 1909, 9.2 per cent were custom mills, these mills employing only 1 per cent of the wage earners in the industry and contributing only four-tenths of 1 per cent of the total value of products. The small proportion of the total value of products reported by such mills results from the fact that their value of products consists almost entirely of the amounts received for work done, the value of the lumber sawed which is owned by others not being included.

Merchant sawmills and logging camps formed more than four-fifths of the total number of merchant establishments in the industry in 1909, the value of their products amounting to \$753,388,368, or 65.2 per cent of the total for merchant establishments and 64.9 per cent of that for all establishments combined, while they gave employment to 547,178 wage earners, or 77.9 per cent of the total number in the industry and 78.7 per cent of those in merchant establishments. The principal products of logging camps are saw logs; shingle, stave, and heading bolts; telegraph and telephone poles; fence posts; and hewed railway ties. Those of sawmills include rough lumber, shingles, cooperage materials, veneers, lath, and sawed railway ties. When the logging and sawing are done by the same concern, there is no duplication in value of products, but so far as logs are purchased from other establishments in the industry there is duplication.

The 6,402 independent planing mills reported for 1909 formed 15.7 per cent of the total number of merchant establishments in the industry and gave employment to 16.2 per cent of the wage earners in merchant establishments and 16 per cent of those in the industry as a whole, while the value of their products formed 28.3 per cent of the total for merchant establishments and 28.2 per cent of the total for all establishments combined. The establishments included in this subclassification manufacture principally dressed lumber; sash,

doors, and blinds; interior woodwork; and moldings. Among the minor products are cattle stanchions, water tubs and cisterns, wooden tanks, wooden pipe, and wooden covering for water and steam pipes.

The 1,179 wooden packing-box factories reported formed 2.9 per cent of the total number of merchant establishments in the lumber industry, employed 5.1 per cent of the wage earners in such establishments, and contributed 6.5 per cent of the total value of products. Box shooks; wooden boxes used for packing; crates for butter, fruits, and vegetables; egg cases; carrier trays; and wine cases are the principal products reported for establishments included under this subclassification. Many manufacturing concerns in a variety of industries make packing boxes for their own products, but the census schedules did not call for the value of such containers as a separate item and statistics for them are not included in this report.

**Comparison with previous censuses.**—The census of 1909 was the first at which the establishments constituting the lumber industry were united under a single classification. At the censuses of 1904 and 1899 three independent classifications were employed: (1) "Lumber and timber products," corresponding practically to the present subclassification of logging camps and merchant sawmills; (2) "lumber, planing-mill products, including sash, doors, and blinds," the scope of which was the same as that of the second subclassification for 1909; and (3) "boxes, wooden packing," corresponding to the third subclassification at present employed. At the present census, however, it was deemed best, on account of the large amount of overlapping between the different classifications, to combine them all under a single head. At censuses prior to 1899 the establishments constituting the lumber industry as at present defined were included under a number of independent classifications.

Table 2 summarizes the statistics of the lumber industry (merchant establishments and custom establishments combined) for each census from 1859 to 1909, inclusive, the statistics for the various independent classifications into which the lumber industry as at present defined was divided at the different censuses being combined.

Table 2

	LUMBER INDUSTRY, INCLUDING CUSTOM MILLS.										
	Number or amount.						Per cent of increase. <sup>1</sup>				
	1909	1899	1889	1879	1869	1859	1899-1909	1889-1899	1879-1889	1869-1879	1859-1869
Number of establishments.....	44,804	38,110	26,913	28,851	29,256	22,685	17.6	41.6	-6.7	-1.4	29.0
Persons engaged in the industry.....	797,825	447,389	(2)	(2)	(2)	(2)	78.3	.....	.....	.....	.....
Proprietors and firm members.....	54,527	49,307	(2)	(2)	(2)	(2)	10.6	.....	.....	.....	.....
Salaried employees.....	41,189	19,242	(2)	(2)	(2)	(2)	114.1	.....	.....	.....	.....
Wage earners (average number).....	702,109	378,840	404,815	193,199	189,413	90,416	85.3	-6.4	(2)	(2)	(2)
Primary horsepower.....	2,933,362	1,889,050	1,165,875	.....	716,113	(2)	55.3	62.0	.....	.....	.....
Capital.....	\$1,182,330,552	\$752,653,962	\$691,055,223	\$224,840,197	\$186,998,274	\$86,330,266	57.1	8.9	207.4	20.2	116.6
Expenses.....	997,783,110	629,690,153	549,249,797	(2)	(2)	(2)	58.5	14.6	.....	.....	.....
Services.....	367,863,055	162,559,390	154,563,073	49,093,887	58,404,678	26,925,179	126.3	5.2	214.8	-16.9	116.9
Salaries.....	47,436,596	17,482,622	(2)	(2)	(2)	(2)	171.3	.....	.....	.....	.....
Wages.....	320,426,459	145,076,768	(2)	(2)	(2)	(2)	120.9	.....	.....	.....	.....
Materials.....	508,215,153	440,568,199	361,708,435	199,256,320	154,373,572	58,831,010	15.4	21.8	81.5	29.1	162.4
Miscellaneous.....	121,704,902	26,562,564	32,925,669	(2)	(2)	(2)	358.2	-19.4	.....	.....	.....
Value of products.....	1,160,644,628	773,181,142	647,093,674	319,720,635	298,171,488	122,497,017	50.1	19.5	102.4	7.2	143.4
Value added by manufacture (value of products less cost of materials).....	652,429,475	332,612,943	285,390,230	120,464,315	143,797,916	63,666,007	96.2	16.5	136.9	-16.2	125.9

<sup>1</sup> A minus sign (-) denotes decrease. Where percentages are omitted, comparable figures are not available.

<sup>2</sup> Comparable figures not available.

<sup>3</sup> Figures not strictly comparable.

The reports for the censuses prior to 1899 included, without distinction, both merchant mills and custom mills. As custom mills were not canvassed at the census of 1904, no statistics for that year are shown.

The financial figures for 1869 in this and other tables are given in currency, which at that time was worth only about 80 cents, gold, to the dollar. For strict comparison, therefore, these figures should be reduced about 20 per cent.

The number of establishments in the industry in 1909 was practically twice as great as that in 1859, while the value of products reported for 1909 was over nine times as great as the value for 1859. During the decade 1899-1909 the number of wage earners in the industry increased 85.3 per cent, while the value of products increased \$387,463,486, or 50.1 per cent, the relative increase in this item being very much greater than that in cost of materials, which was only 15.4 per cent.

The growth of the industry, as measured by the increase in value of products, was more rapid during the decade 1859-1869 than during any other decade covered by the table, although the actual increase in value of products for the decade was somewhat less than that shown in the table, owing to the fact, already noted, that the financial figures for 1869 were reported in a depreciated currency. The smallest relative increase in value of products shown for any decade covered by the table was that for the decade 1869-1879 (7.2 per cent). This, however, is due entirely to the fact that the figures for 1869 were reported in depreciated currency, as when allowance is made for this the smallest relative increase is shown for the decade 1889-1899.

As already stated, the establishments constituting the first branch of the lumber industry, as at present defined, constituted an independent industry under the classification employed at the censuses of 1904 and 1899, being included under the designation "lumber and timber products," which is now employed for the industry as a whole.

In 1889 two classifications were employed for establishments engaged in this branch of the industry—"lumber and other mill products from logs and bolts" and "timber products not manufactured at mills"; in 1879, three—"lumber, sawed," "shingles, split," and "veneering"; in 1869, three—"lumber, sawed," "staves, shooks, and headings," and "veneering"; and in 1859, six—"lumber, sawed," "masts and spars," "shingles and lath," "staves, headings, hoops, and shooks," "timber cut and timber hewed," and "veneers." It is uncertain to what extent logging camps, especially if not connected with sawmills, were covered at the earlier censuses.

Statistics for sawmills and logging camps, as reported for each census from 1859 to 1909, are given in the following table, the separate classes shown at the

earlier censuses being combined. The statistics are roughly comparable, although the figures for censuses prior to 1899 include those for the custom mills.

**Table 3** MERCHANT SAWMILLS AND LOGGING CAMPS

CENSUS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	33,090	547,178	\$238,866,806	\$265,559,595	\$753,388,368	\$487,828,773
1904.....	19,121	404,663	182,949,649	183,708,296	579,777,310	396,069,014
1899.....	23,043	413,257	147,951,886	242,617,767	555,042,605	312,424,838
1889.....	22,607	311,886	87,915,659	242,532,098	437,898,942	195,366,844
1879.....	25,758	148,260	31,893,098	146,312,937	233,608,886	87,295,940
1869.....	25,842	150,091	40,054,472	103,473,348	210,401,077	106,927,729
1859.....	20,870	77,439	22,196,533	45,368,025	98,679,948	53,311,023

The manufacture of the various classes of planing-mill products by independent mills was shown for the first time at the census of 1889 under the classification "lumber, planing-mill products, including sash, doors, and blinds," this classification, as already noted, also being used at the censuses of 1899 and 1904 and corresponding practically to the second branch of the industry as at present defined. In 1879 two separate classifications were employed, "lumber, planed," and "sash, doors, and blinds." In 1869 the same classifications were employed as in 1879, together with the additional classification "wood brackets, moldings, and scrolls." In 1859 the classifications "pump logs," "drainpipe, wooden," and "splints" were employed in addition to "lumber, planed," and "sash, doors, and blinds."

The statistics for the manufacture of planing-mill products are given in the following table for each census from 1859 to 1909, inclusive, the various classifications employed for the establishments manufacturing such products at the earlier censuses being combined. As already stated, the large planing-mill business done in connection with sawmills is not covered by the table.

**Table 4** INDEPENDENT PLANING MILLS.

CENSUS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	6,402	112,392	\$64,536,409	\$196,079,522	\$327,397,891	\$131,318,369
1904.....	5,009	97,674	50,713,607	143,137,662	247,441,956	104,304,294
1899.....	4,198	73,510	32,621,704	99,568,501	167,786,122	68,217,621
1889.....	3,670	79,923	42,221,856	104,926,834	183,681,552	78,754,718
1879.....	2,491	37,187	14,431,654	45,268,462	73,424,681	28,156,219
1869.....	2,783	34,766	16,716,528	46,046,585	80,277,550	33,320,965
1859.....	1,456	11,179	4,086,629	12,179,527	21,237,383	9,057,856

The decrease in the value of products of the planing-mill branch of the lumber industry between 1889 and 1899 was due to the increasing extent to which lumber was planed in establishments classified as sawmills. The apparent decrease between 1869 and 1879 results from the fact, already mentioned, that the value for

1869 was reported in a depreciated currency. If the figures were reduced to a gold basis, the decade 1869-1879 would show an increase.

The classification "boxes, wooden packing," under which the establishments constituting the third branch of the industry were included at censuses prior to that of 1909, was first employed at the census of 1879. In 1869 "boxes, cheese," and "boxes, tobacco" (not cigar boxes), were shown separately from "boxes, wooden packing." In 1859 statistics were presented for the manufacture of "boxes, sugar," and of "box shooks," as well as of cheese, tobacco, and packing boxes. The figures for these separate classifications have been combined for the various years in Table 5.

CENSUS.	Number of establishments.	Wage earners (average number).	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
1909.....	1,179	35,449	\$15,335,992	\$40,478,462	\$75,342,483	\$28,864,026
1904.....	1,023	30,320	12,171,104	33,478,991	57,047,743	23,568,752
1899.....	892	21,999	7,821,388	22,777,573	33,163,633	15,386,060
1889.....	636	13,006	5,615,707	14,244,503	25,513,180	11,268,677
1879.....	602	7,722	2,769,135	7,674,921	12,687,068	5,012,147
1869.....	696	5,303	2,068,318	4,590,062	8,964,903	4,374,841
1859.....	390	2,035	743,357	1,419,643	2,939,917	1,520,274

The most important statistics for the three classes of merchant establishments in the lumber industry, as reported at the censuses of 1909, 1904, and 1899, are given in Table 6. As already noted, custom mills were not segregated from merchant mills at censuses prior to that of 1899.

	Number or amount.						Per cent of increase. <sup>1</sup>		
	1909			1904			1899		
	1909	1904	1899	1899-1909	1904-1909	1899-1904			
Number of establishments.....	40,671	25,153	23,133	44.6	61.7	-10.6			
Persons engaged in the industry.....	784,980	593,342	( <sup>2</sup> )	.....	32.3	.....			
Proprietors and firm members.....	48,825	30,738	( <sup>2</sup> )	.....	58.8	.....			
Salaried employees.....	41,145	30,038	20,940	96.5	37.0	43.4			
Wage earners (average number).....	695,019	532,569	508,766	36.6	30.5	4.7			
Primary horsepower.....	2,840,082	1,886,624	1,658,594	71.2	60.5	13.7			
Capital.....	\$1,176,676,407	\$733,707,720	\$541,594,956	117.3	60.4	35.5			
Expenses.....	995,622,839	738,032,608	621,135,272	60.3	34.9	18.8			
Services.....	306,166,903	277,571,851	207,109,909	76.8	31.9	34.0			
Salaries.....	47,427,690	31,737,491	18,714,931	153.4	49.4	69.6			
Wages.....	318,739,207	245,834,360	188,394,978	69.2	29.7	30.5			
Materials.....	508,117,579	360,324,949	364,963,841	39.2	41.0	-1.3			
Miscellaneous.....	121,338,357	100,135,808	49,061,522	147.3	21.2	104.1			
Value of products.....	1,156,128,747	884,267,009	760,992,360	51.9	30.7	16.2			
Value added by manufacture (value of products less cost of materials).....	648,011,168	523,942,060	396,028,519	63.6	23.7	32.3			

<sup>1</sup> A minus sign (-) denotes decrease. <sup>2</sup> Comparable figures not available.

In general this table indicates a considerable growth during the decade. The relative increase in number of wage earners and value of products was much greater during the last half of the decade than during the first.

The very considerable increase in number of establishments shown by the census of 1909 results in part from the fact that the canvass of that year was more complete than that of any previous census, and par-

ticularly than that of 1904. The additional establishments covered by this more complete canvass were for the most part small, however, so that the statistics for items other than number of establishments and number of proprietors and firm members are not materially affected.

**Summary, by states.**—Table 7 summarizes the more important statistics of the merchant establishments in the industry by states, the states being arranged according to the value of products reported for 1909.

The lumber industry is widely distributed throughout the United States, some establishments being reported for every state. Washington was in 1909 the most important state as measured by value of products and value added by manufacture, and ranked second in number of wage earners. New York, which ranked second among the states in value of products, was ninth in number of wage earners and fifth in value added by manufacture. Louisiana ranked third in value of products, but first in number of wage earners and second in value added by manufacture. The wide distribution of the industry is indicated by the fact that the five leading states reported only 26.9 per cent of the total number of wage earners and 29.8 per cent of the total value of products.

Of the 11 states that reported products valued at \$40,000,000 or over, Louisiana shows the most rapid development during the period 1899-1909, the number of wage earners increasing 202.3 per cent, the value of products 229 per cent, and the value added by manufacture 265.1 per cent. Still higher percentages of increase are shown for Idaho, Oklahoma, and New Mexico, in which states, however, the industry has attained comparatively little importance. Louisiana shows the largest relative increase in value of products for the five-year period 1904-1909 of any of the leading states (63.8 per cent), also showing the largest increase in number of wage earners (65.3 per cent).

For the five-year period 1904-1909 three states show decreases in value of products and five states decreases in number of wage earners, the largest relative decrease in each case (9.3 per cent and 14.7 per cent, respectively) being reported for Vermont.

Ten states show decreases in number of wage earners, and five decreases in value of products and in value added by manufacture for the decade 1899-1909, the largest relative decrease in wage earners (29.1 per cent) being in Indiana and the largest in value of products (15.1 per cent) in Wisconsin.

There was considerable change in the rank of the different states in value of products at the two censuses. Among the more important states in the industry, Washington advanced from fifth place in 1904 to first in 1909; Louisiana advanced from seventh to third place; and Mississippi from thirteenth to ninth. Wisconsin, which ranked second in value of products in 1904, had dropped to fifth place in 1909; Pennsylvania, which was fourth in 1904, had dropped to sixth in 1909; and Minnesota, which was sixth in 1904, was tenth in 1909.

Table 7

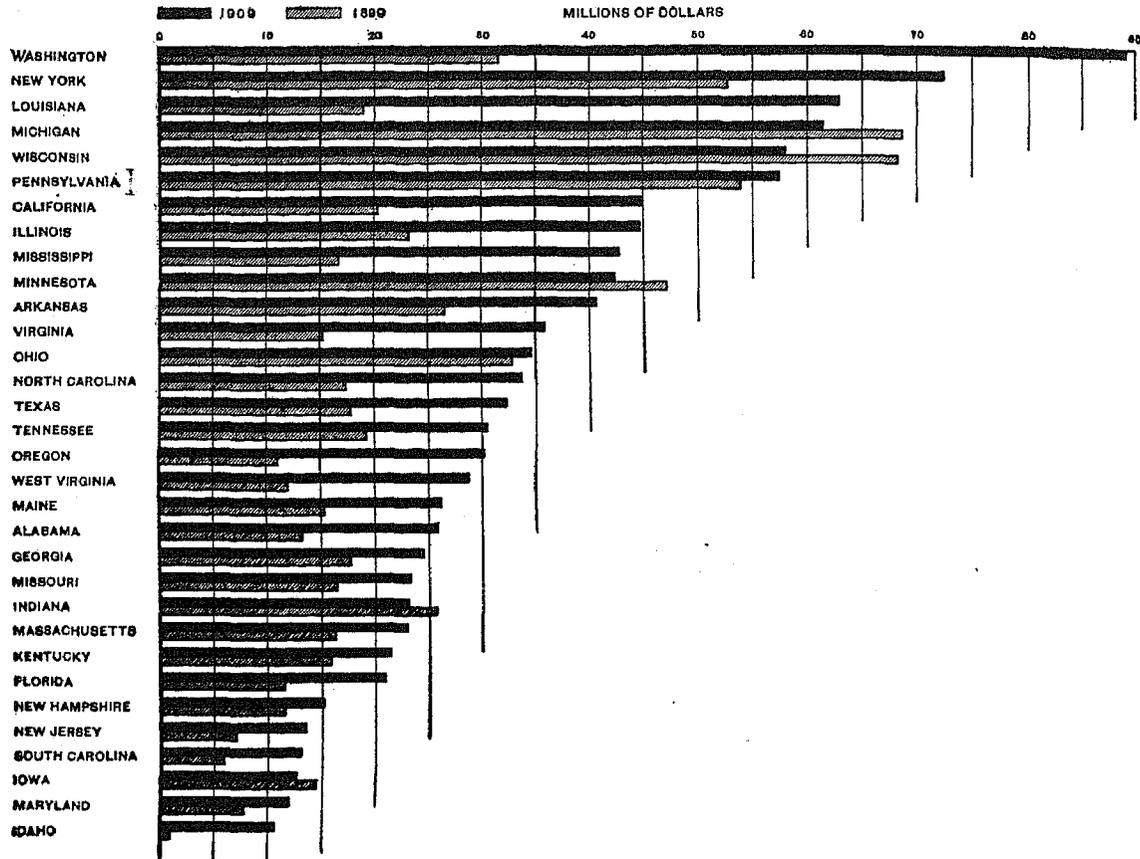
MERCHANT ESTABLISHMENTS.

STATE.	Number of establishments: 1909	Wage earners.			Value of products.			Value added by manufacture.			Per cent of increase. <sup>1</sup>											
		Average number: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Amount: 1909	Per cent of total: 1909	Rank.	Wage earners (average number).			Value of products.			Value added by manufacture.					
											1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904	1899-1909	1904-1909	1899-1904			
																				1909	1904	1909	1904	1909	1904
United States..	40,671	695,019	100.0	.....	\$1,156,128,747	100.0	.....	\$648,011,168	100.0	.....	38.6	30.5	4.7	51.9	30.7	16.2	63.6	23.7	32.3			
Washington.....	1,263	43,749	6.3	2	3	89,164,820	7.7	1	5	52,275,054	8.1	1	1	112.7	45.2	46.5	181.6	62.1	73.7	199.1	46.9	103.6
New York.....	2,263	27,471	4.0	9	6	72,529,813	6.3	2	1	30,824,722	4.8	5	5	8.7	5.6	2.9	37.5	17.6	16.9	38.1	5.5	30.9
Louisiana.....	702	46,072	6.6	1	4	62,837,912	5.4	3	7	39,081,716	6.1	2	6	202.3	65.3	82.9	229.0	63.8	100.9	265.1	41.8	157.5
Michigan.....	1,180	35,627	5.1	2	2	61,513,600	5.3	4	3	32,471,918	5.0	3	3	-22.8	4.2	-25.9	-10.4	7.5	-16.7	-11.3	( <sup>1</sup> )	-11.3
Wisconsin.....	1,020	34,093	4.9	4	1	57,969,170	5.0	5	2	32,381,700	5.0	4	2	-13.8	-1.1	-12.8	-15.1	-1.0	-14.3	-3.9	-4.6	0.7
Pennsylvania.....	2,667	26,873	3.9	10	5	57,453,583	5.0	6	4	30,139,347	4.7	6	4	-13.3	-1.0	-12.5	6.6	1.3	5.2	4.2	7.1	12.1
California.....	644	22,925	3.3	12	11	45,000,276	3.9	7	8	26,631,376	4.1	8	8	72.6	21.2	42.4	121.6	28.0	30.0	118.1	15.4	89.0
Illinois.....	814	16,567	2.4	19	16	44,951,804	3.9	8	10	17,687,608	2.7	16	14	39.6	9.5	27.4	93.8	37.3	41.2	74.2	21.8	43.0
Mississippi.....	1,647	33,397	4.8	6	8	42,792,844	3.7	9	13	28,586,248	4.4	7	10	113.3	48.9	43.2	156.8	63.6	57.0	190.6	49.2	94.7
Minnesota.....	525	20,704	3.0	16	9	42,352,507	3.7	10	6	21,487,170	3.3	11	7	-7.6	1.1	-8.6	-10.0	0.8	-14.3	-7.9	-14.3	4.2
Arkansas.....	1,897	32,932	4.7	8	7	40,640,327	3.5	11	11	26,340,660	4.1	9	9	31.3	37.7	-4.6	52.6	27.0	20.2	71.6	15.7	48.2
Virginia.....	2,617	32,287	4.6	7	15	35,855,310	3.1	12	21	21,962,911	3.4	10	21	129.9	119.9	4.5	135.6	91.5	23.1	162.7	85.0	41.5
Ohio.....	1,300	13,456	1.9	24	19	34,597,069	3.0	13	9	14,622,706	2.3	21	12	-18.5	-0.8	-17.8	8.4	5.1	0.3	-6.8	-3.7	-3.2
North Carolina.....	2,544	34,001	4.9	5	13	33,524,653	2.9	14	19	20,991,050	3.2	13	17	70.2	100.2	-15.0	92.2	72.0	11.7	107.8	63.0	27.5
Texas.....	799	23,518	3.4	11	17	32,201,440	2.8	15	20	21,197,137	3.3	12	15	88.8	60.8	17.4	81.1	70.6	6.2	126.6	52.2	48.9
Tennessee.....	1,977	22,389	3.2	14	12	30,456,807	2.6	16	12	16,815,366	2.6	18	11	56.6	29.6	20.8	58.9	13.4	40.2	70.9	10.1	55.2
Oregon.....	1,977	22,389	3.2	14	12	30,456,807	2.6	16	12	16,815,366	2.6	18	11	56.6	29.6	20.8	58.9	13.4	40.2	70.9	10.1	55.2
West Virginia.....	1,016	18,643	2.7	18	23	28,758,481	2.6	17	25	17,786,420	2.7	15	24	148.8	76.0	41.3	172.5	95.9	39.1	202.1	86.0	62.3
Maine.....	1,065	15,086	2.2	20	18	26,124,640	2.3	19	16	20,082,394	3.1	14	18	111.0	60.5	31.5	138.2	53.8	54.9	186.4	60.7	78.2
Alabama.....	1,819	22,409	3.2	13	14	26,057,662	2.3	20	24	15,194,465	2.3	20	19	39.5	11.1	25.5	70.8	22.4	39.5	100.3	22.3	63.8
Georgia.....	1,826	22,257	3.2	15	10	24,632,093	2.1	21	14	16,127,490	2.5	19	13	13.4	13.1	0.3	38.1	13.8	21.4	42.2	7.6	32.1
Missouri.....	1,098	13,522	1.9	23	20	23,260,026	2.0	22	23	10,924,070	1.2	26	27	-6.8	24.7	-25.3	31.8	32.1	-0.2	19.1	27.9	-6.9
Indiana.....	1,277	10,317	1.5	26	25	23,135,324	2.0	23	15	12,047,273	2.0	23	20	18.7	6.8	11.2	41.6	26.8	11.7	47.8	6.0	39.4
Massachusetts.....	708	8,976	1.3	27	27	23,025,837	2.0	24	18	10,752,996	1.7	25	23	-29.1	6.3	-33.3	9.9	7.7	-16.3	-15.7	10.6	-23.8
Kentucky.....	1,692	13,042	1.9	25	21	21,380,564	1.8	25	17	10,541,712	1.6	26	25	11.3	5.6	5.4	41.3	13.4	24.6	37.8	15.7	19.2
Florida.....	515	19,227	2.8	17	22	20,863,016	1.8	26	26	14,623,571	2.3	22	26	86.7	64.8	13.3	80.2	60.8	12.0	109.1	62.6	28.6
New Hampshire.....	589	8,464	1.2	28	28	15,284,357	1.3	27	28	8,021,070	1.2	26	27	-6.8	24.7	-25.3	31.8	32.1	-0.2	19.1	27.9	-6.9
New Jersey.....	416	4,857	0.7	31	32	13,511,162	1.2	28	32	5,501,207	0.8	32	32	49.2	35.2	10.3	93.1	68.9	14.3	66.1	56.9	5.9
South Carolina.....	851	14,604	2.1	22	24	13,140,856	1.1	29	31	9,159,418	1.4	27	28	105.2	37.2	49.5	120.5	58.7	38.9	159.6	58.7	63.6
Iowa.....	229	4,658	0.7	33	31	12,659,259	1.1	30	27	5,518,730	0.9	31	29	-18.2	-3.2	-15.5	13.5	4.2	-17.0	8.2	1.9	6.2
Maryland.....	561	7,003	1.0	29	30	12,134,202	1.0	31	30	5,627,203	0.9	30	31	37.3	36.0	0.9	54.6	35.8	13.9	60.9	39.6	15.2
Idaho.....	256	5,212	0.7	30	35	10,689,310	0.9	32	34	7,344,632	1.1	29	35	607.2	259.7	96.6	1,031.1	240.2	232.5	1,066.1	228.4	264.2
Vermont.....	593	4,790	0.7	32	29	8,598,084	0.7	33	29	4,467,342	0.7	34	30	-24.2	-14.7	-11.2	-2.3	-9.3	7.7	5.5	-7.3	13.8
Connecticut.....	393	3,495	0.5	34	34	7,845,521	0.7	34	33	3,927,063	0.6	35	34	69.3	65.7	-2.2	85.3	63.7	13.2	90.2	69.8	12.0
Montana.....	155	3,106	0.4	36	33	6,333,778	0.5	35	35	4,468,893	0.7	33	33	31.8	40.0	-5.9	108.1	102.9	2.5	120.1	67.6	31.4
Oklahoma.....	342	3,175	0.5	35	42	4,438,563	0.4	36	41	2,951,317	0.5	36	41	489.1	.....	.....	549.0	.....	.....	700.0	.....	.....
Colorado.....	283	2,190	0.3	37	36	4,184,864	0.4	37	36	2,788,905	0.4	37	36	.....	53.1	.....	.....	97.6	.....	.....	64.9	.....
Kansas.....	73	982	0.1	40	38	3,244,265	0.3	38	37	1,172,499	0.2	39	40	53.7	31.6	16.9	188.6	77.5	62.6	163.4	51.2	74.2
New Mexico.....	76	1,475	0.2	38	37	2,162,396	0.2	39	39	1,584,774	0.2	38	37	131.6	26.1	83.7	371.0	50.7	212.6	407.7	41.9	257.7
Nebraska.....	48	543	0.1	44	43	2,021,366	0.2	40	43	795,425	0.1	42	43	44.0	.....	.....	101.7	.....	.....	113.1	.....	.....
Rhode Island.....	57	748	0.1	42	39	1,907,072	0.2	41	38	843,268	0.1	41	39	13.8	13.7	0.2	52.9	12.3	36.2	33.6	-0.6	34.4
Arizona.....	23	839	0.1	41	41	1,419,114	0.1	42	40	1,082,074	0.2	40	38	120.2	.....	.....	120.2	.....	.....	153.4	.....	.....
Delaware.....	116	1,174	0.2	39	40	1,312,287	0.1	43	42	704,430	0.1	43	42	25.5	79.2	-29.9	75.2	53.1	14.4	71.3	55.8	10.0
Utah.....	104	431	0.1	46	47	976,589	0.1	44	48	541,682	0.1	46	48	20.7	138.8	-49.0	122.6	192.5	-23.9	98.5	177.9	28.6
South Dakota.....	58	451	0.1	45	46	944,777	0.1	45	47	595,866	0.1	44	45	21.6	136.1	-48.6	90.9	150.7	-23.8	96.7	112.9	-7.6
Wyoming.....	63	648	0.1	43	44	751,240	0.1	46	45	553,744	0.1	45	44	-6.4	112.5	-55.9	-0.7	61.5	-38.5	2.6	37.9	-25.6
District of Columbia.....	10	309	( <sup>2</sup> )	47	45	609,438	0.1	47	46	355,400	0.1	47	47	45.8	14.0	27.8	84.0	55.4	18.4	100.6	43.1	40.1
Nevada.....	9	186	( <sup>2</sup> )	48	48	503,266	( <sup>2</sup> )	48	44	214,946	( <sup>2</sup> )	48	46	.....	28.5	.....	199.4	-4.7	214.3	.....	-20.7	.....
North Dakota.....	8	63	( <sup>2</sup> )	49	49	186,645	( <sup>2</sup> )	49	49	98,509	( <sup>2</sup> )	49	49	.....	.....	.....	.....	.....	.....	.....	.....	.....

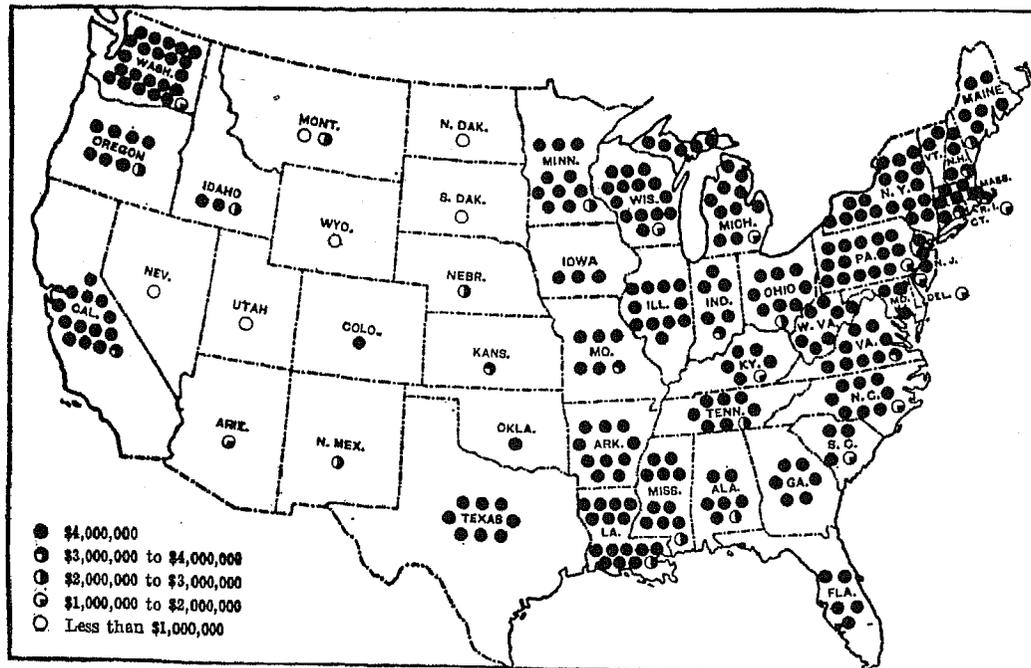
<sup>1</sup> Percentages are based on figures in Table 23. A minus sign (-) denotes decrease. Percentage not shown where base is less than 100 for wage earners or \$100,000 for value added by manufacture, or where comparative figures can not be given without disclosing individual operations.  
<sup>2</sup> Less than one-tenth of 1 per cent.

MANUFACTURES.

VALUE OF PRODUCTS FOR LEADING STATES: 1909 AND 1899.



VALUE OF PRODUCTS, BY STATES: 1909.



PERSONS ENGAGED IN THE INDUSTRY.

Summary: 1909.—Table 8 shows for 1909 the number of persons engaged in the operation of all merchant establishments in the industry, and of each of the three classes separately, classified according to occupational status and sex, and in the case of wage earners according to age also. It should be borne in mind that the sex and age classification of the average number of wage earners in this and other tables is an estimate obtained by the method described in the Introduction.

BRANCH OF INDUSTRY AND CLASS OF PERSONS.	PERSONS ENGAGED IN MERCHANT ESTABLISHMENTS: 1909		
	Total.	Male.	Female.
<b>Lumber industry, all branches combined</b> .....	<b>784,989</b>	<b>777,030</b>	<b>7,959</b>
Proprietors and officials.....	68,165	67,485	679
Proprietors and firm members.....	48,825	48,249	576
Salaried officers of corporations.....	6,616	6,523	93
Superintendents and managers.....	12,724	12,714	10
Clerks.....	21,805	18,088	3,717
Wage earners (average number).....	695,019	691,456	3,563
16 years of age and over.....	689,086	685,746	3,340
Under 16 years of age.....	5,933	5,710	223
<b>Merchant sawmills and logging camps</b> .....	<b>613,601</b>	<b>610,126</b>	<b>3,475</b>
Proprietors and officials.....	53,950	53,488	462
Proprietors and firm members.....	41,489	41,070	419
Salaried officers of corporations.....	3,574	3,536	38
Superintendents and managers.....	8,887	8,882	5
Clerks.....	12,473	10,949	1,524
Wage earners (average number).....	547,178	545,689	1,489
16 years of age and over.....	543,951	542,547	1,404
Under 16 years of age.....	3,227	3,142	85
<b>Independent planing mills</b> .....	<b>132,511</b>	<b>129,945</b>	<b>2,566</b>
Proprietors and officials.....	11,974	11,801	173
Proprietors and firm members.....	6,247	6,124	123
Salaried officers of corporations.....	2,563	2,618	45
Superintendents and managers.....	3,164	3,159	5
Clerks.....	8,145	6,291	1,854
Wage earners (average number).....	112,392	111,853	539
16 years of age and over.....	111,310	110,806	504
Under 16 years of age.....	1,082	1,047	35
<b>Wooden packing-box factories</b> .....	<b>38,877</b>	<b>38,959</b>	<b>1,918</b>
Proprietors and officials.....	2,241	2,197	44
Proprietors and firm members.....	1,089	1,055	34
Salaried officers of corporations.....	479	469	10
Superintendents and managers.....	673	673	.....
Clerks.....	1,187	848	339
Wage earners (average number).....	35,449	33,914	1,535
16 years of age and over.....	33,825	32,393	1,432
Under 16 years of age.....	1,624	1,521	103

The average number of persons engaged in the operation of merchant establishments during 1909 was 784,989, of whom 695,019, or 88.5 per cent, were wage earners, 68,165, or 8.7 per cent, proprietors and officials, and 21,805, or 2.8 per cent, clerks, this class including other subordinate salaried employees. Of the total number employed in the industry, 777,030, or 99 per cent, were males, and 7,959, or 1 per cent, females. The number of children under 16 years was 5,933, or less than 1 per cent of the total.

In the merchant sawmills and logging camps, 89.2 per cent of all persons engaged were wage earners, 8.8 per cent proprietors and officials, and 2 per cent clerks. The corresponding percentages for the independent planing mills were 84.8, 9, and 6.1, respectively, and for the wooden packing box factories, 91.2, 5.8, and 3.1, respectively.

Of the total number of women employed in the merchant establishments of the industry, 43.7 per cent were in the sawmills and logging camps, 32.2 per cent in the independent planing mills, and 24.1 per cent in the packing box factories. Of the children under 16 years, 54.4 per cent were in the sawmills and logging camps, 18.2 per cent in the independent planing mills, and 27.4 per cent in the packing box factories.

The average number of wage earners in each state for 1909, 1904, and 1899 is given in Table 23. The sex and age distribution of the average number is not shown for the individual states, but Table 24 gives such a distribution of the number employed on December 15, 1909, or the nearest representative day.

In order to compare the distribution of the persons engaged in the industry in 1909 according to occupational status with that in 1904, it is necessary to use the classification employed at the earlier census. (See Introduction.) Such a comparison is made in Table 9.

CLASS.	PERSONS ENGAGED IN MERCHANT ESTABLISHMENTS.				
	1909		1904		Percent of increase: 1904-1909
	Number.	Per cent distribution.	Number.	Per cent distribution.	
<b>Total</b> .....	<b>784,989</b>	<b>100.0</b>	<b>593,342</b>	<b>100.0</b>	<b>32.3</b>
Proprietors and firm members.....	48,825	6.2	30,738	5.2	58.8
Salaried employees.....	41,145	5.2	30,038	5.1	37.0
Wage earners (average number).....	695,019	88.5	532,566	89.8	30.5

Table 10 shows the average number of wage earners in merchant establishments distributed according to age and, in the case of those 16 years of age and over, according to sex, for 1909, 1904, and 1899.

CLASS.	AVERAGE NUMBER OF WAGE EARNERS IN MERCHANT ESTABLISHMENTS.					
	1909		1904		1899	
	Number.	Percent distribution.	Number.	Percent distribution.	Number.	Percent distribution.
<b>Total</b> .....	<b>695,019</b>	<b>100.0</b>	<b>532,566</b>	<b>100.0</b>	<b>508,766</b>	<b>100.0</b>
16 years of age and over.....	689,086	99.1	526,986	99.0	502,335	98.7
Male.....	685,746	98.7	523,972	98.4	499,162	98.1
Female.....	3,340	0.5	3,014	0.6	3,173	0.6
Under 16 years of age.....	5,933	0.9	5,580	1.0	6,431	1.3

The number of women employed as wage earners in merchant establishments and the proportion which they formed of the total shows comparatively little change during the decade. The number of children employed shows a decrease for the decade as a whole, although somewhat larger in 1909 than in 1904; the proportion which they formed of the total, however, decreased during each intercensal period.

Wage earners in logging camps and merchant sawmills: 1909.—In view of the fact that logging camps and sawmills differ so widely in character of work and

in the conditions under which the work is done, statistics relative to the sex and age of the wage earners employed in each are presented in the following table:

Table 11		WAGE EARNERS EMPLOYED ON REPRESENTATIVE DAY IN LOGGING CAMPS AND MERCHANT SAWMILLS: 1909								WAGE EARNERS EMPLOYED ON REPRESENTATIVE DAY IN LOGGING CAMPS AND MERCHANT SAWMILLS: 1909									
STATE.	Total number.	In logging camps.				In mills.				STATE.	Total number.	In logging camps.				In mills.			
		16 years of age and over.		Under 16 years of age.		16 years of age and over.		Under 16 years of age.				16 years of age and over.		Under 16 years of age.		16 years of age and over.		Under 16 years of age.	
		Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.			Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
United States..	679,996	249,027	321	430	1	425,000	1,424	3,689	104	Montana.....	4,382	2,228	6	1	.....	2,138	1	8	.....
Alabama.....	25,589	8,451	.....	31	.....	16,700	101	290	16	Nebraska.....	8	2	.....	1	.....	5	.....	1	8
Arizona.....	904	302	.....	.....	.....	599	1	2	.....	125	65	.....	.....	.....	60	.....	.....	.....	.....
Arkansas.....	38,022	10,173	1	4	.....	27,529	13	299	3	Nevada.....	8,666	4,250	.....	2	.....	4,396	14	4	.....
California.....	17,105	6,844	56	1	.....	10,121	66	17	.....	1,416	641	.....	.....	.....	775	.....	.....	.....	.....
Colorado.....	2,244	1,092	5	.....	.....	1,124	23	.....	.....	New Mexico.....	1,560	606	.....	.....	.....	912	.....	42	.....
Connecticut.....	2,476	1,304	.....	.....	.....	1,172	.....	.....	.....	New York.....	12,207	4,308	36	.....	.....	7,301	53	9	.....
Delaware.....	1,032	461	.....	.....	.....	567	4	.....	.....	North Carolina.....	37,771	13,870	26	.....	.....	23,554	16	305	.....
Florida.....	20,065	6,959	1	16	.....	12,790	49	235	15	Ohio.....	8,007	1,912	9	1	.....	6,046	38	1	.....
Georgia.....	23,184	7,903	6	24	.....	15,101	24	121	5	Oklahoma.....	3,447	871	3	.....	.....	2,566	1	6	.....
Idaho.....	6,826	2,854	8	1	.....	3,942	14	7	.....	Oregon.....	15,964	4,500	21	1	.....	11,402	35	5	.....
Illinois.....	4,091	602	.....	6	.....	3,444	8	31	.....	Pennsylvania.....	20,895	8,916	14	4	.....	11,910	10	41	.....
Indiana.....	8,785	1,103	.....	1	.....	7,557	31	90	3	Rhode Island.....	132	47	.....	.....	84	1	.....	.....	
Iowa.....	826	89	.....	.....	.....	730	7	.....	.....	South Carolina.....	16,966	6,880	.....	23	.....	9,891	2	200	.....
Kansas.....	10	4	.....	.....	.....	6	.....	.....	.....	South Dakota.....	585	199	.....	.....	.....	385	.....	1	.....
Kentucky.....	14,782	3,530	.....	4	.....	11,177	25	45	1	Tennessee.....	25,138	9,776	1	12	.....	17,877	166	290	16
Louisiana.....	49,386	14,831	.....	58	.....	34,190	35	272	.....	Texas.....	25,592	8,124	1	60	.....	17,133	7	237	.....
Maine.....	20,312	9,907	7	1	.....	10,341	45	11	.....	Utah.....	418	157	4	.....	.....	252	4	1	.....
Maryland.....	5,020	2,051	1	4	.....	2,780	111	44	29	Vermont.....	5,426	1,969	12	16	.....	3,416	5	8	.....
Massachusetts.....	3,476	1,492	.....	7	.....	1,939	28	10	.....	Virginia.....	36,679	14,943	.....	32	.....	21,136	151	417	.....
Michigan.....	34,626	15,639	46	5	1	18,815	58	62	.....	Washington.....	48,786	16,532	56	5	.....	32,021	140	32	.....
Minnesota.....	22,315	12,721	4	.....	.....	9,571	2	17	.....	West Virginia.....	20,032	9,665	6	34	.....	10,242	6	70	.....
Mississippi.....	39,817	13,281	2	35	.....	26,387	6	106	.....	Wisconsin.....	32,102	15,760	18	1	.....	16,122	69	123	9
Missouri.....	11,968	3,193	.....	8	.....	8,518	57	185	7	Wyoming.....	801	520	.....	2	.....	278	1	2	.....

As would be expected from the nature of the work, a much larger proportion of the wage earners in the sawmills were women and children than was the case in the logging camps. In the latter they were principally employed in connection with cooking.

Wage earners employed in merchant establishments, by months.—Table 12 gives the number of wage earners employed in all merchant establishments in the industry on the 15th (or the nearest representative day) of each month during the year 1909 for the 44 states in which an average of more than 500 wage earners were employed during the year.

There was comparatively little variation in the number of wage earners employed from month to

month. The largest number reported for any month of 1909 was 739,160, for November, and the smallest number 649,239, for January, the latter number being equal to 87.8 per cent of the maximum. In 1904 the maximum number, 553,017, was shown for October, and the minimum, 483,363, for January, the latter number being equal to 87.4 per cent of the former. For a large majority of the states shown in the table the time of maximum employment was in the fall and winter months.

The months of maximum and minimum employment for 1909, and the number of wage earners reported for these months, are given for all the states in Table 24.

Table 12

WAGE EARNERS EMPLOYED IN MERCHANT ESTABLISHMENTS: 1909<sup>1</sup>

STATE.	Average number during the year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
United States.....	695,019	649,230	681,690	685,133	681,354	686,657	687,597	680,509	692,669	714,963	732,796	739,160	728,481
Alabama.....	22,409	21,367	21,571	21,480	21,505	21,127	<i>20,803</i>	21,667	23,296	23,708	23,793	24,203	24,390
Arizona.....	839	568	545	547	592	846	1,018	1,043	986	997	1,016	993	935
Arkansas.....	32,932	30,293	30,451	31,544	31,430	<i>30,262</i>	31,035	32,875	34,811	36,083	36,172	35,385	34,842
California.....	22,935	<i>14,401</i>	14,441	16,825	21,853	26,755	28,533	28,986	28,961	27,932	25,835	22,807	17,894
Colorado.....	2,190	1,870	1,928	1,894	<i>1,793</i>	2,117	2,302	2,561	2,577	2,577	2,272	2,236	2,170
Connecticut.....	3,495	3,666	3,676	3,736	3,569	3,397	3,085	<i>2,850</i>	3,003	3,288	3,684	3,947	4,039
Delaware.....	1,174	1,180	1,338	1,325	1,242	1,093	994	<i>968</i>	1,032	1,058	1,222	1,310	1,324
Florida.....	19,227	18,877	18,930	18,846	19,021	19,264	18,579	<i>18,222</i>	18,612	19,244	20,052	20,427	20,651
Georgia.....	22,257	22,471	22,750	22,398	21,049	20,644	<i>20,623</i>	20,935	22,108	22,322	22,950	23,926	24,410
Idaho.....	5,212	<i>3,477</i>	3,569	4,634	5,389	5,781	5,873	5,718	5,584	5,575	6,034	5,550	5,373
Illinois.....	16,567	<i>16,002</i>	15,870	16,314	16,545	16,478	16,437	16,129	16,416	17,247	17,551	17,596	17,225
Indiana.....	10,317	<i>9,302</i>	9,863	10,537	10,814	10,627	10,354	9,643	9,847	10,553	10,835	10,781	10,515
Iowa.....	4,658	<i>3,808</i>	3,906	4,128	4,583	4,816	5,064	5,117	5,051	5,043	5,101	4,847	4,435
Kansas.....	982	<i>907</i>	891	948	949	973	1,013	1,025	1,032	1,017	1,013	1,006	1,015
Kentucky.....	13,042	<i>10,839</i>	11,244	12,250	13,056	12,817	12,217	12,141	12,701	14,307	15,287	15,174	14,461
Louisiana.....	46,072	44,686	<i>43,932</i>	45,672	45,800	45,016	46,056	47,040	46,024	45,343	45,826	47,244	49,316
Maine.....	15,086	17,382	16,431	13,946	13,946	15,671	14,013	12,338	<i>12,146</i>	13,369	15,713	16,791	15,070
Maryland.....	7,003	6,640	6,993	7,612	7,527	7,170	6,897	6,473	<i>6,162</i>	6,428	7,171	7,550	7,451
Massachusetts.....	8,976	9,113	9,129	9,430	9,086	8,703	8,661	8,186	<i>8,101</i>	8,664	9,228	9,556	9,821
Michigan.....	35,627	36,146	36,300	35,909	<i>33,004</i>	34,975	36,057	35,000	35,132	35,595	35,305	36,625	37,468
Minnesota.....	20,704	20,732	20,383	20,641	<i>19,177</i>	19,649	20,136	19,644	19,807	20,244	23,116	22,781	22,135
Mississippi.....	33,397	31,266	32,363	31,362	<i>30,493</i>	30,725	32,527	34,768	36,147	36,246	36,622	36,622	35,893
Missouri.....	13,522	<i>12,671</i>	12,749	13,116	13,052	13,221	12,890	13,097	13,492	14,182	14,619	14,825	14,339
Montana.....	3,106	2,904	2,839	2,723	<i>2,673</i>	2,889	2,885	2,791	3,188	3,390	3,755	3,773	3,348
Nebraska.....	543	494	<i>480</i>	483	517	528	547	569	600	582	572	586	554
New Hampshire.....	8,464	10,428	10,651	10,570	7,972	7,694	7,113	6,213	<i>6,164</i>	7,161	8,280	8,974	10,346
New Jersey.....	4,857	<i>4,658</i>	4,676	4,773	4,830	4,802	4,782	4,788	4,759	4,881	5,021	5,105	5,212
New Mexico.....	1,475	1,311	<i>1,303</i>	1,348	1,388	1,435	1,355	1,488	1,620	1,770	1,590	1,606	1,486
New York.....	27,471	26,457	<i>25,959</i>	26,214	26,866	27,766	27,670	27,172	27,464	28,448	28,802	28,461	28,440
North Carolina.....	34,001	32,841	32,980	33,664	32,984	32,138	<i>31,062</i>	32,295	32,921	34,980	36,181	37,399	37,667
Ohio.....	13,456	<i>12,188</i>	12,383	13,256	13,699	14,018	13,697	13,299	13,175	13,640	14,199	14,022	13,901
Oklahoma.....	3,175	<i>2,837</i>	2,959	3,226	3,150	3,156	3,215	3,033	3,178	3,218	3,343	3,390	3,401
Oregon.....	15,060	<i>11,646</i>	12,842	14,353	15,667	16,191	16,462	15,746	15,857	16,244	15,999	15,382	14,532
Pennsylvania.....	26,873	<i>24,194</i>	24,355	25,440	27,244	27,734	27,435	26,311	26,662	27,677	28,141	28,553	28,680
Rhode Island.....	748	<i>673</i>	694	820	834	807	703	721	706	721	777	760	756
South Carolina.....	14,604	15,556	15,536	15,079	14,279	13,939	13,810	<i>13,704</i>	13,896	13,982	14,379	15,111	15,967
Tennessee.....	22,389	<i>20,620</i>	20,963	21,771	21,485	20,969	20,651	21,080	22,189	23,965	24,980	25,462	24,537
Texas.....	23,518	22,740	<i>21,601</i>	23,434	23,566	<i>22,075</i>	23,803	24,007	23,251	23,568	24,420	24,767	24,914
Vermont.....	4,790	5,113	5,234	5,252	5,047	5,039	4,088	3,935	<i>3,865</i>	4,200	4,535	5,020	5,469
Virginia.....	33,287	<i>29,919</i>	31,039	33,853	34,219	33,170	32,165	31,826	32,104	34,562	35,651	35,949	34,936
Washington.....	43,749	<i>33,411</i>	38,200	43,048	46,236	46,770	45,095	43,662	45,145	46,741	47,133	46,573	42,368
West Virginia.....	18,643	<i>16,888</i>	16,983	18,288	19,388	19,556	19,564	19,306	19,073	19,234	19,374	18,662	15,033
Wisconsin.....	34,093	30,766	<i>30,284</i>	30,588	<i>31,194</i>	31,955	33,902	32,013	31,859	32,604	33,243	34,920	35,815
Wyoming.....	648	441	<i>439</i>	565	587	622	715	740	790	815	722	705	628

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

Since the work of sawmills is to a great extent indoor work, while that of logging camps is outdoor work, the seasonal distribution of employment in the two differ considerably. This is shown in the following table, which gives the number of wage earners in merchant sawmills and in logging camps on the 15th or nearest representative day of each month of 1909.

As shown by the table the maximum employment of wage earners in the logging camps of the country took place during the winter, and in the lumber mills during the summer and fall. Conditions with respect to distribution of employment during the year differ widely, however, in different sections of the country.

In the Northern states most of the logging is done during the winter months while the lumber mills run throughout the year, being usually somewhat more active during the summer than during the winter. In the Southern states, on the other hand, both logging and mill work continue with little change or interruption throughout the year. Thus, there were more than four times as many wage earners employed in the logging camps of New England in December of 1909 as were employed in July of that year. In the logging operations of the five states bordering on the Gulf of Mexico, on the other hand, there were only 7.8 per cent more wage earners employed in December than in July.

MANUFACTURES.

Table 13

WAGE EARNERS EMPLOYED IN LOGGING CAMPS AND MERCHANT SAWMILLS: 1909

STATE.	January.			February.			March.			April.			May.			June.		
	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.
United States .....	515,152	207,152	308,000	525,977	205,822	320,155	544,418	202,229	342,189	536,632	174,960	361,672	539,132	172,720	366,412	536,743	172,252	364,491
Alabama.....	10,005	6,820	13,175	20,221	6,808	13,413	20,055	6,797	13,288	20,010	6,753	13,257	19,586	6,661	12,925	19,364	6,607	12,757
Arizona.....	497	164	333	478	143	335	476	116	300	522	142	380	773	294	479	938	348	590
Arkansas.....	28,790	8,179	20,611	28,963	7,898	21,065	29,945	8,160	21,785	29,856	8,028	21,828	28,705	7,634	21,071	29,485	7,974	21,511
California.....	7,808	2,251	5,617	7,801	2,367	5,434	10,008	4,032	5,976	14,931	6,839	8,092	19,550	9,230	10,320	21,001	9,852	11,149
Colorado.....	1,346	704	642	1,377	720	657	1,326	666	660	1,185	590	595	1,487	739	748	1,650	826	830
Connecticut.....	2,068	1,163	905	2,145	1,194	951	2,157	1,185	972	1,911	992	919	1,045	843	802	1,337	665	672
Delaware.....	845	384	461	892	300	592	894	397	497	760	322	438	636	270	366	635	217	318
Florida.....	17,689	6,247	11,342	17,618	6,182	11,436	17,502	6,163	11,339	17,620	6,205	11,415	17,852	6,354	11,498	17,204	5,995	11,209
Georgia.....	18,473	6,663	11,810	18,754	6,711	12,043	18,306	6,530	11,776	16,813	5,998	10,815	16,395	5,982	10,413	16,401	5,944	10,457
Idaho.....	3,333	1,890	1,443	3,430	1,796	1,634	4,486	2,123	2,363	5,230	2,032	3,198	5,624	1,950	3,665	5,716	2,028	3,688
Illinois.....	2,642	380	2,262	3,049	354	2,695	3,276	368	2,908	3,205	350	2,855	3,031	361	2,670	2,759	332	2,427
Indiana.....	6,434	914	5,720	6,917	926	5,991	7,490	937	6,553	7,620	921	6,699	7,348	845	6,503	6,910	767	6,163
Iowa.....	2,652	97	355	463	107	356	553	95	458	964	79	885	1,059	69	990	1,157	17	1,140
Kansas.....	8	4	4	10	4	6	10	4	6	10	4	6	12	4	8	4	8	4
Kentucky.....	8,513	1,958	6,555	8,903	2,021	6,882	9,880	2,295	7,585	10,617	2,344	8,273	10,350	2,211	8,139	9,744	2,037	7,707
Louisiana.....	42,682	12,756	29,926	41,920	12,551	29,369	43,688	12,824	30,864	43,719	12,046	31,073	42,896	12,142	30,754	43,996	12,637	31,359
Maine.....	15,527	10,608	4,919	15,430	9,880	5,550	14,493	7,389	7,104	11,990	3,149	8,841	13,793	2,997	10,766	12,089	1,765	10,324
Maryland.....	3,608	1,655	2,053	3,853	1,655	2,198	4,341	1,859	2,482	4,188	1,755	2,433	3,856	1,623	2,233	3,607	1,623	1,975
Massachusetts.....	2,941	1,367	1,574	3,007	1,406	1,601	3,010	1,287	1,723	2,616	958	1,658	2,299	765	1,534	1,990	624	1,366
Michigan.....	28,834	18,601	12,233	28,908	16,065	12,843	28,183	13,898	14,285	24,954	7,703	17,251	26,686	7,513	19,173	27,383	8,306	19,077
Minnesota.....	17,244	11,310	5,934	16,549	10,261	6,288	16,789	9,965	6,821	15,167	4,488	10,679	15,635	3,213	12,422	15,929	3,124	12,805
Mississippi.....	29,993	10,229	19,764	31,111	10,427	20,684	31,120	10,359	20,767	30,091	9,932	20,159	29,205	9,807	19,398	29,423	9,810	19,613
Missouri.....	9,124	2,684	6,440	9,208	2,628	6,580	9,458	2,759	6,699	9,275	2,436	6,839	9,260	2,308	6,952	8,830	2,103	6,736
Montana.....	2,838	2,004	834	2,777	1,834	943	2,663	1,463	1,200	2,589	732	1,857	2,888	816	2,072	2,795	870	1,925
Nebraska.....										8	3	5	8	3	5	8	3	5
Nevada.....	39	15	24	25		25	25		25	70	45	25	100	60	40	110	60	50
New Hampshire.....	8,136	4,825	3,311	8,353	4,886	3,467	8,228	4,451	3,777	5,648	1,827	3,821	5,437	1,613	3,324	4,835	1,426	3,309
New Jersey.....	1,257	602	655	1,264	612	652	1,271	589	682	1,244	551	693	1,199	523	676	1,094	468	626
New Mexico.....	1,222	497	725	1,213	461	752	1,247	495	752	1,294	498	796	1,336	481	855	1,247	407	840
New York.....	9,350	5,361	3,989	9,091	4,900	4,191	8,709	3,380	5,329	8,784	2,400	6,384	9,433	2,521	6,912	8,723	2,293	6,430
North Carolina.....	29,496	11,183	18,313	29,704	11,133	18,571	30,360	11,299	19,067	29,512	10,923	18,589	28,742	10,710	18,032	28,499	10,474	18,025
Ohio.....	5,694	1,335	4,359	5,827	1,341	4,486	6,350	1,464	4,886	6,550	1,442	5,108	6,522	1,433	5,039	6,241	1,377	4,864
Oklahoma.....	2,409	679	1,730	2,526	680	1,846	2,746	736	2,010	2,666	732	1,934	2,648	678	1,970	2,692	702	1,990
Oregon.....	10,420	3,049	7,380	11,669	3,362	8,307	13,036	3,926	9,110	14,227	4,396	9,831	14,533	4,580	9,953	14,606	4,515	10,091
Pennsylvania.....	18,970	6,559	7,411	14,106	6,569	7,537	14,835	6,415	8,420	16,459	6,852	9,607	16,615	7,024	9,591	16,169	7,126	9,043
Rhode Island.....	91	37	54	87	37	50	82	31	51	99	40	59	80	36	44	52	22	30
South Carolina.....	14,574	5,664	9,010	14,574	5,646	8,928	14,086	5,468	8,018	13,278	5,220	8,058	12,874	5,022	7,852	12,803	4,994	7,809
South Dakota.....	268	143	125	401	190	211	416	190	226	290	120	161	290	102	188	379	133	246
Tennessee.....	17,596	4,510	13,086	17,920	4,482	13,438	18,636	4,506	14,130	18,343	4,524	13,819	17,812	4,323	13,489	17,524	4,410	13,114
Texas.....	20,945	6,762	14,183	19,848	6,088	13,760	21,473	6,799	14,674	21,520	6,813	14,707	20,040	6,322	13,718	21,726	7,005	14,721
Utah.....	41	24	17	48	21	27	51	14	37	44	17	27	44	22	22	112	51	61
Vermont.....	4,053	1,809	2,244	4,198	1,810	2,388	4,145	1,289	2,856	3,957	465	3,492	4,048	428	3,620	3,549	446	3,103
Virginia.....	26,843	10,918	15,925	28,037	11,240	16,797	30,630	12,463	18,167	30,904	12,411	18,493	29,599	12,085	17,514	28,455	11,831	17,124
Washington.....	31,686	11,243	20,443	36,435	13,030	23,399	41,694	15,174	26,520	44,177	15,609	28,568	44,604	15,340	29,264	43,447	14,765	28,682
West Virginia.....	15,406	7,663	7,743	16,083	8,161	7,922	17,332	8,633	8,699	18,395	9,108	9,287	18,568	9,359	9,209	18,533	9,498	9,035
Wisconsin.....	29,364	17,125	12,239	30,347	16,515	13,832	28,415	12,810	15,605	22,734	5,133	17,601	23,408	4,939	18,469	24,960	5,716	19,244
Wyoming.....	439	317	122	437	324	113	563	456	107	586	424	162	621	426	195	713	456	275

THE LUMBER INDUSTRY.

Table 13—Continued.

WAGE EARNERS EMPLOYED IN LOGGING CAMPS AND MERCHANT SAWMILLS: 1909—continued.

STATE.	July.			August.			September.			October.			November.			December.		
	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.	Total.	In logging camps.	In mills.
United States .....	528,577	170,587	357,990	540,052	178,001	362,051	559,904	190,561	369,343	578,380	206,380	372,000	585,304	219,058	366,246	575,837	222,564	353,273
Alabama .....	20,258	7,096	13,162	21,832	7,559	14,273	22,203	7,729	14,474	22,301	7,663	14,638	22,719	7,909	14,810	22,845	7,759	15,086
Arizona .....	954	356	598	897	281	616	905	304	601	928	311	617	911	307	604	841	271	570
Arkansas .....	31,435	8,629	22,806	33,276	9,216	24,060	34,577	9,676	24,901	34,673	9,901	24,772	33,859	9,584	24,275	33,269	8,891	24,378
California .....	21,209	9,855	11,354	21,078	9,813	11,265	20,078	9,099	10,979	18,175	7,845	10,330	15,196	5,910	9,286	10,475	3,089	7,376
Colorado .....	1,888	965	923	1,897	935	962	1,889	923	966	1,597	789	808	1,579	792	783	1,535	790	745
Connecticut .....	1,042	520	522	1,138	507	541	1,406	756	650	1,818	965	853	2,025	1,075	950	2,147	1,150	997
Delaware .....	532	227	305	527	229	298	631	292	339	745	338	407	847	375	472	7,904	400	504
Florida .....	16,977	6,006	10,971	17,361	6,166	11,195	17,778	6,280	11,498	18,566	6,560	12,006	18,919	6,623	12,296	19,119	6,629	12,490
Georgia .....	16,727	6,085	10,642	17,873	6,486	11,387	18,525	6,675	11,850	18,962	6,805	12,157	19,835	7,037	12,798	20,257	7,084	13,173
Idaho .....	5,553	1,956	3,597	5,400	1,891	3,509	5,361	2,076	3,285	5,820	2,369	3,451	5,377	2,508	2,809	5,226	2,053	2,873
Illinois .....	2,292	297	1,995	2,529	339	2,190	3,125	405	2,720	3,356	495	2,861	3,368	408	2,960	3,294	465	2,829
Indiana .....	6,240	633	5,566	6,407	723	5,684	7,083	829	6,254	7,459	876	6,583	7,463	887	6,576	7,326	968	6,358
Iowa .....	1,139	18	1,121	1,029	21	1,008	1,060	24	1,036	1,116	36	1,080	941	56	885	599	67	532
Kansas .....	8	4	4	8	4	4	8	4	4	8	4	4	8	4	4	10	4	6
Kentucky .....	9,585	1,922	7,663	10,182	2,287	7,895	11,750	2,838	8,912	12,653	3,102	9,551	12,549	3,080	9,469	11,826	2,790	9,027
Louisiana .....	44,947	12,975	31,972	44,889	12,861	32,028	43,327	12,410	30,917	43,682	12,867	30,815	45,088	13,629	31,459	47,118	14,249	32,869
Maine .....	10,504	1,718	8,786	10,296	1,914	8,382	11,544	3,342	8,202	13,839	5,725	8,114	14,887	8,071	6,816	14,049	9,616	4,433
Maryland .....	3,278	1,419	1,859	2,909	1,186	1,723	3,168	1,387	1,781	3,927	1,672	2,255	4,226	1,780	2,446	4,143	1,772	2,371
Massachusetts .....	1,498	392	1,106	1,415	395	1,020	1,768	557	1,211	2,299	803	1,406	2,523	991	1,534	2,818	1,214	1,604
Michigan .....	26,366	7,663	18,703	26,508	8,308	18,200	26,677	9,197	17,480	26,495	10,485	16,010	27,962	13,172	14,790	28,939	15,698	13,241
Minnesota .....	15,274	2,017	12,357	15,404	3,291	12,173	16,002	4,392	11,610	18,948	8,285	10,663	18,741	10,296	8,445	18,060	12,317	5,743
Mississippi .....	31,257	10,865	20,392	33,470	11,878	21,592	34,845	12,254	22,591	34,885	12,309	22,576	35,319	12,317	23,002	34,544	11,270	23,274
Missouri .....	8,880	2,169	6,711	9,410	2,278	7,132	10,015	2,616	7,399	10,436	2,875	7,561	10,757	2,925	7,829	10,316	2,738	7,578
Montana .....	2,709	807	1,902	3,108	1,149	1,959	3,320	1,363	1,957	3,673	1,685	1,988	3,696	1,961	1,735	3,276	2,011	1,265
Nebraska .....	8	3	5	8	3	5	8	3	5	8	3	5	8	3	5	8	3	5
Nevada .....	110	60	50	140	60	80	140	60	80	135	60	75	110	60	50	69	10	50
New Hampshire .....	3,937	1,160	2,777	3,852	1,304	2,548	4,720	1,811	2,909	5,808	2,671	3,137	6,480	3,284	3,196	7,795	4,270	3,525
New Jersey .....	1,014	427	587	1,035	441	594	1,124	496	628	1,212	549	663	1,265	587	678	1,274	597	677
New Mexico .....	1,352	447	905	1,490	549	941	1,643	593	1,050	1,471	576	895	1,481	509	912	1,377	556	821
New York .....	7,785	2,259	5,526	7,776	2,515	5,261	8,584	3,134	5,450	9,129	3,800	5,329	9,132	4,258	4,874	9,327	4,713	4,014
North Carolina .....	28,812	10,768	18,044	29,474	11,203	18,271	31,398	11,888	19,510	32,568	12,239	20,329	33,788	12,670	21,118	34,049	12,612	21,437
Ohio .....	5,815	1,244	4,571	5,768	1,319	4,449	6,149	1,405	4,744	6,692	1,644	5,048	6,648	1,685	4,963	6,036	1,677	4,959
Oklahoma .....	2,522	648	1,874	2,665	657	2,008	2,694	672	2,022	2,828	748	2,075	2,820	725	2,095	2,840	726	2,114
Oregon .....	13,834	4,195	9,639	13,029	4,290	8,739	14,376	4,346	10,030	14,175	4,269	9,906	13,717	4,084	9,633	12,987	3,625	9,362
Pennsylvania .....	15,079	6,828	8,251	15,167	6,828	8,344	15,893	7,124	8,769	16,490	7,439	9,051	16,796	7,685	9,114	16,902	7,920	8,982
Rhode Island .....	47	21	26	39	13	26	60	19	41	107	35	72	90	29	70	92	31	61
South Carolina .....	12,679	5,073	7,606	12,922	5,169	7,753	12,971	5,144	7,827	13,362	5,480	7,882	14,047	5,753	8,294	14,858	6,128	8,730
South Dakota .....	414	152	262	294	103	191	407	149	258	462	162	240	465	187	278	351	143	208
Tennessee .....	17,820	4,674	13,146	19,001	5,339	13,662	20,616	5,748	14,868	21,869	6,107	15,761	22,312	6,213	16,099	21,847	5,482	15,865
Texas .....	21,986	6,957	15,029	21,234	6,755	14,478	21,515	7,076	14,439	22,382	7,229	15,156	22,690	7,376	15,314	22,869	7,434	15,436
Utah .....	194	85	109	257	117	140	255	111	144	205	90	115	194	75	119	149	61	88
Vermont .....	2,848	429	2,419	2,819	484	2,335	3,123	696	2,427	3,340	1,010	2,330	3,827	1,598	2,231	4,244	1,978	2,266
Virginia .....	23,195	11,632	11,563	28,549	11,798	16,751	30,826	12,888	17,940	31,834	13,008	18,826	32,137	13,130	19,007	31,083	12,696	18,487
Washington .....	40,892	13,722	28,170	43,017	13,787	29,250	44,562	15,081	29,481	44,917	15,390	29,527	44,475	15,360	29,115	40,301	13,486	26,815
West Virginia .....	13,278	9,373	3,905	18,006	9,320	8,686	18,151	9,190	8,961	18,265	9,172	9,093	17,581	8,697	8,884	16,950	8,359	8,591
Wisconsin .....	23,648	5,423	18,225	22,919	5,096	17,223	22,832	7,020	15,808	24,204	9,510	14,694	25,742	12,780	12,962	26,775	15,772	11,003
Wyoming .....	747	463	284	788	469	319	812	476	337	720	460	260	702	465	237	626	465	161

Prevailing hours of labor in merchant establishments.—In Table 14 the wage earners in merchant establishments have been classified according to the number of hours of labor per week prevailing in the establishments in which they were employed. In making this classification the average number of wage earners employed during the year in each establishment was classified as a total according to the hours prevailing in that establishment, even though a few employees worked a greater or smaller number of hours.

**Table 14**

AVERAGE NUMBER OF WAGE EARNERS IN MERCHANT ESTABLISHMENTS: 1909

STATE.	Total.	In establishments with prevailing hours—						
		48 and under.	Between 48 and 54.	54.	Between 54 and 60.	60.	Between 60 and 72.	72 and over.
United States....	695,018	23,315	17,418	41,713	49,986	469,282	90,983	2,312
Alabama.....	22,409	1,262	681	446	385	10,351	9,152	132
Arizona.....	839	11		7		821		
Arkansas.....	32,932	484	1,130	382	515	29,329	925	167
California.....	22,935	3,859	68	2,709	228	14,732	1,324	15
Colorado.....	2,190	218	306	161	27	1,437	41	
Connecticut.....	3,495	365	317	1,248	113	1,452		
Delaware.....	1,174	65	299	63	368	379		
Florida.....	19,227	238	999	440	730	9,307	7,418	95
Georgia.....	22,257	865	732	144	875	14,722	4,437	482
Idaho.....	5,212	31	26	111		4,965	69	10
Illinois.....	16,567	870	461	4,882	5,231	5,087	3	33
Indiana.....	10,317	260	447	1,051	1,156	7,401	2	
Iowa.....	4,658	12	11	525	582	3,312	216	
Kansas.....	982	42	3	134	321	482		
Kentucky.....	13,042	643	863	889	670	9,761	161	55
Louisiana.....	46,072	389	259	852	300	25,985	18,184	112
Maine.....	15,086	30	129	1,061	1,320	3,784	3,758	4
Maryland.....	7,003	349	404	847	1,341	4,044	13	5
Massachusetts.....	8,976	1,058	987	1,763	3,600	1,486	41	11
Michigan.....	35,627	341	293	721	1,762	32,413	124	3
Minnesota.....	20,704	133		226	442	19,574	324	5
Mississippi.....	33,307	487	311	496	1,241	16,323	14,477	62
Missouri.....	13,522	1,155	720	1,077	223	9,677	67	3
Montana.....	3,106	33		1,551	9	1,667	141	
Nebraska.....	543	3		143	261	131		
New Hampshire.....	8,464	45	44	226	3,058	4,114	271	6
New Jersey.....	4,857	728	908	1,371	1,095	750	5	
New Mexico.....	1,475	148	16	19		1,291	1	
New York.....	27,471	1,878	1,336	3,822	5,948	14,105	381	
North Carolina.....	34,001	733	729	257	2,645	22,838	6,540	289
Ohio.....	13,456	704	358	2,802	2,238	7,348	2	4
Oklahoma.....	3,175	800	180	155	156	1,631	253	
Oregon.....	15,066	360	105	243	186	13,766	393	13
Pennsylvania.....	26,873	790	995	4,105	3,984	12,875	3,822	202
Rhode Island.....	748	77	13	191	267	200		
South Carolina.....	14,604	567	623	72	742	9,677	2,586	337
Tennessee.....	22,389	729	704	826	933	17,873	1,177	47
Texas.....	23,518	632	355	784	315	16,961	4,471	
Vermont.....	4,790	35	5	285	1,024	3,384	57	
Virginia.....	33,287	888	1,222	969	3,306	20,349	6,295	168
Washington.....	43,749	113	32	988	313	42,102	137	64
West Virginia.....	18,643	168	205	364	757	13,998	3,148	3
Wisconsin.....	34,093	230	74	808	1,202	31,217	547	15
Wyoming.....	648	8	10	6	4	611	9	

More than four-fifths (80.9 per cent) of the wage earners employed in the industry were in establishments where the prevailing hours were 60 or more per week. Of the seven groups shown in the table, by far the largest was that made up of the wage earners in establishments where the prevailing hours were 60 per week, such wage earners constituting 67.5 per cent of the total number. Sixty hours per week was the most common working time in 38 of the 44 states for which figures are given, while in Illinois, Massachusetts, Nebraska, and Rhode Island the most common

working time was 54 but less than 60 hours per week, and in Montana and New Jersey it was 54 hours per week.

**CHARACTER OF OWNERSHIP OF MERCHANT ESTABLISHMENTS.**

Table 15 presents statistics with respect to the character of ownership of the merchant establishments in the lumber and timber industry.

**Table 15**

MERCHANT ESTABLISHMENTS.

CHARACTER OF OWNERSHIP.	MERCHANT ESTABLISHMENTS.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	40,671	25,153	\$1,156,128,747	\$884,267,009
Individual.....	22,466	12,402	199,498,587	163,470,134
Firm.....	11,218	7,829	162,652,128	183,082,403
Corporation.....	6,969	4,900	793,810,129	536,795,071
Other.....	18	22	167,903	919,401
Per cent of total.....	100.0	100.0	100.0	100.0
Individual.....	55.2	49.3	17.3	18.5
Firm.....	27.6	31.1	14.1	20.7
Corporation.....	17.1	19.5	68.7	60.7
Other.....	( <sup>2</sup> )	0.1	( <sup>2</sup> )	0.1

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

<sup>2</sup> Less than one-tenth of 1 per cent.

Of the total number of merchant establishments reported for 1909, 17.1 per cent were under corporate ownership, as compared with 19.5 per cent in 1904, while the value of products of such establishments represented 68.7 per cent of the total in 1909 and 60.7 per cent in 1904.

Between 1904 and 1909 there was a decided decrease both in the relative number of establishments under firm ownership and in the proportion which they reported of the total value of products, while there was an increase in the relative number of establishments operated by individuals, but a slight decrease in their relative importance as measured by value of products. Of the 18 establishments operated under forms of ownership other than individual, firm, or corporate in 1909, 15 were controlled by cooperative associations.

Table 16 gives statistics for merchant establishments classified according to form of ownership for each state for which more than 500 wage earners were reported at the census of 1909. The 18 establishments under "other" forms of ownership have in this table been included with those under corporate ownership.

In 1909, 144,508 wage earners, or 20.8 per cent of the total, were employed in establishments under individual ownership; 105,536, or 15.2 per cent, in those under firm ownership; and 444,975, or 64 per cent, in those owned by corporations (including the few comparatively unimportant establishments operated by cooperative associations, etc.).

There is considerable variation among the states as to the relative importance of the establishments operated under the different forms of ownership. Thus in Washington, the leading state in the industry, establishments operated by corporations constituted

52 per cent of the total number of all establishments in the industry, gave employment to 85.2 per cent of all wage earners, and reported 86.1 per cent of the total value of products, while in Maryland such estab-

lishments constituted only 11.4 per cent of the total number of establishments, gave employment to 38.8 per cent of the wage earners, and reported 47.5 per cent of the total value of products.

Table 16

STATE.	MERCHANT ESTABLISHMENTS: 1909											
	Number of establishments owned by—			Wage earners in establishments owned by—			Value of products of establishments owned by—			Value added by manufacture in establishments owned by—		
	Indi-vid-u-als.	Firms.	Cor-pora-tions.	Indi-vid-u-als.	Firms.	Cor-pora-tions.	Indi-vid-u-als.	Firms.	Cor-pora-tions.	Indi-vid-u-als.	Firms.	Cor-pora-tions.
United States.....	22,466	11,218	6,987	144,508	105,536	444,975	\$199,498,587	\$162,652,128	\$793,978,032	\$121,546,805	\$95,876,871	\$430,587,492
Alabama.....	1,064	583	172	6,256	4,133	12,020	6,517,093	4,456,608	15,083,061	4,466,673	3,126,040	9,319,710
Arizona.....	10	3	10	5	5	819	57,144	23,144	1,338,826	28,039	10,158	1,042,977
Arkansas.....	854	536	307	5,798	4,737	22,397	5,502,457	5,842,431	29,295,439	4,002,410	4,045,088	18,293,153
California.....	199	149	296	1,412	1,118	20,405	3,453,706	3,029,374	38,517,196	1,842,575	1,748,532	23,040,269
Colorado.....	133	59	71	535	264	1,391	1,087,907	434,529	2,682,368	756,654	334,208	1,698,043
Connecticut.....	257	84	52	1,635	611	1,240	2,779,579	1,313,973	3,751,969	1,665,721	646,854	1,614,488
Delaware.....	76	30	10	527	248	399	486,245	278,287	547,755	289,712	170,094	244,624
Florida.....	252	139	124	2,849	2,566	13,812	3,406,787	2,860,584	14,595,645	2,291,673	2,059,137	10,272,461
Georgia.....	1,144	509	173	6,730	5,008	10,519	6,370,663	5,422,801	12,838,629	4,610,432	3,813,779	7,697,279
Idaho.....	113	71	72	705	300	4,201	1,314,217	524,015	8,851,078	915,168	377,888	6,051,476
Illinois.....	437	160	208	2,369	1,059	13,139	5,419,920	2,210,937	37,320,947	2,749,240	1,133,303	13,805,005
Indiana.....	704	361	212	3,130	2,590	4,597	5,542,239	5,879,410	11,713,675	2,951,346	2,078,309	5,123,341
Iowa.....	118	56	55	259	413	3,986	562,940	935,924	11,160,395	295,559	421,496	4,810,675
Kansas.....	37	24	12	151	231	600	357,347	566,481	2,320,437	185,270	282,728	705,051
Kentucky.....	980	444	168	4,518	2,677	5,847	4,880,963	3,899,107	12,600,494	3,030,786	2,366,750	5,517,740
Louisiana.....	236	173	293	3,268	2,830	39,974	3,536,060	3,783,345	55,518,507	2,337,126	2,522,579	34,822,011
Maine.....	619	299	147	5,243	2,860	6,983	7,068,199	4,938,034	14,118,407	4,484,019	2,993,634	7,716,812
Maryland.....	331	166	64	1,941	2,348	2,714	2,274,567	4,100,651	5,758,984	1,359,607	1,912,536	2,355,060
Massachusetts.....	444	151	113	3,106	1,749	4,121	6,908,798	4,203,016	11,914,023	3,457,232	1,957,000	5,126,675
Michigan.....	580	311	289	5,570	5,682	24,375	9,868,776	9,696,787	41,947,997	5,103,708	5,145,065	22,223,145
Minnesota.....	265	132	128	1,431	1,053	18,220	2,396,899	1,792,401	38,163,207	1,313,033	998,578	19,175,667
Mississippi.....	920	507	220	7,803	5,612	19,982	8,413,371	7,540,553	26,838,920	0,216,909	5,324,757	17,044,589
Missouri.....	633	286	179	3,268	1,896	8,358	4,094,704	2,247,280	16,918,882	2,649,595	1,503,404	8,489,214
Montana.....	85	35	35	449	324	2,333	793,138	626,625	4,914,015	589,597	497,950	3,381,346
Nebraska.....	24	9	15	96	31	416	221,323	75,737	1,724,306	132,918	44,687	617,620
New Hampshire.....	381	142	66	2,832	1,852	3,790	4,740,950	3,306,956	7,236,451	2,709,358	1,804,868	3,506,844
New Jersey.....	261	78	77	1,543	721	2,583	3,326,384	1,822,214	8,362,564	1,761,683	892,308	2,847,216
New Mexico.....	38	22	16	258	174	1,043	422,208	188,169	1,552,019	352,413	144,246	1,088,115
New York.....	1,446	469	348	7,141	5,522	14,808	16,730,064	13,731,626	42,068,123	8,258,813	5,952,774	16,613,135
North Carolina.....	1,429	800	315	9,773	6,361	17,867	8,122,842	5,761,870	19,649,935	5,344,554	3,794,223	11,852,279
Ohio.....	753	352	285	3,797	2,623	7,036	7,708,599	6,122,840	20,765,060	3,896,347	2,610,692	8,117,607
Oklahoma.....	198	103	41	1,094	710	1,371	1,170,314	931,409	2,336,840	911,246	657,687	1,382,618
Oregon.....	263	246	204	1,178	1,584	12,304	2,008,739	2,918,721	25,212,397	1,436,000	1,996,100	14,354,320
Pennsylvania.....	1,640	757	270	9,445	6,620	10,808	17,547,215	13,718,916	26,187,452	9,849,176	7,275,119	13,015,052
Rhode Island.....	37	11	9	333	120	295	739,600	311,722	855,760	371,718	141,103	330,447
South Carolina.....	563	198	90	4,171	2,296	8,137	3,226,614	2,018,993	7,895,279	2,363,315	1,382,491	5,413,612
Tennessee.....	1,101	665	211	6,676	5,906	9,807	6,690,074	6,567,393	17,199,340	4,141,237	4,104,112	8,570,017
Texas.....	350	267	182	3,035	3,238	17,245	3,539,010	4,604,336	24,058,094	2,532,748	3,343,677	15,202,712
Vermont.....	390	142	61	1,962	1,402	3,104	3,164,198	2,160,641	3,273,245	1,800,955	1,367,796	1,308,591
Virginia.....	1,634	793	190	12,015	7,178	14,094	10,687,384	7,084,056	18,133,870	7,589,482	4,687,628	9,685,801
Washington.....	322	284	657	3,273	3,190	37,286	6,290,252	6,068,031	76,796,537	4,078,616	3,965,766	44,231,572
West Virginia.....	549	294	173	3,249	3,074	12,320	4,137,601	4,353,467	20,267,413	2,846,554	3,169,076	14,126,764
Wisconsin.....	471	239	310	2,988	2,412	28,693	4,699,295	3,904,610	49,365,265	2,789,288	2,267,332	27,325,080
Wyoming.....	39	20	4	205	45	398	230,440	70,416	460,393	196,067	51,898	805,779

Note.—The figures for establishments under corporate ownership include those for the few comparatively unimportant establishments operated by cooperative associations or under other miscellaneous forms of ownership.

SIZE OF MERCHANT ESTABLISHMENTS.

Classification by value of products.—Table 17 presents statistics for 1909 and 1904 for merchant establishments grouped according to the value of their products.

In 1909, 6.2 per cent of the merchant establishments reported products valued at \$100,000 and over, as against 8.2 per cent in 1904. While such establishments represented a comparatively small proportion of the total number at both censuses they reported 61.2 per cent of the total value of products in 1909 and 57.9 per cent in 1904. The most important class shown in the table, as measured by value of products, is that comprising establishments with products valued at \$100,000 but less than \$1,000,000, which reported 52.2 per cent of the total value of products for

merchant establishments in 1909 and 53.9 per cent in 1904.

Table 17

VALUE OF PRODUCTS PER ESTABLISHMENT.	MERCHANT ESTABLISHMENTS.			
	Number of establishments.		Value of products.	
	1909	1904	1909	1904
Total.....	40,671	25,153	\$1,156,123,747	\$884,287,009
Less than \$5,000.....	19,587	8,289	42,692,640	21,711,413
\$5,000 and less than \$20,000.....	12,037	8,915	121,258,680	92,463,698
\$20,000 and less than \$100,000.....	6,529	5,386	284,982,152	258,168,070
\$100,000 and less than \$1,000,000.....	2,446	1,037	603,438,865	476,383,764
\$1,000,000 and over.....	72	26	103,756,410	35,550,164
Per cent of total.....	100.0	100.0	100.0	100.0
Less than \$5,000.....	48.2	33.0	3.7	2.5
\$5,000 and less than \$20,000.....	29.6	35.4	10.5	10.5
\$20,000 and less than \$100,000.....	16.1	23.4	24.6	29.2
\$100,000 and less than \$1,000,000.....	6.0	8.1	52.2	53.9
\$1,000,000 and over.....	0.2	0.1	9.0	4.0

1 Includes one establishment with products valued at more than \$1,000,000, to avoid disclosure of individual operations.

The average value of products per establishment decreased from \$35,156 in 1904 to \$28,426 in 1909, and the average value added by manufacture, as computed from the figures in Table 6, from \$20,830 to \$15,933. The average number of wage earners per establishment shows a decrease from 21 in 1904 to 17 in 1909. These decreases are partly due to the fact, already mentioned, that a more thorough canvass of

the small establishments was made in 1909 than at the previous census.

Classification by number of wage earners.—Table 18 gives a classification of the merchant establishments engaged in the industry according to the number of wage earners employed for each state in which an average of 500 or more wage earners were employed in 1909.

**Table 18**

STATE.	TOTAL.		MERCHANT ESTABLISHMENTS EMPLOYING IN 1909—																
	Es-tab-lish-ments.	Wage earners (aver-age num-ber).	No wage earners.	1 to 5 wage earners.		6 to 20 wage earners.		21 to 50 wage earners.		51 to 100 wage earners.		101 to 250 wage earners.		251 to 500 wage earners.		501 to 1,000 wage earners.		Over 1,000 wage earners.	
			Es-tab-lish-ments.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.	Es-tab-lish-ments.	Wage earners.
United States...	40,671	695,010	909	21,917	64,788	11,985	131,352	3,260	104,092	1,293	92,612	920	142,025	294	99,209	70	46,737	17	24,204
Alabama.....	1,819	22,409	39	1,079	2,721	546	5,886	84	2,652	33	2,332	26	4,196	11	3,795	1	827		
Arizona.....	23	839	3	14	33	1	13	1	30	2	117			2	646				
Arkansas.....	1,697	32,932	28	829	2,310	563	6,103	149	4,703	61	4,334	45	6,583	17	5,644	4	2,242	1	1,013
California.....	644	22,935	13	276	689	179	1,073	95	2,957	35	2,645	26	4,001	15	5,911	3	2,200	2	2,559
Colorado.....	293	2,190	15	149	349	85	837	8	222	3	220	2	231	1	331				
Connecticut.....	393	3,495	10	222	527	129	1,551	26	806	3	253	3	358						
Delaware.....	116	1,174		56	181	51	551	7	224	1	60	1	158						
Florida.....	515	19,227	3	152	448	203	2,397	68	2,107	35	2,452	40	5,072		3,758				
Georgia.....	1,826	22,257	20	1,062	2,646	551	5,917	108	3,379	47	3,614	31	4,628	11	3,758	3	2,033		
Idaho.....	256	5,212	4	161	394	56	637	19	665	8	497	3	306	3	953	2	1,700		
Illinois.....	814	16,567	20	459	917	181	1,966	77	2,457	41	2,969	24	3,438	10	3,476	2	1,284		
Indiana.....	1,277	10,317	29	814	1,814	307	3,324	99	3,055	25	1,697	3	427						
Iowa.....	229	4,658	8	156	217	28	328	14	520	11	760	7	1,016	5	1,825				
Kansas.....	73	982	7	38	87	18	197	5	159	3	184	2	355						
Kentucky.....	1,592	13,042	17	1,007	2,832	374	3,852	67	2,235	28	2,018	6	844	2	707	1	554		
Louisiana.....	702	46,072	1	159	545	253	3,140	120	4,280	52	3,834	74	12,059	33	11,616	6	3,841	4	6,748
Maine.....	1,065	15,086	24	579	1,428	310	3,527	87	2,733	42	2,971	20	3,261	2	607	1	509		
Maryland.....	561	7,003	14	300	773	182	2,045	33	1,017	20	1,464	12	1,704						
Massachusetts.....	708	8,976	18	364	883	207	2,381	83	2,639	26	1,735	10	1,338						
Michigan.....	1,180	65,627	41	533	1,278	283	3,161	154	5,101	84	6,167	60	9,404	20	6,937	5	3,579		
Minnesota.....	525	20,704	8	352	675	64	699	28	939	29	2,137	26	4,134	7	2,429	7	4,775	4	4,976
Mississippi.....	1,647	33,397	19	797	2,325	548	6,086	182	5,644	53	3,804	35	5,560	14	5,149	6	3,711	1	1,118
Missouri.....	1,098	13,522	35	666	1,604	250	2,819	83	2,614	35	2,465	14	1,977	7	2,043	2	1,574		
Montana.....	155	3,106	5	91	190	35	376	12	376	5	479	4	608	2	527	1	550		
Nebraska.....	48	543	7	22	52	13	171	3	106	3	214								
New Hampshire.....	589	8,464	4	311	748	101	2,104	55	1,670	17	1,187	8	1,238	2	667	1	760		
New Jersey.....	416	4,857	10	215	570	142	1,587	34	1,115	12	840	1	217	2	628				
New Mexico.....	76	1,475		44	128	24	246	6	237			1	181						
New York.....	2,263	27,471	105	1,361	2,696	506	5,613	177	5,583	68	4,813	37	5,330	7	2,062	2	1,683		
North Carolina.....	2,544	34,001	30	1,332	3,644	389	9,516	181	5,633	61	4,113	29	4,353	10	3,127	2	1,198	1	2,417
Ohio.....	1,390	13,456	28	831	2,018	376	4,058	114	3,569	30	2,108	11	1,703						
Oklahoma.....	342	3,175	3	212	589	103	1,100	14	441	8	542	1	250		253				
Oregon.....	713	15,066	26	377	863	178	1,914	68	2,380	31	2,277	21	3,094	11	3,744	1	794		
Pennsylvania.....	2,667	26,873	129	1,612	3,780	681	7,222	164	5,191	51	3,474	23	3,654	3	979	4	2,573		
Rhode Island.....	67	743		30	79	15	165	9	299	3	205								
South Carolina.....	851	14,604	6	461	1,355	274	2,944	58	1,839	22	1,621	23	3,274	6	1,943			1	1,628
Tennessee.....	1,977	22,389	40	1,088	2,937	679	6,872	103	3,252	28	1,989	31	4,440	7	2,275	1	624		
Texas.....	799	23,518	13	262	913	314	3,447	82	2,520	33	2,538	50	8,179	11	3,617	4	2,304		
Vermont.....	593	4,790	10	386	912	149	1,647	39	1,250	4	275	5	706						
Virginia.....	2,617	33,287	27	1,281	3,606	1,078	11,742	161	4,928	36	2,440	18	3,024	12	3,867	3	2,190	1	1,490
Washington.....	1,263	43,749	14	333	1,023	491	5,948	200	6,428	109	7,908	94	14,458	20	6,559	2	1,425		
West Virginia.....	1,016	18,643	34	604	1,455	231	2,464	70	2,533	30	2,226	32	5,225	6	1,994	3	2,746		
Wisconsin.....	1,020	34,093	20	537	1,184	210	2,353	104	3,278	59	4,209	57	9,446	27	9,107	4	2,261	2	2,255
Wyoming.....	63	648	2	53	94	5	50					3	504						

Of the 40,671 merchant establishments reported for 1909, 2.2 per cent employed no wage earners, 53.9 per cent employed from 1 to 5 wage earners, 29.5 per cent employed from 6 to 20, 8 per cent from 21 to 50, 3.2 per cent from 51 to 100, 3 per cent from 101 to 500, and two-tenths of 1 per cent over 500. The most numerous single group consists of the 21,917 establishments employing from 1 to 5 wage earners. There were 87 establishments that employed over 500 wage earners and of these 17 employed over 1,000.

Of the total number of wage earners, 7.9 per cent

were reported by establishments employing from 1 to 5 wage earners, 18.9 per cent by establishments employing from 6 to 20, 15 per cent by establishments employing from 21 to 50, 13.3 per cent by establishments employing from 51 to 100, 34.7 per cent by establishments employing from 101 to 500, and 10.2 per cent by establishments employing over 500. The most important single group was that comprising the wage earners in establishments employing from 101 to 250 wage earners, who represented 20.4 per cent of the total for merchant establishments.

**EXPENSES.**

As stated in the Introduction, the census figures representing expenses do not purport to show the total cost of manufacture, since they take no account of interest or depreciation; hence they can not properly be used for determining profits. Facts of interest can be brought out, however, concerning the relative importance of the different classes of expenses which were reported. Table 6 shows the total expenses of merchant establishments in 1909 to have been \$995,622,839, distributed as follows: Cost of materials, \$508,117,579, or 51 per cent; wages, \$318,739,207, or 32 per cent; salaries, \$47,427,696, or 4.8 per cent; and miscellaneous expenses, made up of advertising, ordinary repairs of buildings and machinery, and insurance, traveling expenses, and other sundry expenses, \$121,338,357, or 12.2 per cent. Table 19 shows corresponding percentages for the three classes of merchant establishments.

There is comparatively little difference between planing mills and wooden packing box factories with respect to the relative importance of the several classes of expenses. In the case of sawmills and logging camps, however, the cost of materials represents a smaller proportion, and "miscellaneous expenses" and wages represent larger proportions of the total

expenses than in the case of either of the other two classes of establishments.

**Table 19**

	PER CENT OF TOTAL EXPENSES REPORTED FOR MERCHANT ESTABLISHMENTS: 1909			
	Salaries.	Wages.	Cost of materials.	Miscellaneous expenses.
Total.....	4.8	32.0	51.0	12.2
Sawmills and logging camps.....	4.7	37.7	42.0	15.6
Independent planing mills.....	5.1	22.0	66.8	6.2
Wooden packing box factories.....	4.1	22.3	67.5	6.1

Considerable variation appears in the proportions of total expenses represented by the different classes of expenses in the several states, as shown by the figures in table 24.

**ENGINES, POWER, AND FUEL.**

**Engines and power.**—The amount of power used in the lumber and timber product industry was first reported at the census of 1869. Table 2, which gives statistics for the industry as a whole, including the custom mills, shows that the total horsepower used increased from 716,113 in 1869, to 2,933,362 in 1909. Table 20 shows for the merchant establishments the statistics of power as reported at the censuses of 1909, 1904, and 1899.

**Table 20**

POWER.	MERCHANT ESTABLISHMENTS.								
	Number of engines or motors.			Horsepower.			Per cent distribution of horsepower.		
	1909	1904	1899 <sup>1</sup>	1909	1904	1899	1909	1904	1899
<b>Primary power, total.....</b>	<b>56,665</b>	<b>33,400</b>		<b>2,840,082</b>	<b>1,886,624</b>	<b>1,658,594</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Owned.....	51,484	32,517		2,767,454	1,850,187	( <sup>1</sup> )	97.4	98.5	
Steam.....	45,877	28,762		2,587,487	1,720,185	1,480,098	91.1	91.2	89.2
Gas.....	2,030	798		38,628	16,897	<sup>2</sup> 16,820	1.4	0.9	1.0
Water wheels.....	3,541	2,947		139,392	119,354	150,644	4.9	6.3	9.6
Water motors.....	36	10		1,111	107	( <sup>3</sup> )	( <sup>4</sup> )	( <sup>4</sup> )	
Other.....				836	2,644	( <sup>1</sup> )	( <sup>1</sup> )	0.1	
Rented.....	5,181	883		72,628	27,437	( <sup>1</sup> )	2.6	1.5	
Electric.....	5,181	883		62,200	14,181	2,032	2.2	0.8	0.1
Other.....				10,428	13,256	( <sup>1</sup> )	0.4	0.7	
<b>Electric motors.....</b>	<b>8,815</b>	<b>1,767</b>		<b>130,707</b>	<b>33,517</b>	<b>11,315</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Run by current generated by establishment.....	3,634	874		68,507	19,336	9,283	52.4	57.7	82.0
Run by rented power.....	5,181	883		62,200	14,181	2,032	47.6	42.3	18.0

<sup>1</sup> Comparable figures not available.

<sup>2</sup> Includes other kinds of primary power.

<sup>3</sup> Not reported.

<sup>4</sup> Less than one-tenth of 1 per cent.

The total primary power used in merchant establishments increased from 1,658,594 horsepower in 1899 to 2,840,082 in 1909, or 71.2 per cent. In 1909, as in 1904 and 1899, most of the power employed in the industry was generated by steam engines, steam power representing 91.1 per cent of the total primary power in 1909, as compared with 89.2 per cent in 1899. The amount of steam power reported increased from 1,480,098 horsepower in 1899 to 2,587,487 horsepower in 1909, or 74.8 per cent. Water power ranks next to steam power in importance, but shows a decrease of

12.7 per cent for the decade, representing only 4.9 per cent of the total primary power in 1909, as compared with 9.6 per cent in 1899. The most notable increase during the decade is that for rented electric power, the amount reported in 1909 (62,200 horsepower) being over thirty times that reported for 1899. The number and horsepower of electric motors used for distributing power by means of current generated in the establishments also show a very great increase.

Table 21 shows, for 1909, by states, statistics of the power and of the fuel used in merchant establishments.

Table 21

MERCHANT ESTABLISHMENTS: 1909

STATE.	Number of establishments reporting.	Total horsepower.	Primary horsepower.					Electric horsepower.		Fuel used.							
			Owned by establishments reporting.				Rented.	Total, rented and generated by establishment.	Generated in the establishment reporting.	Coal.		Coke (short tons).	Wood (cords).	Oil, including gas-oil (barrels).	Gas (1,000 feet).		
			Total.	Steam engines.	Gas engines.	Water wheels and motors.	Other.			Electric.	Other.					An-thra-cite (long tons).	Bitu-minous (short tons).
<b>United States . . . . .</b>	<b>39,423</b>	<b>2,840,082</b>	<b>2,767,454</b>	<b>2,587,487</b>	<b>38,628</b>	<b>140,503</b>	<b>836</b>	<b>62,200</b>	<b>10,428</b>	<b>130,707</b>	<b>68,507</b>	<b>79,330</b>	<b>1,134,218</b>	<b>5,854</b>	<b>162,644</b>	<b>144,499</b>	<b>521,034</b>
Alabama . . . . .	1,768	102,527	102,157	96,539	3,458	2,160	-----	370	-----	889	519	10	16,816	-----	7,972	470	-----
Arizona . . . . .	23	2,953	2,452	2,442	-----	10	-----	301	200	303	2	-----	127	-----	4,089	-----	-----
Arkansas . . . . .	1,667	122,387	121,999	121,603	282	112	2	388	-----	2,048	1,060	150	24,469	-----	3,155	712	5,096
California . . . . .	638	94,914	85,785	82,670	886	2,229	-----	8,654	475	13,887	5,213	26	389	-----	13,285	46,216	23,607
Colorado . . . . .	255	11,177	10,502	10,120	117	-----	-----	675	-----	675	-----	-----	10,104	60	200	156	868
Connecticut . . . . .	365	15,163	13,928	11,250	354	2,324	-----	902	323	997	95	558	5,647	50	311	414	1,642
Delaware . . . . .	115	3,767	3,716	3,691	24	-----	-----	52	-----	59	7	2	234	-----	-----	20	154
Florida . . . . .	510	65,097	64,819	64,398	116	-----	130	175	-----	238	40	2,550	2,312	-----	701	1,757	2,085
Georgia . . . . .	1,793	33,464	32,382	30,492	459	-----	1,431	-----	-----	1,004	78	1,501	122	9,551	3,859	712	120
Idaho . . . . .	255	32,342	31,659	30,670	20	-----	-----	663	-----	2,781	2,118	-----	680	-----	45	-----	-----
Illinois . . . . .	757	52,015	46,846	45,680	889	275	2	4,787	382	8,282	3,495	1,272	62,128	62	1,855	1,544	10,509
Indiana . . . . .	1,250	57,243	54,530	52,975	1,259	296	-----	2,628	85	3,542	914	5	68,193	120	667	1,280	14,612
Iowa . . . . .	213	16,564	15,939	15,520	209	210	-----	625	-----	900	365	180	14,797	42	4	193	2
Kansas . . . . .	72	2,947	2,376	1,792	584	-----	-----	571	-----	935	364	98	3,809	-----	7	103	21,575
Kentucky . . . . .	1,544	59,693	58,372	57,188	773	411	-----	1,241	40	3,377	2,136	-----	51,589	1,582	1,080	718	8,260
Louisiana . . . . .	605	150,286	149,512	149,009	438	65	-----	774	-----	8,805	8,031	68	68,000	80	22,781	24,129	550
Maine . . . . .	1,008	95,363	92,498	57,304	1,076	34,068	50	2,465	400	3,215	750	471	1,401	-----	1,860	964	115
Maryland . . . . .	549	23,553	23,005	22,537	358	110	-----	495	53	780	285	9	11,603	4	144	1,512	2,735
Massachusetts . . . . .	679	44,784	41,450	32,917	1,129	7,404	-----	1,177	2,157	1,965	788	1,050	10,626	620	2,335	2,058	5,438
Michigan . . . . .	1,106	133,739	130,312	125,368	1,169	3,775	-----	2,722	705	5,171	2,449	-----	70,242	20	7,656	1,799	1,777
Minnesota . . . . .	501	67,839	66,682	65,994	396	267	25	1,057	100	1,483	426	466	22,359	-----	2,221	664	36
Mississippi . . . . .	1,624	149,715	149,301	148,823	258	220	-----	359	55	2,904	2,545	1,700	51,135	100	10,582	1,009	-----
Missouri . . . . .	1,072	49,506	47,843	46,570	671	96	-----	1,942	221	2,614	672	294	34,871	-----	172	1,169	4,874
Montana . . . . .	146	14,337	14,063	13,804	12	262	-----	299	-----	375	106	-----	1,817	-----	300	6	-----
Nebraska . . . . .	47	1,343	964	826	138	-----	-----	379	-----	379	-----	-----	2,124	-----	-----	384	-----
New Hampshire . . . . .	578	44,593	43,513	30,608	211	12,694	-----	810	770	772	462	13	358	-----	660	189	290
New Jersey . . . . .	381	15,760	14,617	12,716	933	968	-----	1,000	143	1,807	807	10,770	6,127	42	132	694	8,655
New Mexico . . . . .	76	4,885	4,703	4,642	22	39	-----	182	-----	182	-----	-----	6,697	-----	5	40	-----
New York . . . . .	2,179	131,462	124,123	93,422	4,448	26,217	30	5,780	1,559	9,219	3,439	26,829	82,258	1,526	5,551	2,998	41,298
North Carolina . . . . .	2,503	115,542	112,876	112,876	457	1,753	-----	426	30	2,842	2,416	-----	24,247	762	9,916	1,091	-----
Ohio . . . . .	1,358	69,255	65,249	59,570	5,313	366	-----	2,543	1,463	4,716	2,173	721	80,623	225	1,227	488	102,075
Oklahoma . . . . .	335	12,397	11,765	11,315	410	40	-----	632	-----	842	210	-----	7,616	-----	101	151	10,539
Oregon . . . . .	685	95,213	92,778	88,406	77	4,295	-----	2,435	-----	5,693	3,258	18	1,180	-----	4,474	11,160	506
Pennsylvania . . . . .	2,598	113,412	108,206	97,194	6,330	4,202	540	4,898	278	7,390	2,522	25,267	99,059	99	1,310	1,766	112,333
Rhode Island . . . . .	55	2,828	2,456	2,166	118	-----	-----	160	212	184	24	10	1,050	140	15	816	-----
South Carolina . . . . .	851	49,400	49,146	47,582	90	1,474	-----	254	-----	3,181	2,927	-----	7,287	50	5,063	166	-----
Tennessee . . . . .	1,923	83,382	82,811	81,251	391	1,169	-----	506	65	1,305	799	500	49,109	-----	1,281	728	-----
Texas . . . . .	794	83,031	87,037	86,238	535	294	-----	952	12	1,494	512	2,661	18,926	-----	13,821	0,874	5,887
Vermont . . . . .	579	41,937	41,361	23,364	424	17,567	6	526	50	579	53	510	1,298	-----	887	388	118
Virginia . . . . .	2,538	90,474	93,761	95,821	704	2,236	-----	538	175	2,203	1,665	75	33,096	140	908	1,085	422
Washington . . . . .	1,144	224,465	220,553	218,271	205	2,077	-----	3,877	25	9,305	5,518	4	36,741	-----	24,714	20,832	500
West Virginia . . . . .	1,008	62,366	62,054	60,339	1,363	352	-----	155	147	236	881	-----	83,955	-----	551	280	132,261
Wisconsin . . . . .	961	124,286	122,876	114,807	1,105	6,964	-----	1,293	117	5,282	3,989	885	45,568	70	8,636	1,372	1,720
Wyoming . . . . .	63	2,251	2,241	2,010	90	141	-----	10	-----	50	40	-----	184	-----	-----	4	-----
All other states . . . . .	192	6,495	5,462	4,711	327	424	-----	985	48	1,844	59	39	5,337	-----	255	1,690	1,015

The states which in 1909 ranked highest with respect to the amount of primary power used were Washington, Louisiana, Mississippi, Michigan, New York, Wisconsin, Arkansas, North Carolina, Pennsylvania, and Alabama in the order named; each of these 10 states reported a total of more than 100,000 horsepower, their aggregate horsepower representing 48.2 per cent of the total for all merchant establishments. Steam was the most important form of power in all of the states shown separately, the largest amount being shown for Washington. The largest amount of water power is shown for Maine, the largest amount of rented electric power for California, and the largest amount of power developed by gas and other internal-combustion engines for Pennsylvania.

Fuel consumed.—Bituminous coal was the principal class of fuel reported. Gas was used to a considerable extent, 25.4 per cent of the total being reported from West Virginia. The figures in the table do not represent all the fuel consumed in merchant establishments,

since many such establishments in the industry used sawdust, slabs, edgings, and other mill waste, and the amount of such fuel used was not reported.

SAWMILL PRODUCTS.

It is necessary, in giving detailed statistics of the lumber production in 1909, to use the figures shown in the annual report on lumber, lath, and shingles issued by the Bureau of the Census in cooperation with the Forest Service of the Department of Agriculture (Forest Products of the United States, 1909). This report contained figures for a number of establishments which, because of their small output or of the fact that their principal products were such as to cause them to be included in the manufactures statistics under another classification than "lumber and timber products," are not included in the preceding tables of this report. Consequently the output of the establishments covered by the annual report on forest products is somewhat greater than that of the establishments in the lumber industry proper and is not strictly comparable with the

statistics of the output of the lumber industry as compiled at the censuses of 1904 and 1899. The statistics for 1899 in Table 22, however, include small custom mills, and are for this reason more nearly comparable with those for 1909 than are the figures for 1904, which are confined to the logging camps and merchant mills.

Since the nature of the products of the planing mills and box factories is such as not to permit of satisfactory reports in detail, the only products of the lumber industry for which figures are shown are lumber, lath,

and shingles. It will of course be understood that the value of products for 1909 in Table 22 represents only the value of rough lumber, lath, and shingles, while the value of products of the sawmill branch of the lumber industry as shown in Table 1 and other tables in this report covers, in addition to rough lumber and lath and shingles, dressed lumber, tight and slack cooperage stock, cross-ties, poles, posts, masts, spars, excelsior stock, etc., together with the products reported for the independent logging camps.

Table 22							
PRODUCT.	1909	1904	1899	PRODUCT.	1909	1904	1899
Total value.....	\$724,705,760	\$465,153,662	\$414,058,487	Rough lumber—Continued.			
Rough lumber:				Hardwoods—Continued.			
Total quantity (M feet board measure).....	44,509,761	34,135,139	1 35,084,166	Maple—			
Total value.....	\$684,479,859	\$435,708,084	1 \$390,489,873	Quantity.....	1,106,604	587,558	633,466
Softwoods—				Value.....	\$17,447,814	\$8,780,727	\$7,495,082
Quantity.....	33,896,959	27,353,312	26,153,063	Red gum—			
Value.....	\$477,345,046	\$319,835,746	\$268,481,112	Quantity.....	706,945	523,990	285,417
Yellow pine—				Value.....	\$9,334,268	\$5,093,555	\$2,747,680
Quantity.....	16,277,185	11,521,781	9,658,548	Chestnut—			
Value.....	\$206,505,207	\$114,780,600	\$81,740,300	Quantity.....	663,891	243,537	206,688
Western pine—				Value.....	\$10,703,130	\$3,356,054	\$2,764,989
Quantity.....	1,499,385	1,290,526	944,500	Birch—			
Value.....	\$23,077,854	\$14,588,140	\$9,163,256	Quantity.....	452,370	224,009	132,601
White pine—				Value.....	\$7,666,186	\$3,459,501	\$1,657,021
Quantity.....	3,900,034	5,332,704	7,742,391	Basswood—			
Value.....	\$70,830,131	\$79,594,717	\$98,002,555	Quantity.....	399,151	228,041	308,069
Douglas fir—				Value.....	\$7,781,563	\$3,845,885	\$3,954,625
Quantity.....	4,856,378	2,928,409	1,736,507	Elm—			
Value.....	\$60,435,793	\$27,862,228	\$15,050,638	Quantity.....	347,456	258,330	456,731
Hemlock—				Value.....	\$6,088,098	\$3,732,609	\$5,240,530
Quantity.....	3,051,399	3,268,787	3,420,673	Cottonwood—			
Value.....	\$42,580,800	\$38,938,154	\$34,136,892	Quantity.....	265,600	321,574	415,124
Spruce—				Value.....	\$4,794,424	\$4,797,779	\$4,303,544
Quantity.....	1,748,547	1,303,886	1,448,091	Ash—			
Value.....	\$29,561,315	\$18,289,327	\$16,322,666	Quantity.....	291,209	169,178	269,120
Cypress—				Value.....	\$7,116,089	\$3,174,861	\$4,263,599
Quantity.....	955,635	749,592	495,836	Hickory—			
Value.....	\$19,549,741	\$13,115,339	\$6,604,495	Quantity.....	333,929	106,824	96,636
Redwood—				Value.....	\$10,283,776	\$2,557,601	\$1,814,500
Quantity.....	521,630	519,267	360,167	Walnut—			
Value.....	\$7,720,124	\$6,661,499	\$3,645,603	Quantity.....	46,108	31,455	38,681
Cedar—				Value.....	\$1,972,835	\$1,435,509	\$1,411,611
Quantity.....	346,008	223,035	232,978	Sycamore—			
Value.....	\$6,901,948	\$3,201,331	\$2,542,818	Quantity.....	56,511	18,002	29,715
All other—				Value.....	\$834,612	\$236,856	\$327,933
Quantity.....	740,168	215,325	113,312	All other—			
Value.....	\$10,182,043	\$2,800,402	\$1,271,884	Quantity.....	1,528,571	1,166,474	1,323,746
Hardwoods—				Value.....	\$32,599,949	\$23,999,098	\$19,662,279
Quantity.....	10,612,802	6,781,827	8,634,021	Lath:			
Value.....	\$207,134,813	\$115,872,338	\$116,817,192	Quantity (thousands).....	3,703,195	2,647,847	2,523,998
Oak—				Value.....	\$9,063,439	\$5,435,903	\$4,098,909
Quantity.....	4,414,457	2,902,855	4,438,027	Shingles:			
Value.....	\$90,512,009	\$50,832,303	\$61,174,129	Quantity (thousands).....	14,907,371	14,547,477	12,102,017
				Value.....	\$30,262,462	\$24,069,610	\$18,869,705

<sup>1</sup> Includes 297,082 M feet of lumber, board measure, valued at \$5,191,569, reported as "other sawed products," and not by kinds of wood.

DETAILED STATE TABLES.

The principal statistics secured by the census inquiry concerning the merchant establishments in the lumber industry are presented by states in Tables 23 and 24, Table 23 showing for 1909, 1904, and 1899 the number of merchant establishments in the industry, number of persons engaged, primary horsepower,

capital invested, salaries, wages, cost of materials, value of products, and value added by manufacture, and Table 24 giving more detailed statistics for the merchant establishments for 1909 only.

Table 25 gives detailed statistics for 1909 for the mills engaged exclusively in custom sawing.

LUMBER INDUSTRY, MERCHANT ESTABLISHMENTS—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

Table 23	STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.					Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
				Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).								
Expressed in thousands.															
	United States.....	1909	40,671	784,989	48,825	41,145	695,019	2,840,082	\$1,176,875	\$47,428	\$318,739	\$508,118	\$1,156,129	\$648,011	
		1904	25,153	593,342	30,738	30,038	532,566	1,886,624	733,708	31,737	245,834	360,325	884,207	523,942	
		1899	28,133			20,940	508,766	1,658,594	541,595	18,715	188,395	364,964	760,992	396,028	
	Alabama.....	1909	1,819	25,927	2,387	1,131	22,409	102,527	24,442	1,168	7,259	9,145	26,058	16,913	
		1904	966	17,751	830	780	16,135	55,512	14,164	814	5,546	5,195	18,270	13,084	
		1899	1,540			523	14,882	41,588	8,202	392	3,619	4,998	13,286	8,288	
	Arizona.....	1909	23	911	30	42	839	2,953	2,842	106	639	337	1,419	1,082	
		1904	29	576	8	26	542	2,338	1,469	56	413	208	1,037	829	
		1899	17			23	381	890	632	34	267	192	619	427	
	Arkansas.....	1909	1,697	36,662	2,135	1,505	32,932	122,387	42,344	1,793	13,060	14,300	40,640	26,340	
		1904	929	26,348	1,079	1,360	23,909	77,570	29,619	1,415	9,235	9,235	31,993	22,758	
		1899	2,965			974	25,072	59,786	16,261	771	7,482	11,271	26,624	15,363	
	California.....	1909	644	25,079	547	1,597	22,935	94,914	55,165	2,237	15,651	18,369	45,000	26,681	
		1904	582	20,612	545	1,148	18,919	71,011	37,904	1,432	12,789	11,529	34,615	23,086	
		1899	435			599	13,285	44,129	19,280	666	6,643	8,092	20,304	12,212	
	Colorado.....	1909	263	2,614	261	163	2,160	11,177	3,472	172	1,458	1,396	4,185	2,789	
		1904	110	1,631	109	92	1,430	5,659	1,892	83	896	806	2,497	1,691	
		1899	148			90	1,507	5,789	1,605	89	799	1,099	2,638	1,539	
	Connecticut.....	1909	393	4,219	443	281	3,495	15,153	6,109	288	1,907	3,918	7,846	3,928	
		1904	176	2,406	206	181	2,109	7,275	3,372	168	1,128	2,479	4,792	2,313	
		1899	191			130	2,004		2,776	107	899	2,169	4,234	2,065	
	Delaware.....	1909	116	1,369	148	47	1,174	3,767	1,048	23	330	608	1,312	704	
		1904	94	786	113	18	655	3,037	551	9	196	405	857	452	
		1899	85			12	935		622	8	219	338	749	411	
	District of Columbia.....	1909	10	339	12	18	309	501	385	20	189	254	609	355	
		1904	6	295	6	18	271	400	273	17	159	144	392	248	
		1899	5			15	212		180	12	98	154	331	177	
	Florida.....	1909	515	20,893	580	1,086	19,227	65,097	27,670	1,253	7,551	6,239	20,863	14,624	
		1904	242	12,578	253	655	11,670	33,527	12,940	709	4,229	3,977	12,972	8,995	
		1899	368			441	10,300	27,901	9,009	365	3,229	4,583	11,578	6,995	
	Georgia.....	1909	1,826	25,491	2,271	963	22,257	83,464	23,337	997	7,305	8,505	24,632	10,127	
		1904	949	21,877	1,212	981	19,684	56,431	16,309	961	6,324	6,666	21,648	16,982	
		1899	1,010			625	19,628	47,456	9,867	452	4,688	6,497	17,839	11,342	
	Idaho.....	1909	256	5,904	342	350	5,212	32,342	17,872	459	3,882	3,345	10,689	7,344	
		1904	107	1,670	123	98	1,449	10,013	3,516	120	876	906	3,142	2,236	
		1899	100			24	737	3,523	721	15	297	331	945	614	
	Illinois.....	1909	814	19,025	825	1,633	16,507	52,015	29,778	1,961	9,110	27,264	44,952	17,688	
		1904	591	16,900	611	1,172	15,126	44,347	21,651	1,303	7,424	18,222	32,741	14,519	
		1899	706			683	11,899		13,400	645	5,178	13,035	23,190	10,155	
	Indiana.....	1909	1,277	12,840	1,540	983	10,317	57,243	19,177	965	4,492	12,382	23,135	10,753	
		1904	994	11,739	1,254	781	9,704	49,505	13,816	695	4,226	4,226	21,476	9,724	
		1899	1,504			638	14,549	61,805	12,799	513	5,529	12,908	26,666	12,758	
	Iowa.....	1909	229	5,403	243	502	4,658	16,564	12,809	520	2,356	7,141	12,659	5,518	
		1904	139	5,348	140	398	4,810	17,381	13,523	457	6,739	12,153	5,414	5,414	
		1899	199			347	5,692	16,474	10,761	308	2,194	9,536	14,635	5,099	
	Kansas.....	1909	73	1,160	89	89	982	2,947	2,159	127	540	2,072	3,244	1,172	
		1904	39	866	44	747	747	1,800	1,180	84	369	1,053	1,828	775	
		1899	63			36	639		602	26	245	679	1,124	445	
	Kentucky.....	1909	1,592	15,800	1,068	790	13,042	59,653	20,884	847	4,382	10,456	21,381	10,925	
		1904	960	14,392	1,229	766	12,407	43,404	16,405	724	4,882	10,456	20,565	11,708	
		1899	1,000			446	11,282	41,073	9,238	341	3,618	7,514	15,923	8,409	
	Louisiana.....	1909	702	49,535	652	2,811	46,072	150,286	88,973	3,679	20,033	23,156	62,838	39,682	
		1904	471	30,161	418	1,866	27,877	84,186	39,573	2,252	12,827	10,385	38,371	27,988	
		1899	376			713	15,242	38,799	14,926	693	5,010	8,229	19,098	10,869	
	Maine.....	1909	1,065	17,101	1,331	654	15,086	95,393	26,536	656	7,103	10,930	26,125	15,195	
		1904	862	15,307	1,110	620	13,577	76,267	17,811	460	6,155	8,912	21,330	12,424	
		1899	745			388	10,817	67,022	14,529	308	3,943	7,710	15,296	7,586	
	Maryland.....	1909	561	8,165	718	444	7,003	23,553	9,182	417	2,457	6,507	12,134	5,627	
		1904	301	5,851	400	302	5,149	16,740	5,432	259	1,959	4,906	8,937	4,631	
		1899	322			206	5,102		5,587	143	1,540	4,349	7,847	3,493	
	Massachusetts.....	1909	708	10,478	793	709	8,976	44,784	17,552	795	5,031	12,484	23,026	10,542	
		1904	618	9,836	772	563	8,501	37,851	13,714	583	4,601	11,195	20,308	9,113	
		1899	603			422	8,063		11,003	392	3,761	8,646	16,294	7,948	
	Michigan.....	1909	1,180	39,011	1,310	2,074	35,627	133,739	57,290	2,337	16,298	29,042	61,514	32,472	
		1904	1,058	37,124	1,315	1,616	34,193	119,485	48,771	1,713	15,995	29,042	57,217	32,488	
		1899	1,624			1,904	46,163	143,554	53,630	1,815	18,478	32,067	68,678	39,606	
	Minnesota.....	1909	525	22,304	645	955	20,704	67,839	49,128	1,460	10,818	20,865	42,353	21,488	
		1904	332	21,878	365	1,042	20,471	57,575	34,884	1,249	10,309	17,798	42,033	24,235	
		1899	361			846	22,395	59,184	35,002	960	10,232	23,823	47,080	23,257	
	Mississippi.....	1909	1,647	37,118	2,117	1,604	33,397	149,715	39,455	1,818	12,583	14,207	42,793	28,586	
		1904	2,664	24,415	788	1,216	22,431	68,905	24,819	1,300	9,242	7,005	26,162	19,157	
		1899	608			581	15,660	41,682	10,800	497	4,558	6,826	16,664	9,838	
	Missouri.....	1909	1,098	15,814	1,289	1,003	13,522	49,506	18,930	1,106	5,897	10,614	23,261	12,647	
		1904	495	14,057	665	828	12,664	33,047	13,688	875	5,542	6,417	18,340	11,932	
		1899	762			546	11,391	32,870	12,010	513	4,155	7,869	16,426	8,557	

<sup>1</sup> Excludes statistics for one establishment, to avoid disclosure of individual operations.

<sup>2</sup> Excludes statistics for two establishments, to avoid disclosure of individual operations.

# THE LUMBER INDUSTRY.

505

LUMBER INDUSTRY, MERCHANT ESTABLISHMENTS—COMPARATIVE STATISTICS, BY STATES: 1909, 1904, AND 1899.

STATE.	Census.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture (value of products less cost of materials).
			Total.	Proprietors and firm members.	Salaried employees.	Wage earners (average number).							
Montana.....	1909	155	3,452	170	176	3,106	14,337	\$8,544	\$265	\$2,185	\$1,805	\$6,334	\$4,469
	1904	47	2,408	45	145	2,218	7,612	4,846	198	1,512	454	3,121	2,607
	1899	91	.....	.....	62	2,357	4,131	2,377	72	1,214	1,014	3,044	2,030
Nebraska.....	1909	48	707	43	121	543	1,343	1,155	106	356	1,226	2,021	795
	1904	27	416	27	33	356	1,119	379	37	294	264	645	331
	1899	35	.....	.....	34	377	.....	420	30	161	629	1,002	373
Nevada.....	1909	9	224	5	33	186	563	774	47	143	288	503	215
	1904	5	162	.....	15	147	1,110	1,072	21	110	257	528	271
	1899	3	.....	.....	3	57	.....	91	3	27	102	168	66
New Hampshire.....	1909	589	9,449	689	296	8,464	44,593	13,866	333	3,924	7,263	15,284	8,021
	1904	474	7,586	604	193	6,789	30,231	8,748	188	2,968	5,301	11,573	6,272
	1899	485	.....	.....	212	9,085	33,316	8,819	153	3,309	4,858	11,594	6,736
New Jersey.....	1909	416	5,745	438	450	4,867	15,790	9,563	469	2,631	8,010	13,511	5,501
	1904	242	4,129	265	272	3,592	10,496	5,875	287	1,850	4,491	7,998	3,507
	1899	266	.....	.....	213	3,256	.....	5,161	222	1,540	3,636	6,997	3,311
New Mexico.....	1909	76	1,620	84	61	1,475	4,885	2,374	90	714	578	2,162	1,584
	1904	31	1,280	32	78	1,170	3,140	1,945	93	565	319	1,435	1,116
	1899	33	.....	.....	9	637	.....	214	6	198	147	450	312
New York.....	1909	2,263	32,458	2,519	2,468	27,471	131,462	64,491	2,798	15,101	41,705	72,530	30,825
	1904	1,599	29,807	1,998	1,855	26,013	101,614	48,937	2,066	13,221	32,461	61,677	29,216
	1899	1,802	.....	.....	1,435	25,283	.....	40,852	1,361	10,834	30,416	52,738	22,322
North Carolina.....	1909	2,544	38,636	3,349	1,286	34,061	115,542	29,675	1,264	9,707	12,534	33,525	20,991
	1904	1,864	19,560	1,836	741	16,983	65,026	12,008	621	5,119	6,612	19,489	12,877
	1899	1,416	.....	.....	607	19,972	59,181	10,660	413	4,245	7,341	17,442	10,101
Ohio.....	1909	1,890	16,445	1,560	1,429	13,456	69,255	28,500	1,467	6,701	19,972	34,597	14,625
	1904	1,812	16,380	1,644	1,169	13,570	68,536	24,631	1,087	6,594	17,733	32,926	15,193
	1899	1,656	.....	.....	864	16,502	71,085	19,136	715	6,548	17,116	32,812	15,696
Oklahoma <sup>2</sup> .....	1909	342	3,809	429	205	3,175	12,937	3,603	189	1,269	1,487	4,439	2,952
	1904	160	597	78	31	458	2,361	612	31	245	437	1,017	580
	1899	73	.....	.....	24	539	.....	405	19	169	315	684	369
Oregon.....	1909	713	16,833	846	921	15,066	95,213	35,031	1,267	10,172	12,413	30,200	17,787
	1904	477	9,587	601	428	8,858	43,364	13,108	520	5,450	5,856	15,418	9,562
	1899	419	.....	.....	284	6,056	28,030	6,948	262	2,887	5,191	11,081	5,890
Pennsylvania.....	1909	2,667	32,073	3,473	1,727	26,873	113,412	54,638	1,758	13,558	27,314	57,454	30,140
	1904	1,866	31,262	2,527	1,565	27,149	93,228	44,336	1,507	13,529	24,288	56,713	32,427
	1899	2,273	.....	.....	1,160	31,008	109,376	43,852	979	13,017	24,964	53,886	28,922
Rhode Island.....	1909	57	880	59	73	748	2,828	1,343	83	437	1,064	1,907	843
	1904	47	761	54	49	658	2,472	1,018	40	371	850	1,698	848
	1899	51	.....	.....	31	657	.....	979	29	280	616	1,247	631
South Carolina.....	1909	851	16,330	1,042	684	14,604	49,400	15,010	713	4,378	3,931	13,141	9,160
	1904	602	11,654	621	392	10,641	20,430	8,194	347	2,873	2,506	8,279	5,773
	1899	* 510	.....	.....	274	7,117	18,219	3,882	168	1,503	2,431	5,969	3,528
South Dakota.....	1909	58	534	52	31	451	2,260	941	33	301	349	945	596
	1904	26	227	23	13	191	833	244	12	114	97	377	280
	1899	* 36	.....	.....	17	371	.....	233	15	170	192	406	308
Tennessee.....	1909	1,977	26,283	2,683	1,211	22,389	83,382	30,159	1,325	6,966	13,641	30,457	16,816
	1904	1,122	19,705	1,605	823	17,277	54,301	20,431	808	6,456	11,590	26,864	15,274
	1899	1,204	.....	.....	510	14,300	47,807	11,057	418	4,380	9,327	19,166	9,839
Texas.....	1909	799	25,843	985	1,340	23,518	88,031	45,552	1,484	11,602	11,004	32,201	21,197
	1904	391	16,101	437	1,041	14,623	43,622	20,452	1,174	6,500	4,955	18,880	13,925
	1899	559	.....	.....	493	12,455	34,433	12,904	465	4,841	8,429	17,782	9,353
Utah.....	1909	104	629	150	48	431	2,922	915	34	306	435	977	542
	1904	53	291	88	21	182	1,380	245	15	105	139	334	195
	1899	76	.....	.....	21	357	1,774	350	11	134	166	439	273
Vermont.....	1909	593	5,720	716	214	4,790	41,937	8,989	193	2,013	4,131	8,598	4,467
	1904	493	6,392	614	164	5,614	39,009	7,845	153	2,343	4,656	9,477	4,821
	1899	575	.....	.....	151	6,322	39,662	7,257	113	2,000	4,563	8,790	4,236
Virginia.....	1909	2,617	37,931	3,479	1,165	33,287	99,474	28,392	1,170	9,962	13,802	35,855	21,063
	1904	938	17,000	1,283	603	15,134	44,212	13,253	538	4,972	6,891	18,727	11,836
	1899	991	.....	.....	539	14,480	34,467	8,255	389	3,915	6,856	15,218	8,362
Washington.....	1909	1,263	47,447	1,013	2,685	43,749	224,455	97,224	3,615	31,327	36,879	89,155	52,276
	1904	1,099	32,579	1,039	1,403	30,137	128,236	44,799	1,706	19,820	19,418	54,999	35,581
	1899	813	22,374	1,004	802	20,568	63,914	19,858	805	11,092	13,791	31,665	17,874
West Virginia.....	1909	1,016	20,799	1,226	930	18,643	62,356	30,333	1,090	8,632	8,676	28,758	20,082
	1904	765	13,257	1,032	606	11,619	37,585	14,663	574	5,390	6,202	18,697	12,495
	1899	697	.....	.....	325	8,834	27,156	7,884	254	2,968	5,060	12,073	7,013
Wisconsin.....	1909	1,020	37,134	1,046	1,995	34,093	124,286	68,309	2,355	16,059	25,587	57,969	32,382
	1904	777	36,961	774	1,730	34,457	101,881	48,466	1,907	16,674	24,533	58,531	33,948
	1899	931	.....	.....	1,636	39,529	114,285	55,820	1,686	15,949	34,566	68,272	33,706
Wyoming.....	1909	63	768	85	33	648	2,251	1,075	50	314	198	751	553
	1904	32	370	41	24	305	707	345	28	151	64	465	401
	1899	34	.....	.....	18	692	.....	602	10	305	217	750	539
All other states.....	1909	8	80	8	9	63	249	178	15	50	90	187	97
	1904	10	337	9	24	304	673	1,005	35	128	443	699	256
	1899	12	.....	.....	3	88	.....	177	1	33	56	151	96

<sup>1</sup> Excludes statistics for two establishments, to avoid disclosure of individual operations.

<sup>2</sup> Includes Indian Territory in 1904 and 1899.

<sup>3</sup> Excludes statistics for one establishment, to avoid disclosure of individual operations.

MANUFACTURES.

LUMBER INDUSTRY, MERCHANT ESTABLISHMENTS

Table 24	STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.										WAGE EARNERS—DEC. 15, OR NEAREST REPRESENTATIVE DAY.					Primary horse-power.
			Total.	Proprietors and firm members.	Salaried officers, superintendents, and managers.	Clerks.		Wage earners.			Total.	16 and over.		Under 16.				
						Male.	Female.	Average number.	Number, 15th day of—			Male.	Female.	Male.	Female.			
									Maximum month.	Minimum month.								
1	United States .....	40,671	784,989	48,825	19,340	18,088	3,717	695,019	No 739,160	Ja 649,239	838,160	826,978	4,027	6,886	269	2,840,082		
2	Alabama .....	1,819	25,927	2,387	654	440	37	22,409	De 24,300	Je 20,803	27,224	26,661	126	406	81	102,527		
3	Arizona .....	23	911	30	16	20	6	839	Jy 1,043	Fe 545	997	994	1	2	.....	2,053		
4	Arkansas .....	1,697	36,662	2,135	769	758	68	32,932	Oc 36,172	My 30,252	39,769	39,381	40	338	10	122,387		
5	California .....	644	25,079	547	647	799	151	22,935	Jy 28,986	Ja 14,401	24,795	24,588	148	59	.....	94,914		
6	Colorado .....	263	2,614	261	81	77	5	2,190	Au <sup>1</sup> 2,577	Ap 1,793	2,909	2,877	28	4	.....	11,177		
7	Connecticut .....	393	4,219	443	110	109	62	3,495	De 4,039	Jy 2,850	4,400	4,344	41	15	.....	15,153		
8	Delaware .....	116	1,369	148	35	10	2	1,174	Fe 1,043	Jy 908	1,540	1,477	46	14	.....	3,767		
9	District of Columbia .....	10	339	12	3	14	1	309	Oc <sup>1</sup> 333	Mh 287	308	307	.....	1	.....	501		
10	Florida .....	515	20,893	580	549	509	28	19,227	De 20,651	Jy 18,222	21,666	21,328	50	273	15	65,097		
11	Georgia .....	1,826	25,491	2,271	537	391	35	22,257	De 24,410	Je 20,623	27,631	27,232	99	295	5	83,464		
12	Idaho .....	259	5,904	342	129	194	27	5,212	Oc 6,034	Ja 3,477	6,995	6,964	22	0	.....	32,342		
13	Illinois .....	814	19,025	825	638	783	212	16,567	No 17,896	Ja 15,002	18,122	17,768	153	199	2	52,015		
14	Indiana .....	1,277	12,840	1,540	519	346	118	10,317	Oc 10,835	Ja 9,462	12,132	11,809	148	165	10	57,243		
15	Iowa .....	229	5,403	243	156	253	93	4,658	Jy 5,117	Ja 3,808	4,749	4,639	21	87	2	16,564		
16	Kansas .....	73	1,160	89	32	47	10	982	Au 1,032	Fe 891	1,016	989	2	25	.....	2,947		
17	Kentucky .....	1,592	15,800	1,968	376	330	84	13,042	Oc 15,297	Ja 10,839	17,493	17,335	53	194	1	50,653		
18	Louisiana .....	702	49,535	652	1,010	1,665	136	46,072	De 49,316	Fe 43,932	51,645	51,202	55	382	6	150,286		
19	Maine .....	1,065	17,101	1,331	370	186	128	15,086	Ja 17,382	Au 12,146	22,401	22,280	80	34	1	95,363		
20	Maryland .....	561	8,165	718	220	193	31	7,003	Mh 7,612	Au 6,152	8,401	7,670	317	339	75	23,553		
21	Massachusetts .....	708	10,478	793	299	231	179	8,970	De 9,821	Au 8,101	10,577	10,176	316	80	5	44,784		
22	Michigan .....	1,180	39,011	1,310	962	844	268	35,627	De 37,468	Ap 33,004	43,689	43,300	217	167	5	133,799		
23	Minnesota .....	525	22,304	645	333	500	72	20,704	Oc 23,116	Ap 19,177	26,453	26,367	47	30	.....	67,839		
24	Mississippi .....	1,647	37,118	2,117	798	747	59	33,397	No 36,622	My 30,493	41,281	41,123	8	145	.....	149,715		
25	Missouri .....	1,098	15,814	1,289	508	400	95	13,522	No 14,925	Ja 12,671	16,142	15,763	88	284	7	49,506		
26	Montana .....	155	3,452	170	84	88	4	3,106	No 3,773	Ap 2,673	4,473	4,457	7	0	.....	14,337		
27	Nebraska .....	48	707	43	27	82	12	543	Au 600	Fe 480	576	568	.....	8	.....	1,343		
28	Nevada .....	9	224	5	11	19	3	186	Au 287	Fe 88	241	241	.....	.....	.....	563		
29	New Hampshire .....	589	9,449	689	142	105	49	8,464	Fe 10,651	Au 6,164	11,229	11,037	138	38	16	44,693		
30	New Jersey .....	416	5,745	438	192	204	54	4,857	De 5,212	Ja 4,658	5,383	5,288	65	27	3	15,760		
31	New Mexico .....	76	1,620	84	34	23	4	1,475	Se 1,770	Fe 1,303	1,672	1,627	.....	45	.....	4,885		
32	New York .....	2,263	32,458	2,519	1,014	1,127	327	27,471	Oc 28,802	Je 25,059	31,926	31,631	208	87	.....	131,462		
33	North Carolina .....	2,544	38,636	3,349	858	355	73	34,001	De 37,667	Je 31,902	41,763	41,159	55	530	19	115,542		
34	North Dakota .....	8	80	8	6	3	.....	63	No 77	Ja 40	71	71	.....	.....	.....	249		
35	Ohio .....	1,390	10,445	1,560	679	527	223	13,456	Oc 14,199	Ja 12,183	15,644	15,452	165	27	.....	69,255		
36	Oklahoma .....	342	3,809	429	110	84	11	3,175	De 3,401	Ja 2,837	4,045	4,035	1	9	.....	12,397		
37	Oregon .....	713	16,833	846	453	385	83	15,066	Je 16,462	Ja 11,545	17,572	17,501	59	12	.....	95,213		
38	Pennsylvania .....	2,067	32,073	3,473	777	722	228	26,873	De 28,690	Ja 24,194	32,915	32,429	123	356	7	113,412		
39	Rhode Island .....	57	880	59	31	30	12	748	Ap 834	Ja 673	806	803	2	1	.....	2,828		
40	South Carolina .....	851	16,330	1,042	397	253	34	14,604	De 15,937	Jy 13,704	18,127	17,847	17	263	.....	49,400		
41	South Dakota .....	58	634	52	18	10	3	451	No 562	Ja 331	668	666	.....	2	.....	2,260		
42	Tennessee .....	1,977	26,283	2,653	623	504	84	22,389	No 25,462	Ja 20,620	28,603	28,032	182	373	16	83,382		
43	Texas .....	799	25,843	985	585	717	38	23,518	De 24,914	Fe 21,661	27,722	27,317	46	369	.....	88,031		
44	Utah .....	104	629	150	27	16	5	431	Se 593	Fe 300	753	742	8	3	.....	2,922		
45	Vermont .....	593	5,720	716	127	53	34	4,790	De 5,460	Au 3,866	6,668	6,550	94	24	.....	41,937		
46	Virginia .....	2,617	37,931	3,479	670	425	70	33,287	No 35,949	Ja 29,919	40,692	39,875	187	630	.....	99,474		
47	Washington .....	1,263	47,447	1,013	1,414	1,095	176	43,749	Oc 47,133	Ja 33,411	50,964	50,714	198	62	.....	224,455		
48	West Virginia .....	1,016	20,799	1,225	449	403	78	18,643	Je 19,564	Ja 16,288	21,185	21,051	12	122	.....	62,356		
49	Wisconsin .....	1,020	37,134	1,046	793	998	204	34,093	Fe 38,284	Ap 31,194	41,824	40,502	353	439	30	124,286		
50	Wyoming .....	63	766	85	18	14	1	648	Se 815	Fe 439	803	798	1	4	.....	2,251		

<sup>1</sup> Same number reported for one or more other months.

THE LUMBER INDUSTRY.

DETAILED STATISTICS, BY STATES: 1909.

	Capital.	EXPENSES.										Value of products.	Value added by manufacture (value of products less cost of materials).
		Total.	Services.			Materials.		Miscellaneous.					
			Officials.	Clerks.	Wage earners.	Fuel and rent of power.	Other.	Rent of factory.	Taxes, including internal revenue.	Contract work.	Other.		
1	\$1,176,675,407	\$995,622,839	\$29,448,332	\$17,979,364	\$318,739,207	\$5,082,287	\$503,035,292	\$2,623,148	\$9,863,384	\$32,491,242	\$76,360,585	\$1,156,128,747	\$648,011,168
2	24,442,461	21,486,509	806,903	361,403	7,258,751	59,067	9,085,572	52,586	183,396	1,236,890	2,441,941	26,057,662	16,913,023
3	2,342,117	1,345,079	63,100	43,158	638,857	15,782	321,258	820	16,628	8,061	238,015	1,419,114	1,082,074
4	42,346,234	34,312,349	1,097,191	695,625	13,059,689	108,338	14,191,329	23,884	440,903	1,977,704	2,717,626	40,640,327	26,340,660
5	55,105,260	40,609,463	1,343,978	893,347	15,651,040	281,095	18,087,805	211,804	445,890	317,009	3,377,495	45,000,270	26,631,376
6	3,472,112	3,472,112	112,826	58,937	7,467,889	37,977	1,357,982	9,338	32,123	3,266	405,128	4,184,864	2,788,905
7	6,108,887	6,649,538	159,279	128,491	1,907,220	43,561	3,874,897	45,377	28,296	98,078	364,330	7,845,521	3,927,063
8	1,048,225	1,030,510	16,405	6,289	329,799	1,752	606,105	2,409	3,354	9,876	60,521	1,312,287	704,430
9	1,355,116	1,486,116	3,920	16,515	189,295	4,919	249,119	8,208	3,015	11,119	669,438	355,400	355,400
10	27,670,429	18,006,547	808,214	444,512	7,551,369	28,291	6,211,154	11,790	262,135	694,313	1,994,569	20,863,016	14,623,571
11	23,337,198	18,929,184	678,394	318,717	7,304,567	62,927	8,441,676	31,389	152,220	200,836	1,738,428	24,632,093	16,127,490
12	17,872,478	8,851,315	218,432	240,895	3,381,578	12,521	3,332,287	4,739	184,681	720,265	755,947	10,689,310	7,344,532
13	29,777,623	41,125,588	1,132,843	828,257	9,109,584	350,832	26,907,364	300,484	146,020	234,491	2,103,683	44,951,804	17,687,603
14	19,177,421	19,351,788	650,505	314,552	4,492,047	166,911	12,215,417	42,530	126,599	242,244	1,106,983	23,135,324	10,752,996
15	12,809,449	11,329,459	279,199	246,384	2,365,524	44,660	7,085,869	15,669	61,049	294,468	936,647	12,659,269	5,513,730
16	2,169,007	2,951,532	17,608	57,725	539,622	19,701	2,052,065	6,395	16,370	649	189,337	3,244,255	1,172,499
17	20,883,500	17,425,864	538,424	308,236	4,382,405	120,674	10,335,614	24,131	120,652	444,459	1,151,209	21,380,564	10,924,276
18	88,073,240	55,421,176	1,867,513	1,811,894	20,033,213	308,169	22,853,027	40,203	837,515	2,330,523	5,344,119	62,837,912	39,681,716
19	26,535,890	22,709,838	185,622	7,103,269	32,441	10,897,734	55,682	160,335	1,893,547	1,880,489	1,880,489	26,124,640	15,194,465
20	9,182,109	10,321,505	265,781	151,450	2,457,402	38,417	6,468,582	49,137	54,723	347,772	488,261	12,134,202	5,627,203
21	17,551,637	20,208,965	491,891	303,339	5,030,561	117,846	12,366,779	178,726	109,526	413,593	1,137,204	23,025,857	10,541,712
22	57,200,374	54,363,745	1,510,379	827,020	16,298,314	262,174	28,779,498	65,295	982,615	1,016,994	4,021,486	61,513,560	32,471,918
23	49,127,615	38,441,046	889,856	570,282	10,917,945	110,976	20,764,284	39,536	626,233	1,180,492	3,345,423	42,352,507	21,487,278
24	39,454,659	35,634,040	1,129,169	689,046	12,582,847	154,352	14,082,246	21,163	388,912	2,527,222	4,089,083	42,792,844	28,580,246
25	18,029,837	19,563,458	680,064	416,899	5,897,120	109,882	10,503,771	69,072	126,244	588,654	1,192,752	23,260,926	12,647,273
26	8,543,743	5,342,549	160,942	104,326	2,185,300	14,776	1,860,109	3,104	73,584	289,066	660,742	6,333,778	4,408,893
27	1,154,858	1,819,981	45,490	60,159	356,339	15,518	1,210,423	3,782	7,665	200	120,405	2,021,366	795,425
28	774,015	510,002	24,850	22,329	142,917	5,698	282,624	900	3,761	.....	26,923	503,208	214,946
29	13,866,251	13,342,163	221,712	111,530	3,093,988	24,497	7,288,790	39,466	108,280	774,084	904,810	15,284,357	8,021,070
30	9,562,967	11,672,195	281,670	187,039	2,631,468	89,654	7,020,301	52,363	52,937	59,769	397,005	13,511,162	5,501,207
31	2,374,496	1,885,834	66,081	23,570	714,022	15,302	562,320	2,454	21,255	119,608	361,222	2,162,390	1,684,774
32	64,490,672	65,012,600	1,641,265	1,156,505	15,100,744	518,540	41,186,551	442,180	313,343	1,129,589	3,523,893	72,529,813	30,824,722
33	29,674,900	20,856,858	967,829	295,982	9,707,194	121,697	12,411,900	39,260	176,016	967,848	2,170,132	33,524,653	20,991,056
34	177,587	161,074	8,700	3,250	50,162	5,108	83,478	8	1,987	.....	8,331	186,645	98,059
35	28,500,012	30,347,035	935,667	531,712	6,700,910	219,372	19,782,991	144,685	185,684	252,266	1,623,749	34,597,069	14,624,708
36	3,602,740	3,518,848	117,028	72,287	1,269,369	26,410	1,460,836	9,233	27,975	277,425	258,285	4,438,563	2,951,317
37	35,030,556	26,488,295	824,935	442,401	10,171,862	72,204	12,341,233	49,979	273,974	318,561	1,093,146	30,199,857	17,786,420
38	54,638,401	48,102,628	1,085,846	671,864	13,557,761	329,610	26,984,626	146,313	257,572	2,422,055	2,046,981	57,453,683	30,139,347
39	1,342,924	1,710,672	61,570	31,525	437,065	13,042	1,050,762	19,015	7,401	22,503	76,889	1,907,072	843,263
40	15,009,649	10,214,597	512,804	199,927	4,877,760	35,320	3,946,148	14,651	68,921	178,983	880,083	13,140,886	9,159,418
41	940,549	894,682	22,249	10,395	300,940	13,466	335,445	1,021	7,049	152,108	52,009	944,777	585,866
42	30,158,572	24,892,523	848,872	476,445	6,965,997	100,419	13,541,022	38,664	114,292	1,085,650	1,721,162	30,456,807	16,815,366
43	45,582,223	27,634,260	835,590	648,308	11,602,362	134,557	10,869,746	37,877	223,487	910,961	2,371,372	32,201,440	21,197,137
44	915,418	817,451	23,876	9,909	306,181	13,459	421,448	3,011	6,162	4,168	29,237	976,589	541,682
45	8,988,774	7,219,486	136,510	61,847	2,013,458	21,663	4,109,070	16,868	53,852	357,042	449,167	8,598,084	4,467,342
46	28,392,248	28,731,977	826,006	344,333	9,961,588	106,153	13,786,246	39,981	127,685	1,144,784	2,395,201	35,855,310	21,962,911
47	97,224,264	80,206,950	2,427,125	1,188,254	31,326,917	262,779	36,616,087	139,140	870,831	1,405,691	5,970,126	89,154,820	52,275,954
48	30,332,960	22,460,731	683,051	406,892	8,631,652	223,790	8,462,297	17,933	188,585	1,914,800	1,941,731	28,758,481	20,682,394
49	68,308,764	51,120,034	1,367,315	987,395	16,059,326	204,132	25,383,338	44,822	1,096,563	1,336,861	4,640,282	57,969,170	32,381,700
50	1,074,886	622,994	35,700	14,605	314,009	1,357	196,148	169	6,039	9,175	45,792	751,249	553,744

## MANUFACTURES.

## LUMBER INDUSTRY, CUSTOM SAWMILLS—STATISTICS, BY STATES: 1909.

STATE.	Number of establishments.	PERSONS ENGAGED IN INDUSTRY.				Primary horse-power.	Capital.	Salaries.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
		Total.	Proprietors and firm members.	Salaries employed.	Wage earners (average number).							
United States.....	4,133	12,836	5,702	44	7,090	93,280	\$5,655,145	\$8,900	\$1,687,252	\$97,574	\$4,515,881	\$4,418,307
Alabama.....	55	237	113	1	123	1,302	52,867	200	18,325	1,385	55,271	53,886
Arkansas.....	39	156	51	.....	105	970	46,700	.....	16,434	918	39,439	38,521
Connecticut.....	31	86	36	.....	60	873	51,408	.....	19,478	1,045	46,481	45,436
Delaware.....	21	93	26	.....	67	415	26,775	.....	11,371	845	25,605	24,760
Florida.....	5	24	10	1	13	155	7,028	78	3,446	252	6,817	6,505
Georgia.....	92	360	143	2	215	1,771	98,122	700	38,360	2,749	109,319	106,570
Idaho.....	4	27	22	.....	5	111	9,110	.....	2,392	150	4,505	4,355
Illinois.....	123	305	149	.....	156	2,244	139,731	.....	38,784	2,099	117,443	114,744
Indiana.....	204	594	269	.....	325	4,298	237,931	.....	77,688	1,838	220,437	218,599
Iowa.....	117	284	148	3	133	2,232	150,765	1,062	40,287	2,999	124,124	121,125
Kentucky.....	294	1,009	381	2	626	5,650	294,594	653	114,763	6,092	326,593	320,471
Louisiana.....	3	15	2	2	11	95	9,600	600	3,804	213	6,090	5,877
Maine.....	88	223	100	4	119	4,339	173,500	1,383	43,313	3,135	102,802	99,667
Maryland.....	126	435	158	1	276	2,492	196,099	100	69,679	2,167	173,450	171,293
Massachusetts.....	35	92	40	.....	62	1,512	78,685	.....	22,548	601	47,754	47,153
Michigan.....	197	580	271	3	306	4,894	322,255	370	102,659	4,051	236,209	232,158
Minnesota.....	137	367	244	.....	123	3,066	203,105	.....	46,250	2,001	132,283	130,282
Mississippi.....	27	95	35	.....	60	663	26,600	.....	10,133	933	28,769	27,836
Missouri.....	419	1,135	595	4	536	7,060	497,026	634	116,773	13,568	414,135	400,567
Montana.....	14	43	10	.....	24	534	32,000	.....	8,741	670	24,249	23,609
New Hampshire.....	42	94	46	1	47	1,970	61,373	35	21,941	956	49,201	48,245
New Jersey.....	7	13	7	.....	6	213	22,625	.....	2,065	440	5,422	4,982
New York.....	211	452	243	3	206	6,599	423,786	400	76,213	7,090	207,624	200,534
North Carolina.....	191	811	300	5	506	3,641	214,394	498	82,774	5,821	209,665	203,844
Ohio.....	262	732	340	1	391	5,398	336,846	150	107,840	3,980	286,189	282,209
Oklahoma.....	4	12	5	.....	7	118	5,325	.....	1,908	65	4,725	4,660
Oregon.....	4	13	5	.....	8	90	6,580	.....	4,614	135	8,144	8,009
Pennsylvania.....	267	675	342	1	332	5,541	388,261	108	103,540	5,025	284,056	279,031
Rhode Island.....	11	26	12	.....	14	410	19,500	.....	7,191	807	15,290	14,483
South Carolina.....	73	271	100	1	170	1,358	66,358	500	25,347	1,745	62,273	60,528
Tennessee.....	226	918	321	3	594	4,475	237,331	275	87,085	6,027	233,204	227,177
Vermont.....	61	184	74	1	109	3,340	147,198	364	41,627	1,865	86,398	84,533
Virginia.....	284	1,092	415	1	676	4,609	350,535	100	110,433	5,482	296,668	291,186
Washington.....	10	25	13	.....	12	207	16,612	.....	7,442	167	13,970	13,803
West Virginia.....	187	596	282	2	312	3,403	223,976	500	74,033	3,767	208,092	204,325
Wisconsin.....	251	732	367	2	383	6,930	432,029	190	116,101	5,459	291,736	286,280
Wyoming.....	4	10	8	.....	2	58	4,925	.....	698	215	4,900	4,745
All other states.....	7	20	10	.....	10	244	12,300	.....	2,063	230	6,519	6,289