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## SLAUGHTERING AND MEAT PACKING.

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# SLAUGHTERING AND MEAT PACKING.

By HARRY C. McCARTY.

The process of converting live stock into food for human consumption is an industry that, directly and indirectly, furnishes employment to a considerable portion of the population of the United States, and sustenance to all. The Census Office recognizes two classifications of this process—one, slaughtering, whole-sale, not including meat packing, which involves the preparation of fresh meat; the other, slaughtering and

meat packing, wholesale, which comprehends the packing of meat and the preparation of the various other animal products and by-products. Up to the census of 1890 these two branches were reported together under various names, but at that time the classification was subdivided as indicated above. This classification was also adopted at the Twelfth Census in 1900. The figures of these subdivisions are united in Table 1.

TABLE 1.—COMBINED SLAUGHTERING AND MEAT PACKING: COMPARATIVE SUMMARY, 1850 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.						PER CENT OF INCREASE.				
	1900	1890	1880	1870	1860	1850	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments.....	921	1,118	872	768	259	185	117.6	28.2	18.5	196.5	40.0
Capital.....	\$189,198,264	\$110,837,504	\$49,419,213	\$24,224,692	\$10,158,362	\$3,482,500	61.9	136.5	104.0	138.5	191.7
Salaries officials, clerks, etc., number.....	10,227	23,971	(3)	(3)	(3)	(3)	167.5				
Wage-earners, average number.....	10,123,247	24,536,600	(3)	(3)	(3)	(3)	123.1				
Total wages.....	68,534	48,976	27,297	8,366	5,058	3,276	55.8	61.1	226.8	65.4	54.4
Men, 16 years and over.....	\$33,457,013	\$24,304,976	\$10,508,530	\$2,553,447	\$1,019,266	\$1,231,536	37.7	131.3	311.6	150.5	117.2
Women, 16 years and over.....	63,922	42,285	26,113	7,906	5,059	3,267	51.2	61.9	230.8	66.9	54.2
Wages.....	\$32,289,847	\$23,887,890	(3)	(3)	(3)	(3)	35.0				
Women, 16 years and over.....	2,945	990		202	19	9	197.5		100.0	963.2	111.1
Wages.....	\$853,813	\$285,554		(3)	(3)	(3)	190.0				
Children, under 16 years.....	1,667	700	1,184	258	(3)	(3)	138.1	40.9	358.9		
Wages.....	\$363,353	\$131,532	(3)	(3)	(3)	(3)	176.3				
Miscellaneous expenses.....	\$24,060,412	\$15,716,735	(3)	(3)	(3)	(3)	58.1				
Cost of materials used.....	\$683,583,577	\$480,992,211	\$267,738,902	\$61,674,024	\$23,564,433	\$9,451,096	42.1	79.6	324.1	161.7	149.8
Value of products.....	\$785,562,433	\$561,611,668	\$303,562,413	\$75,826,500	\$22,441,776	\$11,981,642	39.9	85.0	300.8	137.5	145.7

<sup>1</sup> Decrease.

<sup>2</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 12.)

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

<sup>4</sup> Not reported.

The development of this industry during the half century covered by the table has been almost phenomenal. The settlement of the Western country and the consequent expansion of territory devoted to stock raising; the extension of railroads and the increased facility of communication; the methods devised to insure preservation of meats, such as improved methods of curing, and the introduction and improvement of mechanical and chemical processes of refrigeration, rendering summer packing possible; the utilization of every part of the animal; and the adoption of labor-saving devices, are among the factors that have contributed to its growth. In the fifty years the number of establishments increased from 185 to 921; the capital invested, from \$3,482,500 to \$189,198,264; the number of wage-earners, from 3,276 to 68,534; the wages paid,

from \$1,231,536 to \$33,457,013; the cost of materials used, from \$9,451,096 to \$683,583,577; and the value of products, from \$11,981,642 to \$785,562,433. The average amount of capital invested per establishment grew from \$18,824 in 1850 to \$205,427 in 1900; the average yearly earnings of the wage-earners grew from \$376 to \$488; and the average value of products per establishment rose from \$64,766 to \$852,945. The growth was steady.

During the ten years covered by the Eighth Census, taken in 1860, the center of the meat industry was at Cincinnati and in the Ohio Valley. The average amount of capital invested per establishment increased from \$18,824 to \$39,221, or 108.4 per cent, while the average value of products per establishment increased from \$64,766 to \$113,675, or 75.5 per cent. From that time

concentration in definite centers was a marked feature of the growth. The effects of the industrial crisis of 1857, with its wholesale reduction of wages, is seen by the difference in the average yearly wage paid in 1850 and 1860. In 1850 it was \$376, which decreased to \$202 in 1860, a decrease of 46.3 per cent. The winter packing in six principal Western centers grew from 720,500 hogs in 1850 to 992,310 hogs in 1860.

In the following decade, from 1860 to 1870, a still greater relative growth is shown. The number of establishments increased 509, or 196.5 per cent, the largest increase in this item recorded in the half century. The sum of \$14,066,330 was added to the capital invested; 3,308 wage-earners more than formerly found employment, and the benefit to the stock raiser is shown approximately in the increase of \$38,109,591, or 161.7 per cent paid for materials used. The value of the product increased \$46,384,724, or 157.5 per cent. It should be remembered, however, that these values were expressed in a currency which was at a discount in gold, and should therefore be reduced about one-fifth for purposes of comparison with the other census years. This decade saw the beginning of the dressed-beef trade. The refrigerator car was invented, and in September, 1869, the first cargo of dressed beef was shipped from Chicago to Boston. The capital invested per establishment decreased from \$39,221 to \$81,543, or 19.6 per cent. This decrease was due principally to the large increase in the number of small establishments. The average value of products per establishment decreased from \$113,675 to \$98,732, or 13.1 per cent.

The development in the decade from 1870 to 1880 was due primarily to the improvement in various refrigerating processes, and the consequent inauguration of summer packing on a large scale. Up to 1872, in the pork-packing branch of the industry, summer slaughtering and packing had not assumed large proportions, but in the packing year 1872-1873, 505,500 hogs were killed during the summer season. The increase was steady until the summer season of 1879-1880, when 4,051,248 hogs were killed and packed. In 1872-1873 summer packing amounted to 8.5 per cent of the pack for the entire year, while in 1879-1880 it had grown to 37.7 per cent. During the same period, winter packing grew from 5,410,314 hogs in 1872-1873 to 6,950,451 hogs in 1879-1880. Winter packing increased 28.5 per cent, while summer packing increased 701.6 per cent. This latter growth affords an illustration of the influence that refrigeration had on the growth of the meat trade. The yearly pack increased from 5,915,814 hogs in 1872-1873 to 11,001,699 in 1879-1880, or 86 per cent. The dressed-beef trade, too, was given an impetus by the introduction of the refrigerating processes. Up to 1875

this trade had been of minor importance except for local consumption, but with the introduction of the refrigerator car, allowing shipment to markets at a distance from the place of slaughtering, it assumed large proportions. The beginning of the export of fresh beef dates from 1876. The canning of beef was attempted in Chicago in the sixties, and had some growth, but it was not until 1879 that it was taken up on a large scale. The decrease in the number of women employed, and the increase in the number of children, is a noticeable feature. The table shows, however, a large increase in all other items.

In the ninth decade (1880-1890), the capital invested and the wages had very nearly the same growth per cent, although the total amount of wages was a little more than one-fifth the amount of capital invested. The value of products increased \$258,049,255, or 85 per cent. The number of establishments increased faster than in the preceding decade. The average amount of the capital invested per establishment increased from \$56,673 in 1880 to \$104,551 in 1890; the average value of products per establishment increased from \$348,122 to \$502,336, an increase of 44.3 per cent. This decade is the only one in which the growth per cent of the value of products exceeded the growth per cent of the cost of materials used. This was due to the fact that the packer began to utilize the waste that was formerly thrown away, thus giving an increased value to the product, while the value of the stock, as purchased from the stock raiser, did not increase in corresponding ratio.

In the tenth decade (1890-1900), the progress of concentration went steadily on. In 1900 there were 921 establishments, with an invested capital of \$189,198,264, an average capital of \$205,427, as against 1,118 establishments in 1890, with a capital of \$116,887,504, and an average of \$104,551 invested per establishment, or an increase in the individual establishment in the ten years of 96.5 per cent. These figures show this period to be the most rapid in its tendency toward concentration. The more extended use and consequent increased operating expenses of the refrigerator car system, owned by the packers, explains part of the increase in the miscellaneous expenses. In 1890 the miscellaneous expenses were 2.8 per cent of the value of the product, and 3.1 per cent in 1900. The largest percentage of increase appears in the number of women and children employed and the wages paid them. The number of women employed increased 197.5 per cent, and their wages 199 per cent; the number of children employed increased 138.1 per cent, and their wages 176.3 per cent.

A reference to Table 2, showing the comparative summary, by states, is instructive as indicating the geographical location of this industry, and, roughly, its movement during the decade 1890-1900.

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TABLE 2.—COMBINED SLAUGHTERING AND MEAT PACKING: COMPARATIVE SUMMARY, BY STATES, 1890 AND 1900.

STATES.	Year.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		AVERAGE NUMBER OF WAGE-EARNERS AND TOTAL WAGES.								Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Total.		Men, 16 years and over.		Women, 16 years and over.		Children, under 16 years.				
						Average number.	Wages.	Average number.	Wages.	Average number.	Wages.	Average number.	Wages.			
United States .....	1900	921	\$189,198,264	10,227	\$10,123,247	68,534	\$33,457,013	63,922	\$32,230,847	2,945	\$853,818	1,667	\$363,353	\$24,060,412	\$683,588,577	\$785,562,433
	1890	1,118	116,887,504	13,971	14,536,600	43,975	24,304,976	42,285	23,887,890	990	285,554	700	131,532	15,716,735	480,962,211	561,611,608
California .....	1900	58	3,913,081	180	254,567	925	544,659	915	538,611	10	6,048	1	240	441,210	13,555,445	15,717,712
	1890	50	2,220,536	144	190,430	436	333,697	435	333,457	10	6,048	1	240	290,208	8,075,000	9,708,858
Colorado .....	1900	14	1,380,518	48	60,896	261	170,744	259	170,244	2	500	1	100	56,384	3,721,610	4,343,983
	1890	5	348,650	14	21,668	81	58,424	81	58,424	1	100	1	100	29,605	1,872,949	2,184,580
Connecticut .....	1900	12	562,564	37	36,662	380	174,289	378	173,829	2	410	1	100	76,721	3,143,590	3,663,393
	1890	15	662,885	42	46,527	384	190,559	383	190,039	1	520	1	100	42,865	3,428,072	4,153,378
Delaware .....	1900	4	234,420	22	13,610	37	20,398	36	20,242	1	150	1	150	9,899	442,389	521,076
	1890	5	149,400	6	4,840	40	20,210	40	20,210	1	150	1	150	8,522	250,750	320,206
Dist. Columbia .....	1900	7	248,200	32	15,784	116	63,607	114	62,931	2	676	2	410	19,935	2,013,827	2,210,860
	1890	24	118,230	27	19,970	82	37,113	80	36,697	1	100	1	100	11,029	664,753	858,439
Georgia .....	1900	7	115,827	34	20,235	104	32,440	102	32,115	1	75	1	250	11,234	483,695	591,227
	1890	7	115,827	34	20,235	104	32,440	102	32,115	1	75	1	250	11,234	483,695	591,227
Illinois .....	1900	64	71,229,262	4,226	4,424,285	27,861	14,044,838	25,792	13,462,377	1,473	427,203	596	155,268	14,211,396	246,713,309	287,922,277
	1890	81	40,807,115	984	1,087,867	17,982	10,500,038	17,022	10,271,345	502	152,412	408	76,281	6,463,616	180,903,912	212,291,332
Indiana .....	1900	36	8,800,284	803	314,603	3,597	1,565,752	3,157	1,455,428	887	101,499	53	8,825	530,956	88,608,841	43,862,273
	1890	21	5,346,255	142	139,559	2,107	1,018,104	1,956	983,724	117	29,196	34	5,184	1,858,233	24,426,470	27,913,840
Iowa .....	1900	27	6,351,353	193	197,376	2,887	1,208,167	2,643	1,163,421	29	9,906	215	34,840	441,986	21,556,644	25,695,044
	1890	29	4,485,020	158	189,262	2,575	1,122,695	2,518	1,103,755	27	2,100	50	11,840	526,705	20,655,228	23,426,576
Kansas .....	1900	14	16,486,177	1,841	1,631,866	8,117	3,575,049	7,170	3,330,031	661	190,802	286	53,616	2,003,771	67,908,960	77,411,888
	1890	18	11,086,058	205	253,350	5,018	2,646,309	4,698	2,554,568	217	69,581	103	22,160	3,322,200	56,120,014	44,696,077
Kentucky .....	1900	28	1,326,976	62	51,799	511	214,271	507	213,711	4	560	1	104	105,694	4,444,621	5,177,167
	1890	26	1,447,945	55	49,617	414	130,767	413	130,668	1	100	1	104	135,116	2,604,664	3,374,011
Maine .....	1900	11	132,680	6	2,840	38	17,900	37	17,600	1	300	1	100	6,819	457,031	558,742
	1890	7	70,875	10	6,450	23	15,238	23	15,238	1	300	1	100	6,057	354,607	418,811
Maryland .....	1900	82	1,548,488	68	48,804	597	276,413	584	273,819	10	2,118	3	476	109,017	7,109,079	8,046,359
	1890	17	993,081	55	55,724	389	182,658	382	181,812	3	650	4	606	76,159	8,969,563	4,670,690
Massachusetts .....	1900	22	11,814,075	220	250,296	2,748	1,818,077	2,724	1,811,395	18	8,582	11	3,100	591,102	28,040,069	31,633,433
	1890	24	7,187,735	113	130,806	1,779	820,409	1,769	824,277	10	2,132	1	100	497,382	16,372,177	20,221,645
Michigan .....	1900	29	1,438,351	71	66,661	456	230,637	453	230,137	2	450	1	50	87,291	4,770,640	5,337,417
	1890	30	1,026,223	87	76,209	329	168,089	326	167,408	2	481	1	200	58,733	3,446,164	3,998,978
Minnesota .....	1900	20	1,355,011	125	102,709	668	303,977	650	299,105	9	3,000	9	1,872	90,796	6,823,255	7,810,555
	1890	18	741,846	41	43,064	222	119,792	216	118,710	1	800	5	782	60,453	2,062,954	2,510,431
Missouri .....	1900	37	7,944,033	242	253,775	3,102	1,440,742	2,977	1,416,457	8	2,160	117	22,125	364,267	99,108,137	43,040,885
	1890	68	4,966,780	175	223,096	1,204	645,322	1,189	632,202	78	12,620	2	500	386,743	15,142,352	18,320,193
Montana .....	1900	5	241,826	9	12,600	37	33,698	35	32,493	2	1,200	1	100	7,798	821,070	934,640
	1890	5	241,826	9	12,600	37	33,698	35	32,493	2	1,200	1	100	7,798	821,070	934,640
Nebraska .....	1900	12	16,524,895	721	684,240	6,090	2,990,863	5,602	2,862,441	173	57,425	315	70,997	1,591,516	63,048,186	71,230,366
	1890	7	5,069,499	146	142,935	2,144	1,191,595	2,076	1,178,895	16	4,800	53	7,900	525,518	20,296,950	23,941,144
New Jersey .....	1900	41	1,588,389	100	94,080	558	331,825	556	331,565	2	450	2	260	164,281	12,849,902	14,046,217
	1890	50	1,825,650	136	188,566	610	487,322	610	487,322	1	100	1	100	157,625	16,233,581	17,813,166
New York .....	1900	110	15,857,075	602	584,386	3,099	1,846,434	3,009	1,820,954	79	23,636	11	1,844	1,274,534	60,523,186	57,431,293
	1890	181	12,005,460	559	739,026	3,744	2,434,142	3,725	2,430,284	15	3,462	4	396	960,083	67,560,780	76,642,151
North Dakota .....	1900	3	104,371	8	8,760	34	15,977	33	15,677	1	300	1	100	8,975	198,175	256,160
	1890	3	104,371	8	8,760	34	15,977	33	15,677	1	300	1	100	8,975	198,175	256,160
Ohio .....	1900	71	5,855,626	313	260,001	1,765	811,398	1,717	798,514	29	8,656	19	4,228	639,008	17,927,953	20,660,780
	1890	138	3,532,540	287	301,369	1,346	632,561	1,335	679,825	6	2,300	5	456	234,983	14,341,520	17,012,198
Oregon .....	1900	9	760,448	41	47,130	172	87,821	166	86,441	1	480	5	900	35,768	1,359,861	1,638,480
	1890	7	1,587,600	21	30,500	107	91,500	105	91,150	1	100	1	250	37,548	1,562,700	1,978,625
Pennsylvania .....	1900	111	6,548,577	376	317,153	1,699	920,190	1,646	914,467	18	3,895	10	1,828	526,972	21,601,810	25,238,772
	1890	242	6,180,789	388	396,326	1,582	772,422	1,568	768,524	11	3,100	8	798	316,572	18,575,330	21,991,604
Rhode Island .....	1900	7	759,850	16	17,636	209	107,104	206	106,268	1	100	3	336	44,736	2,246,780	2,503,466
	1890	10	753,100	49	50,680	242	135,829	239	134,579	1	100	3	750	45,140	4,213,329	4,627,366
Tennessee .....	1900	8	651,740	15	17,365	156	60,945	152	60,775	4	170	1	100	25,268	1,453,128	1,671,218
	1890	3	54,500	8	6,120	26	11,700	26	11,700	1	100	1	100	1,782	124,090	150,742
Texas .....	1900	12	1,232,267	49	61,797	414	179,505	394	173,438	19	5,867	1	200	66,749	3,170,538	3,904,491
	1890	12	1,232,267	49	61,797	414	179,505	394	173,438	19	5,867	1	200	66,749	3,170,538	3,904,491
Utah .....	1900	8	117,027	6	2,472	42	18,653	42	18,653	1	100	1	144	5,940	385,358	453,456
	1890	4	302,134	12	14,770	62	45,934	61	45,840	1	100	1	144	16,096	457,064	545,200
Virginia .....	1900	4	159,500	19	14,840	65	28,884	65	28,884	1	100	1	100	3,988	637,780	743,620
	1890	4	159,500	19	14,840	65	28,884	65	28,884	1	100	1	100	3,988	637,780	743,620

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900 but not included in this table. (See Table 12.)

<sup>2</sup> Included in "all other states."

<sup>3</sup> None reported in 1890.



## MANUFACTURES.

TABLE 2.—COMBINED SLAUGHTERING AND MEAT PACKING: COMPARATIVE SUMMARY, BY STATES, 1890 AND 1900—Continued.

STATES.	Year.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		AVERAGE NUMBER OF WAGE-EARNERS AND TOTAL WAGES.								Miscellaneous expenses.	Cost of materials used.	Value of products.
						Total.		Men, 16 years and over.		Women, 16 years and over.		Children, under 16 years.				
				Num-ber.	Salaries.	Average num-ber.	Wages.	Average num-ber.	Wages.	Average num-ber.	Wages.	Average num-ber.	Wages.			
Washington .....	1900 1890	18	\$1,014,086	88	\$81,116	231	\$156,531	229	\$155,631	2	\$900	.....	.....	\$80,008	\$4,252,435	\$4,892,857
West Virginia.....	1900 1890	3	313,000	16	11,800	84	42,646	76	40,642	6	1,620	2	\$384	4,623	1,133,954	1,337,573
Wisconsin.....	1900 1890	13 22	3,811,616 2,622,821	123 63	145,333 69,179	1,367 360	563,208 392,683	1,365 842	562,833 389,033	2 3	375 1,400	..... 15	..... 2,250	403,991 108,512	11,889,524 9,176,673	13,649,750 10,346,398
All other states and territories. <sup>2</sup>	1900 1890	14 16	216,671 625,277	15 49	10,270 43,084	137 177	59,426 94,384	131 168	58,113 93,709	..... 5	..... 400	6 4	1,308 275	12,779 44,616	1,183,852 2,082,050	1,374,953 2,435,979

<sup>1</sup> Included in "all other states."<sup>2</sup> Includes establishments distributed as follows: 1890—Florida, 2; Georgia, 1; New Hampshire, 2; North Carolina, 1; South Dakota, 2; Vermont, 1; Virginia, 1; Washington, 4; West Virginia, 2; 1900—Alabama, 2; Arkansas, 2; North Carolina, 1; New Hampshire, 1; New Mexico, 2; Oklahoma, 2; South Carolina, 1; South Dakota, 1; Wyoming, 2.

In value of products Illinois was the leading state in both years. As between the two census years it is seen that Kansas advanced from third place to second, New York dropped from second place to fourth, Nebraska advanced from fourth to third, Indiana occupied fifth place in both years, Iowa fell from sixth to eighth, Massachusetts advanced from eighth to seventh, and California from thirteenth to eleventh. The list of the leading 13 states, in their order, in 1890 is as follows: Illinois, New York, Kansas, Nebraska, Indiana, Iowa, Pennsylvania, Massachusetts, Missouri, New Jersey, Ohio, Wisconsin, and California; in 1900 the order was: Illinois, Kansas, Nebraska, New York, Indiana, Missouri, Massachusetts, Iowa, Pennsylvania, Ohio, California, New Jersey, and Wisconsin. The falling off in the value of products in New York and New Jersey is noteworthy. Of these 13 states the greatest gain per cent was made by Nebraska, with 146.3 per cent, followed by Missouri, with 134.9 per cent. During the decade Illinois made by far the greatest absolute gain, \$75,630,895, an amount nearly equal to the entire value of products for Kansas, the second state in 1900. In absolute gain, Nebraska, with \$42,339,222, held second place; Kansas, with \$32,715,806, third; and Missouri, with \$24,720,692, fourth; Indiana came next with \$15,948,433. In these 5 states the number of establishments decreased from 195 to 163; their capitalization increased by \$53,748,944, of which Illinois was credited with \$30,422,147, or more than the increase of the other four put together. The products of the leading thirteen states increased \$198,206,503, which was 88.5 per cent of the total increase of \$223,950,765 reported for the country.

Table 2 shows the expansion that has taken place in this industry in the Middle West. Illinois is far in the lead. This state in 1900 had 6.9 per cent of the establishments, 37.6 per cent of the capital, 40.7 per cent of the wage-earners, paid 42 per cent of the wages, and

produced 36.7 per cent of the products. The industry in the Southern states can hardly be said to exist in an industrial sense, except as a so-called "neighborhood" industry. The Northeastern states are coming more and more to rely upon the West as the source of their meat supply. The decline in New York of 25.1 per cent in the value of products, and in New Jersey of 21.1 per cent, shows that the Western dressed meat is supplying much of the demand that was formerly filled by the Eastern dressed article.

In the extreme West the fact that the production of Oregon decreased from \$1,978,625 to \$1,638,480, or 17.2 per cent, while that of California increased from \$9,768,858 to \$15,717,712, or 60.9 per cent, is noteworthy. No comparison can be made for the state of Washington, owing to the fact that the figures for 1890 can not be shown without disclosing the operations of individual establishments. The table shows a growth of 65 establishments in Maryland. Minnesota shows a growth of \$5,300,124, or 211.1 per cent, in the value of products. Texas reported no establishments in 1890, but in 1900 returned 12 establishments, with a capital invested of \$1,232,267, employing 414 wage-earners, who earned \$179,505 during the census year, and produced a product valued at \$3,904,491. Utah, although reporting an increase of 4 establishments (from 4 to 8), shows a decrease of \$91,744, or 16.8 per cent, in the value of products. The progress of concentration is shown in Pennsylvania, where the number of establishments decreased from 242 to 111, or 54.1 per cent. Delaware shows a loss of 1 establishment, but an increase in the value of products from \$320,206 to \$521,076, an increase of \$200,870, or 62.7 per cent. The number of establishments in the District of Columbia decreased from 24 to 7, but the value of products increased \$1,352,421, or 157.5 per cent. Connecticut lost 3 establishments and \$489,985 in value of products, or 11.8 per cent.

In consulting Table 3 it should be borne in mind that these figures do not represent an actual increase or decrease in amounts, but a change as compared with the figures for the industry for the entire country.

TABLE 3.—COMBINED SLAUGHTERING AND MEAT PACKING: PERCENTAGES OF CAPITAL AND PRODUCTS FOR THIRTEEN STATES LEADING IN 1900 IN VALUE OF PRODUCTS TO TOTAL CAPITAL AND TOTAL VALUE OF PRODUCTS, 1890 AND 1900.

STATES.	PER CENT OF TOTAL CAPITAL OF THE UNITED STATES.		PER CENT OF TOTAL VALUE OF PRODUCTS OF THE UNITED STATES.	
	1890	1900	1890	1900
Illinois.....	34.9	37.6	37.8	36.7
Kansas.....	9.5	8.7	8.0	8.9
Nebraska.....	4.2	8.7	5.2	9.1
New York.....	10.8	8.1	13.6	7.3
Indiana.....	4.6	4.7	5.0	5.6
Missouri.....	4.2	4.2	3.8	5.5
Massachusetts.....	6.1	6.0	3.6	4.0
Iowa.....	3.8	3.4	4.2	3.3
Pennsylvania.....	5.8	3.5	8.9	3.2
Ohio.....	3.1	2.8	3.0	2.6
California.....	1.9	2.1	1.7	2.0
New Jersey.....	1.6	0.8	3.2	1.8
Wisconsin.....	2.2	2.0	1.8	1.7

This table presents the percentage of capital invested and of value of products in the 13 states leading in

value of products in 1890 and 1900, as compared with the totals of these items for the United States. It shows the figures of Table 2 in this regard, expressed to make clearer the relative importance of these states. Illinois gained 2.7 per cent in capital invested, but lost 1.1 per cent in value of products. A large decrease is shown in New York, where the capital invested fell off 2.7 per cent and the products 6.3 per cent. Kansas shows a loss of 0.8 per cent in capital invested, but a gain of 1.9 per cent in value of products. Nebraska shows a gain of 4.4 per cent in capital and 3.9 per cent in value of products. Massachusetts shows a falling off of 0.1 per cent in capital invested, but a gain of 0.4 per cent in value of products. The gain in California indicates a normal and steady growth, due to increase of population and of export demand. Missouri shows a slight loss per cent in capital invested, but a considerable gain in value of products. New Jersey suffered a loss in both items. In connection with this table it should be noticed that although in 1900 Iowa led in the production of hogs, and stood second in the number of cattle raised, it was eighth, as shown by Table 3, in the value of meat products. This indicates the tendency for slaughtering and packing operations to concentrate in well-defined centers, as shown in Table 4.

TABLE 4.—COMBINED SLAUGHTERING AND MEAT PACKING: COMPARATIVE SUMMARY OF CITIES HAVING A PRODUCT VALUED AT OVER \$1,000,000, 1880 TO 1900.<sup>1</sup>

CITIES.	Year.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Total wages.			
Allegheny, Pa.....	1900	8	\$1,497,666	52	\$57,800	438	\$233,028	\$111,546	\$3,388,805	\$3,996,807
	1890	7	140,860	213	29,750	42	17,890	7,104	238,876	294,065
	1880									
Baltimore, Md.....	1900	78	1,344,953	57	44,724	508	233,898	99,546	6,257,558	7,066,461
	1890	14	958,521	253	259,904	368	171,208	75,232	3,668,147	4,811,412
	1880	6	705,000	( <sup>2</sup> )	( <sup>2</sup> )	194	85,300	( <sup>2</sup> )	2,559,662	2,742,645
Boston, Mass.....	1900	6	40,915	14	8,996	34	23,030	14,006	1,144,276	1,329,010
	1890	3	452,087	219	234,507	199	140,465	22,175	2,424,447	2,782,823
	1880	21	918,000	( <sup>2</sup> )	( <sup>2</sup> )	211	153,263	( <sup>2</sup> )	6,509,139	7,096,777
Brooklyn Borough, N. Y.....	1900	10	618,825	35	32,660	227	136,777	59,293	3,783,042	4,126,632
	1890	37	1,672,528	295	215,258	449	335,959	120,002	11,640,449	13,087,354
	1880	28	1,125,000	( <sup>2</sup> )	( <sup>2</sup> )	260	194,568	( <sup>2</sup> )	7,340,450	8,010,492
Buffalo, N. Y.....	1900	24	5,173,694	203	146,523	928	436,869	342,378	10,026,676	11,601,167
	1890	34	2,915,280	290	296,374	766	377,849	128,344	8,437,164	9,951,044
	1880	6	872,500	( <sup>2</sup> )	( <sup>2</sup> )	289	170,433	( <sup>2</sup> )	3,028,924	3,441,280
Chicago, Ill.....	1900	38	67,137,569	4,010	4,233,994	25,345	12,875,676	13,329,325	218,241,331	256,527,949
	1890	57	39,222,195	2900	2,003,668	16,975	10,002,573	6,218,026	178,568,365	203,606,402
	1880	70	8,455,200	( <sup>2</sup> )	( <sup>2</sup> )	7,478	3,392,748	( <sup>2</sup> )	74,546,819	85,824,371
Cincinnati, Ohio.....	1900	27	2,893,064	98	103,830	856	414,621	437,889	8,806,652	10,370,177
	1890	33	2,215,490	2149	2178,404	675	373,859	152,452	7,873,703	9,511,183
	1880	49	4,074,682	( <sup>2</sup> )	( <sup>2</sup> )	1,148	338,302	( <sup>2</sup> )	10,454,991	11,614,510
Cleveland, Ohio.....	1900	10	1,827,288	173	135,886	577	235,023	175,132	6,759,023	7,514,470
	1890	13	744,465	273	279,080	332	200,981	30,570	4,983,627	5,582,666
	1880	12	447,000	( <sup>2</sup> )	( <sup>2</sup> )	416	192,892	( <sup>2</sup> )	4,886,771	5,427,938
Dayton, Ohio.....	1900	10	242,925	12	9,900	147	75,881	10,332	959,661	1,097,525
	1890	4	63,750	215	214,500	42	23,700	3,342	255,436	336,928
	1880	5	50,500	( <sup>2</sup> )	( <sup>2</sup> )	29	20,980	( <sup>2</sup> )	178,136	236,318
Denver, Colo.....	1900	7	383,618	27	36,496	171	103,274	33,184	2,404,458	2,858,947
	1890	3	200,150	29	213,920	59	44,322	23,946	1,415,849	1,625,711
	1880	4	49,000	( <sup>2</sup> )	( <sup>2</sup> )	40	15,990	( <sup>2</sup> )	586,920	690,945
Detroit, Mich.....	1900	16	1,184,776	61	59,581	388	177,856	70,587	3,628,440	4,047,749
	1890	19	818,023	278	270,526	280	145,288	46,009	2,953,937	3,404,424
	1880	7	485,000	( <sup>2</sup> )	( <sup>2</sup> )	147	79,067	( <sup>2</sup> )	1,413,426	1,721,231

<sup>1</sup>The following cities, having a product valued at over \$1,000,000, are not included in the above table, because in 1900 they had less than 8 establishments, except Patterson, N. J., and Seattle, Wash., which cities, together with those of 1880 and 1890 shown below, are not included because they are no comparative figures. These establishments are distributed as follows: 1890—Cambridge, Mass., 2; Cedar Rapids, Iowa, 1; Chicopee, Mass., 1; Clinton, Iowa, 1; Hammond, Ind., 1; Los Angeles, Cal., 1; Marshalltown, Iowa, 1; Nebraska City, Neb., 1; New Haven, Conn., 2; Orange, Conn., 1; Ottumwa, Iowa, 1; Paterson, N. J., 3; Seattle, Wash., 8; Topeka, Kans., 1; Wheeling (and Ohio County), W. Va., 2; Wichita, Kans., 1. 1890—Los Angeles, Cal., 6. 1880—Cambridge, Mass., 5; Wheeling, W. Va., 4; Worcester, Mass., 5.

<sup>2</sup>Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this summary.

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

<sup>4</sup>Not reported.

TABLE 4.—COMBINED SLAUGHTERING AND MEAT PACKING: COMPARATIVE SUMMARY OF CITIES HAVING A PRODUCT VALUED AT OVER \$1,000,000, 1880 TO 1900<sup>1</sup>—Continued.

CITIES.	Year.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Total wages.			
East St. Louis, Ill.....	1900	3	\$3,183,288	166	\$188,259	2,159	\$985,497	\$305,594	\$25,370,543	\$27,670,818
	<sup>2</sup> 1890									
	1880	3	1,550,000	( <sup>2</sup> )	( <sup>2</sup> )	2,540	530,019	( <sup>2</sup> )	6,104,019	7,950,000
Indianapolis, Ind.....	1900	7	3,807,246	186	128,884	1,943	783,226	218,989	17,400,330	18,781,442
	1890	8	890,220	<sup>4</sup> 61	<sup>4</sup> 48,000	827	386,472	108,015	5,408,063	6,295,975
	1880	7	1,618,000	( <sup>2</sup> )	( <sup>2</sup> )	892	345,236	( <sup>2</sup> )	7,890,208	9,014,422
Jersey City, N. J.....	1900	13	473,485	27	26,832	183	180,707	58,342	5,872,946	6,243,217
	1890	18	697,640	<sup>4</sup> 57	<sup>4</sup> 88,332	240	197,304	51,295	10,712,166	11,856,511
	1880	20	1,272,200	( <sup>2</sup> )	( <sup>2</sup> )	433	303,800	( <sup>2</sup> )	17,404,689	18,651,783
Kansas City, Kans.....	1900	8	15,114,601	1,771	1,579,436	7,713	3,381,510	1,919,411	65,082,581	78,787,771
	1890	6	8,964,586	<sup>4</sup> 159	<sup>4</sup> 180,373	4,458	2,378,153	3,058,931	32,284,123	39,927,192
	1880	3	437,500	( <sup>2</sup> )	( <sup>2</sup> )	288	166,500	( <sup>2</sup> )	739,071	965,000
Louisville, Ky.....	1900	12	1,218,426	52	45,789	449	189,417	100,312	3,828,486	4,444,978
	1890	12	1,272,415	<sup>4</sup> 33	<sup>4</sup> 22,967	327	101,328	124,475	2,023,501	2,655,164
	1880	23	2,144,500	( <sup>2</sup> )	( <sup>2</sup> )	866	141,092	( <sup>2</sup> )	3,438,459	4,287,158
Milwaukee, Wis.....	<sup>2</sup> 1900	7	3,578,690	116	140,333	1,293	530,483	385,102	11,405,186	13,045,970
	1890	9	2,291,971	<sup>4</sup> 43	<sup>4</sup> 66,728	742	358,830	96,989	8,635,671	9,704,966
	1880	7	789,000	( <sup>2</sup> )	( <sup>2</sup> )	953	187,596	( <sup>2</sup> )	5,529,618	6,099,480
Newark, N. J.....	1900	10	363,777	39	32,708	176	94,993	40,275	8,276,004	8,637,896
	1890	14	541,910	<sup>4</sup> 84	<sup>4</sup> 66,640	207	141,144	80,032	3,205,374	3,660,696
	1880	7	232,000	( <sup>2</sup> )	( <sup>2</sup> )	88	58,322	( <sup>2</sup> )	1,868,288	1,527,650
New York (Manhattan and Bronx boroughs).....	1900	42	8,648,436	320	378,194	1,705	1,166,749	829,740	34,230,835	38,752,636
	1890	56	7,143,468	<sup>4</sup> 282	<sup>4</sup> 418,226	2,165	1,577,238	639,338	44,761,605	50,251,604
	1880	58	1,801,000	( <sup>2</sup> )	( <sup>2</sup> )	895	675,521	( <sup>2</sup> )	27,768,677	29,297,627
Pawtucket, R. I.....	1900	3	501,480			84	47,280	12,129	1,045,754	1,134,946
	1890	3	495,000	<sup>4</sup> 23	<sup>4</sup> 30,262	102	56,650	13,258	2,670,000	2,895,191
	<sup>2</sup> 1880									
Philadelphia, Pa.....	1900	58	1,882,732	141	111,925	617	372,610	221,674	10,321,065	12,020,462
	1890	202	3,722,207	<sup>4</sup> 264	<sup>4</sup> 291,776	908	514,177	207,080	13,674,466	16,094,498
	1880	19	1,965,625	( <sup>2</sup> )	( <sup>2</sup> )	359	165,858	( <sup>2</sup> )	7,042,781	7,860,114
Pittsburg, Pa.....	1900	5	786,810	47	42,713	150	93,950	28,001	1,779,600	2,054,521
	1890	4	3,215,500	<sup>4</sup> 18	<sup>4</sup> 21,600	61	33,012	37,261	1,149,965	1,541,900
	1880	9	693,000	( <sup>2</sup> )	( <sup>2</sup> )	110	41,379	( <sup>2</sup> )	1,302,167	1,451,816
Portland, Oreg.....	1900	4	604,282	34	39,790	121	54,025	29,700	1,109,989	1,806,496
	1890	5	439,600	<sup>4</sup> 18	<sup>4</sup> 85,100	82	78,800	16,718	1,222,830	1,570,935
	<sup>2</sup> 1880									
Providence, R. I.....	1900	3	252,720	16	17,636	122	58,024	30,597	1,155,026	1,316,220
	1890	6	245,500	<sup>4</sup> 26	<sup>4</sup> 20,418	136	76,636	13,641	1,520,940	1,695,105
	1880	6	273,000	( <sup>2</sup> )	( <sup>2</sup> )	89	44,362	( <sup>2</sup> )	1,318,116	1,458,740
St. Joseph (including South St. Joseph), Mo.....	1900	5	5,200,899	131	106,001	2,216	980,749	190,550	27,645,318	29,794,973
	<sup>2</sup> 1890									
	<sup>2</sup> 1880	5	134,500	( <sup>2</sup> )	( <sup>2</sup> )	204	37,290	( <sup>2</sup> )	1,224,208	1,439,843
St. Louis, Mo.....	1900	25	2,608,249	103	142,573	841	448,287	171,902	11,120,325	12,943,576
	1890	60	8,216,571	<sup>4</sup> 129	<sup>4</sup> 170,226	681	366,011	98,539	9,864,639	12,048,114
	1880	82	1,243,000	( <sup>2</sup> )	( <sup>2</sup> )	584	269,763	( <sup>2</sup> )	7,085,909	8,424,064
St. Paul, Minn.....	1900	6	250,998	16	11,390	84	42,252	21,067	989,749	1,288,864
	1890	6	448,600	<sup>4</sup> 16	<sup>4</sup> 15,700	62	35,476	14,067	659,636	733,370
	1880	5	165,000	( <sup>2</sup> )	( <sup>2</sup> )	33	17,100	( <sup>2</sup> )	371,050	429,747
San Francisco, Cal.....	1900	26	2,305,362	114	177,490	532	323,931	306,403	8,622,994	9,991,699
	1890	25	1,591,779	<sup>4</sup> 86	<sup>4</sup> 122,090	249	198,687	226,259	5,675,801	6,670,474
	1880	24	1,586,200	( <sup>2</sup> )	( <sup>2</sup> )	309	239,868	( <sup>2</sup> )	4,611,721	6,013,602
Sioux City, Iowa.....	1900	3	1,209,695	21	24,250	892	471,944	165,222	6,856,684	8,982,896
	1890	3	1,662,736	<sup>4</sup> 32	<sup>4</sup> 43,340	594	283,165	192,373	6,872,132	7,539,228
	<sup>2</sup> 1880									
Somerville, Mass.....	1900	4	6,801,141	45	70,618	1,435	692,999	314,036	14,233,788	16,692,242
	<sup>2</sup> 1890									
	1880	3	760,840	( <sup>2</sup> )	( <sup>2</sup> )	268	122,889	( <sup>2</sup> )	3,868,896	3,702,601
South Omaha, Nebr.....	1900	6	15,657,418	712	677,256	5,940	2,915,732	1,475,848	60,159,430	67,889,749
	<sup>2</sup> 1890									
	<sup>2</sup> 1880									
Washington, D. C.....	1900	7	248,200	32	15,784	116	63,607	19,935	2,013,827	2,210,860
	1890	24	118,230	<sup>4</sup> 27	<sup>4</sup> 19,970	82	37,113	10,274	664,754	853,439
	<sup>2</sup> 1880									

<sup>1</sup> The following cities, having a product valued at over \$1,000,000, are not included in the above table, because in 1900 they had less than 3 establishments, except Paterson, N. J. and Seattle, Wash., which cities, together with those of 1880 and 1890 shown below, are not included because there are no comparative figures. These establishments are distributed as follows: 1900—Cambridge, Mass., 2; Cedar Rapids, Iowa, 1; Chicopee, Mass., 1; Clinton, Iowa, 1; Hammond, Ind., 1; Los Angeles, Cal., 1; Marshalltown, Iowa, 1; Nebraska City, Neb., 1; New Haven, Conn., 2; Orange, Conn., 1; Ottumwa, Iowa, 1; Paterson, N. J., 3; Seattle, Wash., 8; Topeka, Kans., 1; Wheeling (and Ohio County), W. Va., 2; Wichita, Kans., 1. 1890—Los Angeles, Cal., 6. 1880—Cambridge, Mass., 5; Wheeling, W. Va., 4; Worcester, Mass., 5.

<sup>2</sup> Not reported separately.

<sup>3</sup> Not reported.

<sup>4</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this summary.

<sup>5</sup> Includes, for 1900, Cudahy, Wis.

<sup>6</sup> Does not include South St. Joseph, Mo., for 1880.

Table 4 is a comparative summary for 1880, 1890, and 1900, of those cities that, in 1900, showed a production to the value of \$1,000,000 and over. The product of Chicago alone reached a value of \$256,527,949 in 1900, or 32.7 per cent of the total value for the United States; in 1890, this ratio was 36.3 per cent, a net loss during the decade of 3.6 per cent. Chicago's advance in value of products during these ten years was \$52,921,547, or 26 per cent. The number of establishments steadily decreased, falling from 70 in 1880 to 57 in 1890 and 38 in 1900. Kansas City stood second in value of products, in 1900, gaining during the decade, \$33,860,579, or 84.8 per cent. Of the total value of products in the United States, Kansas City furnished 9.4 per cent in 1900 and 7.1 per cent in 1890, a gain of 2.3 per cent. Unfortunately the figures upon which to base such a comparison for South Omaha are not available. The industry had no existence there in 1880, and the figures for 1890 were not published separately. The total production for the state of Nebraska for 1890, however, of which South Omaha constituted a part, was \$28,941,144, which was exceeded in 1900 by \$38,948,605 by South Omaha alone. In 1900 South Omaha produced 8.6 per cent of the total value of the product of the United States.

At the Twelfth Census New York city (boroughs of Manhattan and Bronx) stood fourth in value of products, showing a decrease between 1890 and 1900 of \$11,498,918. Brooklyn in the same time fell off \$8,960,722. Jersey City and Newark also show a decrease.

This was not due to any decrease in the amount of local consumption, but to the growing importance of the western dressed meat in the eastern markets. Boston shows a continuous and steady decrease in the value of products. Baltimore, on the other hand, steadily gained in number of establishments and in value of products. Philadelphia shows a gain from 1880 to 1890, but a decrease from 1890 to 1900. South St. Joseph, Mo., sprang into prominence between 1890 and 1900, and in 1900, with St. Joseph, produced 3.8 per cent of the total value of the product for the United States. The product of St. Louis, Mo., remained about the same. The figures for East St. Louis, Ill., for 1890 were not reported separately, so that no comparison can be made. In the extreme West, San Francisco gained 58.8 per cent in production between 1890 and 1900, while Portland, Oreg., fell off 16.8 per cent in the same period.

This table as a whole indicates a growth of the average establishment. While in many cases a considerable decrease is shown in the number of establishments, yet a large increase is shown in the average capital invested, and in the average value of the product of the single establishment.

The statistics of slaughtering as conducted separately from packing operations was not included in the census returns prior to the taking of the Eleventh Census, in 1890. Tables 5 and 6 should be consulted together, in order to arrive at the relative importance of the two branches for the several states.

## MANUFACTURES.

TABLE 5.—SLAUGHTERING, WHOLESALE, NOT INCLUDING

	United States.	California.	Colorado.	Connecticut.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.
1 Number of establishments.....	348	35	7	7	8	13	11	7	3	13
2 Character of organization:										
3 Individual.....	205	14	8	3	2	1	9	4	1	11
4 Firm and limited partnership.....	96	15	.....	2	1	6	2	1	1	2
5 Incorporated company.....	47	6	4	2	.....	6	.....	2	1	.....
6 Capital:										
7 Total.....	\$15,103,567	\$1,037,093	\$118,443	\$150,814	\$6,427	\$446,901	\$202,250	\$86,775	\$75,700	\$70,879
8 Land.....	\$1,719,794	\$35,600	\$13,000	\$25,500	\$3,200	\$37,100	\$39,350	\$26,800	\$21,500	\$15,300
9 Buildings.....	\$3,645,060	\$92,400	\$15,700	\$51,885	\$1,325	\$112,500	\$49,200	\$33,900	\$19,000	\$14,300
10 Machinery, tools, and implements.....	\$1,608,570	\$76,555	\$21,000	\$5,460	\$102	\$85,430	\$49,250	\$15,700	\$20,700	\$6,000
11 Cash and sundries.....	\$8,280,143	\$782,588	\$68,743	\$67,969	\$1,800	\$211,871	\$64,450	\$10,876	\$14,500	\$35,270
12 Proprietors and firm members.....	398	46	8	5	4	12	13	6	1	15
13 Salaried officials, clerks, etc.:										
14 Total number.....	569	57	11	7	2	45	5	8	11	.....
15 Total salaries.....	\$650,594	\$80,415	\$9,800	\$4,910	\$610	\$48,686	\$3,500	\$1,320	\$11,856	.....
16 Officers of corporations—										
17 Number.....	51	9	2	.....	.....	5	.....	2	8	.....
18 Salaries.....	\$123,738	\$14,400	\$2,400	.....	.....	\$10,000	.....	\$720	\$6,240	.....
19 General superintendents, managers, clerks, etc.										
20 Total number.....	518	48	9	7	2	40	5	1	8	.....
21 Total salaries.....	\$526,550	\$66,015	\$6,960	\$4,910	\$610	\$38,576	\$3,500	\$600	\$5,616	.....
22 Men—										
23 Number.....	475	47	8	4	2	39	5	1	8	.....
24 Salaries.....	\$506,975	\$65,715	\$6,840	\$3,360	\$610	\$38,228	\$3,500	\$600	\$5,616	.....
25 Women—										
26 Number.....	43	1	1	3	.....	1	.....	.....	.....	.....
27 Salaries.....	\$19,881	\$300	\$120	\$1,560	.....	\$350	.....	.....	.....	.....
28 Wage-earners, including pieceworkers, and total wages:										
29 Greatest number employed at any one time during the year.....	4,799	314	68	19	8	274	52	17	59	45
30 Least number employed at any one time during the year.....	3,916	247	45	18	8	235	44	13	35	39
31 Average number.....	3,751	265	49	12	6	235	47	13	49	42
32 Wages.....	\$2,377,298	\$200,470	\$31,234	\$6,814	\$1,390	\$145,888	\$28,728	\$6,486	\$31,272	\$10,431
33 Men, 16 years and over—										
34 Average number.....	3,725	265	49	10	5	235	46	13	49	42
35 Wages.....	\$2,371,183	\$200,470	\$31,234	\$5,904	\$1,315	\$145,888	\$28,628	\$6,486	\$31,272	\$10,431
36 Women, 16 years and over—										
37 Average number.....	10	.....	.....	2	.....	1	.....	.....	.....	.....
38 Wages.....	\$3,839	.....	.....	\$410	\$75	.....	.....	.....	.....	.....
39 Children, under 16 years—										
40 Average number.....	16	.....	.....	.....	.....	.....	.....	.....	.....	.....
41 Wages.....	\$2,276	.....	.....	.....	.....	.....	.....	.....	.....	.....
42 Average number of wage-earners, including pieceworkers, employed during each month:										
43 Men, 16 years and over—										
44 January.....	3,766	268	55	15	7	222	50	14	59	43
45 February.....	3,785	267	55	15	7	222	48	14	54	43
46 March.....	3,743	267	55	12	7	260	46	14	54	42
47 April.....	3,698	267	53	12	7	239	40	13	49	42
48 May.....	4,144	269	44	7	7	254	41	13	49	42
49 June.....	3,401	260	39	7	4	233	43	13	31	41
50 July.....	3,561	259	41	9	4	228	42	11	40	40
51 August.....	3,612	258	41	9	4	234	44	11	40	36
52 September.....	3,648	261	43	7	4	233	51	12	59	44
53 October.....	3,746	264	43	7	4	238	51	16	59	43
54 November.....	3,811	271	55	7	4	238	51	16	59	43
55 December.....	3,835	270	55	11	4	232	49	16	59	44
56 Women, 16 years and over—										
57 January.....	9	.....	.....	2	1	.....	.....	.....	.....	.....
58 February.....	12	.....	.....	2	1	.....	.....	.....	.....	.....
59 March.....	12	.....	.....	2	1	.....	.....	.....	.....	.....
60 April.....	11	.....	.....	1	1	.....	.....	.....	.....	.....
61 May.....	23	.....	.....	1	1	.....	.....	.....	.....	.....
62 June.....	8	.....	.....	1	1	.....	.....	.....	.....	.....
63 July.....	8	.....	.....	2	1	.....	.....	.....	.....	.....
64 August.....	8	.....	.....	2	1	.....	.....	.....	.....	.....
65 September.....	8	.....	.....	2	1	.....	.....	.....	.....	.....
66 October.....	7	.....	.....	2	1	.....	.....	.....	.....	.....
67 November.....	7	.....	.....	1	1	.....	.....	.....	.....	.....
68 December.....	7	.....	.....	1	1	.....	.....	.....	.....	.....
69 Children, under 16 years—										
70 January.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
71 February.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
72 March.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
73 April.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
74 May.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
75 June.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
76 July.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
77 August.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....
78 September.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
79 October.....	16	.....	.....	.....	.....	.....	.....	.....	.....	.....
80 November.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
81 December.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....
82 Miscellaneous expenses:										
83 Total.....	\$1,375,575	\$69,526	\$12,419	\$6,809	\$489	\$58,225	\$8,837	\$4,888	\$3,786	\$6,290
84 Rent of works.....	\$271,202	\$19,270	\$2,600	\$640	\$60	\$9,012	\$446	.....	\$720	\$120
85 Taxes, not including internal revenue.....	\$84,767	\$4,644	\$1,269	\$888	\$29	\$3,209	\$1,146	\$831	\$226	\$871
86 Rent of offices, insurance, interest, and all sundry expenses not hitherto included.....	\$1,018,799	\$45,562	\$8,550	\$5,280	\$400	\$41,004	\$7,295	\$4,052	\$2,790	\$4,047
87 Contract work.....	\$807	\$50	.....	.....	.....	.....	.....	.....	.....	\$28
88 Materials used:										
89 Total cost.....	\$77,411,990	\$6,756,019	\$692,525	\$220,079	\$27,340	\$6,955,880	\$847,970	\$361,578	\$506,715	\$545,378
90 Slaughtered—										
91 Beeves, number.....	900,169	112,407	10,159	408	1,420	92,786	14,122	6,776	18,820	9,220
92 Cost.....	\$41,281,671	\$3,892,975	\$393,472	\$16,240	\$26,340	\$3,191,721	\$529,640	\$241,100	\$421,100	\$323,540
93 Sheep, number.....	3,393,706	476,189	25,394	20,707	100	63,940	11,710	1,474	12,260	9,200
94 Cost.....	\$12,970,850	\$1,463,850	\$140,017	\$74,835	\$300	\$219,642	\$31,725	\$6,034	\$15,500	\$22,855
95 Hogs, number.....	1,911,782	66,373	8,944	58	100	23,289	8,424	8,300	15,722	15,722
96 Cost.....	\$14,312,037	\$544,645	\$86,925	\$580	\$500	\$3,440,220	\$240,346	\$87,588	\$57,600	\$164,825

# SLAUGHTERING AND MEAT PACKING.

395

MEAT PACKING: BY STATES AND TERRITORIES, 1900.

Maine.	Maryland.	Massachu- setts.	Michigan.	Minne- sota.	Missouri.	Montana.	Ne- braska.	New Jersey.	New York.	Ohio.	Pennsyl- vania.	Utah.	Washing- ton.	All other states and terri- tories. (1)
8	35	11	21	7	6	5	4	19	57	11	43	8	4	15
5	32	7	14	7	3	3	2	11	28	8	28	2	1	6
1	2	2	6	7	2	2	2	8	19	2	13	1	1	6
2	1	2	1	1	1	2	2	10	10	2	2	2	2	8
\$97,880	\$229,571	\$2,297,408	\$178,200	\$148,925	\$99,979	\$241,826	\$36,050	\$554,542	\$8,047,013	\$181,400	\$539,230	\$33,125	\$72,800	\$209,950
\$8,400	\$63,806	\$300,650	\$30,750	\$9,150	\$2,900	\$7,600	\$4,550	\$25,633	\$874,980	\$22,175	\$64,800	\$4,600	\$12,100	\$21,950
\$34,750	\$101,000	\$303,300	\$41,025	\$60,400	\$200	\$22,700	\$4,400	\$44,200	\$2,410,425	\$32,550	\$149,700	\$9,000	\$18,900	\$27,300
\$2,430	\$30,175	\$103,615	\$18,625	\$11,750	\$31,755	\$10,959	\$2,600	\$20,600	\$857,680	\$22,175	\$52,984	\$4,525	\$5,800	\$53,200
\$52,300	\$35,000	\$1,589,888	\$82,800	\$62,625	\$65,124	\$200,567	\$24,500	\$464,209	\$3,904,828	\$54,500	\$272,246	\$15,000	\$41,000	\$107,500
7	36	13	18	6	6	3	6	80	78	14	57	4	3	17
2	5	46	8	6	10	9	1	18	271	27	27	9	17	11
\$1,625	\$1,980	\$65,166	\$8,920	\$4,820	\$9,800	\$12,600	.....	\$21,854	\$323,612	.....	\$27,988	.....	\$7,788	\$9,894
.....	2	8	1	.....	4	2	.....	17	17	.....	.....	.....	.....	1
.....	\$700	\$18,000	\$2,000	.....	\$5,800	\$5,000	.....	.....	\$56,918	.....	.....	.....	.....	\$1,500
2	3	48	7	6	6	7	.....	18	254	27	.....	9	16	15
\$1,625	\$1,280	\$47,166	\$6,920	\$4,820	\$3,500	\$7,600	.....	\$21,854	\$266,694	.....	\$27,988	.....	\$7,788	\$7,894
2	3	89	7	6	6	7	.....	18	227	25	.....	8	13	17
\$1,625	\$1,280	\$44,358	\$6,920	\$4,820	\$3,500	\$7,600	.....	\$21,854	\$254,869	.....	\$26,920	.....	\$7,128	\$6,644
.....	.....	4	.....	.....	.....	.....	.....	27	.....	2	.....	1	8	19
.....	.....	\$2,808	.....	.....	.....	.....	.....	.....	\$11,825	.....	\$1,068	.....	\$660	\$1,190
74	96	481	101	44	67	47	9	222	2,248	70	297	12	28	182
15	78	281	80	38	55	32	6	195	1,978	62	269	11	19	113
24	83	411	81	41	59	37	7	206	1,569	65	286	8	22	194
\$10,680	\$34,324	\$204,184	\$44,164	\$23,514	\$24,062	\$33,698	\$4,035	\$145,088	\$1,068,696	\$36,110	\$186,258	\$3,675	\$20,635	\$67,014
23	82	411	80	40	57	35	6	206	1,567	65	282	8	22	127
\$10,380	\$33,874	\$204,184	\$44,114	\$22,914	\$23,812	\$32,498	\$3,975	\$145,088	\$1,068,292	\$36,110	\$185,506	\$3,675	\$20,635	\$65,550
1	1	.....	1	.....	1	2	.....	1	.....	1	.....	.....	.....	27
\$800	\$450	.....	.....	\$600	.....	\$1,200	.....	.....	\$304	.....	\$500	.....	.....	28
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	.....	.....	.....	7
.....	.....	.....	\$50	.....	\$250	.....	\$60	.....	\$100	.....	\$262	.....	.....	\$1,464
14	91	483	96	39	61	31	7	208	1,552	63	282	6	22	183
14	91	447	83	39	63	36	7	201	1,526	62	283	6	22	180
14	79	450	80	39	64	38	7	203	1,506	62	280	7	25	129
10	79	438	76	39	64	37	6	197	1,526	62	280	12	28	121
10	80	334	76	38	62	36	6	197	2,076	62	285	12	28	120
10	79	281	78	38	42	38	6	204	1,459	64	286	7	22	121
58	79	866	79	38	51	37	6	204	1,490	64	279	7	20	127
47	79	401	79	39	51	35	6	207	1,484	64	279	7	20	121
33	78	416	79	42	53	36	5	210	1,512	64	285	7	21	127
80	79	493	77	42	56	38	7	211	1,543	70	284	7	21	181
10	88	451	78	42	59	32	7	221	1,570	69	282	7	21	130
9	87	481	81	43	59	34	7	215	1,565	69	282	7	22	134
2	2	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	43
2	2	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	44
2	2	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	45
2	2	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	46
2	1	.....	.....	1	.....	.....	.....	.....	13	1	.....	.....	.....	47
1	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	48
1	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	49
1	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	50
1	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	51
1	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	52
1	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	53
1	1	.....	.....	1	.....	.....	.....	.....	.....	1	.....	.....	.....	54
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	55
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	56
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	57
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	58
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	59
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	60
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	61
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	62
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	63
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	64
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	65
.....	.....	.....	1	.....	2	.....	1	.....	1	.....	3	.....	.....	66
\$1,102	\$9,778	\$126,576	\$10,682	\$11,784	\$13,668	\$7,798	\$488	\$67,007	\$754,326	\$19,880	\$154,604	\$865	\$13,852	\$17,573
.....	\$1,330	\$7,378	\$676	\$2,301	\$4,300	\$5,300	.....	\$33,944	\$78,227	\$780	\$96,523	\$150	\$1,390	\$5,735
\$584	\$2,820	\$16,084	\$1,808	\$588	\$575	\$888	\$73	\$958	\$41,601	\$980	\$3,234	\$200	\$480	\$1,428
\$568	\$5,628	\$103,084	\$8,648	\$8,895	\$8,798	\$1,610	\$365	\$32,105	\$633,799	\$17,670	\$54,847	\$515	\$11,982	\$10,410
.....	.....	\$30	.....	.....	.....	.....	.....	.....	\$699	.....	.....	.....	.....	71
\$322,698	\$1,662,362	\$8,436,871	\$1,444,906	\$866,884	\$716,894	\$821,070	\$209,424	\$7,406,647	\$38,542,478	\$921,159	\$6,478,714	\$98,876	\$515,777	\$2,063,700
1,865	12,517	33,244	31,189	18,500	12,275	12,395	4,487	24,670	332,847	21,311	89,157	2,213	6,672	85,709
\$70,260	\$561,962	\$1,305,157	\$1,154,406	\$495,850	\$378,250	\$572,580	\$115,800	\$1,345,380	\$19,486,940	\$635,178	\$4,551,674	\$69,622	\$258,895	\$1,243,579
44,815	185,580	407,466	51,305	34,275	6,608	23,092	165	324,957	1,453,474	82,402	146,321	3,705	26,080	32,487
\$150,603	\$792,120	\$1,493,278	\$172,936	\$168,200	\$22,494	\$91,068	\$985	\$1,308,217	\$5,837,934	\$81,856	\$638,355	\$13,042	\$101,660	\$128,863
425	1,800	125	7,802	21,222	29,200	8,401	1,230	675,836	605,553	9,775	80,764	620	10,855	55,714
\$5,250	\$10,600	\$1,100	\$59,412	\$170,164	\$259,600	\$34,948	\$12,650	\$4,027,833	\$3,902,045	\$88,900	\$534,350	\$6,673	\$122,040	\$463,248

<sup>1</sup>Includes establishments distributed as follows: Alabama, 1; Arkansas, 1; Delaware, 1; District of Columbia, 1; New Mexico, 2; North Carolina, 1; Oklahoma, 2; Rhode Island, 1; South Carolina, 1; Virginia, 1; Wisconsin, 2; Wyoming, 1.

## MANUFACTURES.

TABLE 5.—SLAUGHTERING, WHOLESALE, NOT INCLUDING

	United States.	California.	Colorado.	Connecticut.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.
Materials used—Continued.										
Slaughtered—Continued.										
Calves, number.....	552,381	20,380	1,830	11,620	50	10,136	4,455	3,039	1,150	3,910
Cost.....	\$4,314,125	\$204,753	\$12,100	\$92,792	\$200	\$75,698	\$35,700	\$19,657	\$6,200	\$24,664
All other animals, cost.....	\$297,555	\$128,769	\$1,695	\$8,080				\$260		\$3,064
Dressed meat, purchased, fresh or partly cured, cost.	\$502,869	\$4,615	\$54,670							\$10,400
Fuel.....	\$172,728	\$6,015	\$2,401	\$310		\$11,493	\$4,810	\$1,050	\$2,540	\$1,555
Rent of power and heat.....	\$14,824	\$2,273				\$600	\$200			
Mill supplies.....	\$28,398	\$400	\$220	\$100		\$2,135	\$164	\$69	\$275	\$60
All other materials.....	\$1,646,668	\$96,074	\$25	\$24,697		\$11,521	\$5,305	\$5,770	\$3,500	\$2,370
Freight.....	\$1,840,265	\$412,004	\$1,000	\$2,445		\$2,900	\$80			
Products:										
Total value.....	\$87,355,885	\$7,485,032	\$781,626	\$283,281	\$33,896	\$8,079,442	\$971,030	\$398,526	\$582,744	\$635,685
Beef—										
Sold fresh, pounds.....	528,557,864	62,012,890	6,625,500	224,000	426,000	40,914,263	6,971,100	3,278,544	6,482,000	4,212,668
Value.....	\$40,430,090	\$3,818,322	\$450,900	\$15,825	\$23,380	\$3,101,784	\$487,375	\$225,960	\$407,100	\$316,248
Salted or cured, pounds.....	4,605,268	17,000	14,400							
Value.....	\$238,032	\$1,360	\$864							
Mutton, sold fresh, pounds.....	140,132,565	20,269,980	1,439,045	745,252	4,000	2,548,800	579,600	78,700	51,600	339,740
Value.....	\$11,760,405	\$1,472,794	\$123,353	\$85,899	\$360	\$228,125	\$37,769	\$6,856	\$23,056	\$27,069
Veal, sold fresh, pounds.....	48,611,311	2,940,280	138,000	929,650	5,000	904,266	422,075	259,780	116,000	298,419
Value.....	\$4,596,518	\$229,721	\$12,420	\$103,008	\$850	\$86,880	\$39,866	\$21,957	\$8,600	\$26,960
Pork—										
Sold fresh, pounds.....	241,029,567	9,160,456	1,584,000	10,510	6,000	54,928,000	4,806,010	1,547,120	1,090,000	2,081,220
Value.....	\$16,280,205	\$880,924	\$97,473	\$717	\$360	\$3,910,508	\$282,846	\$99,784	\$67,700	\$161,102
Salted, pounds.....	369,200	56,000								
Value.....	\$29,432	\$5,750								
Hams, pounds.....	281,663	8,000								
Value.....	\$23,226	\$1,160								
Smoked bacon, sides and shoulders, pounds.....	250,563	10,000								
Value.....	\$21,724	\$1,230								
Sausage, fresh or cured, pounds.....	1,039,484	22,150	117,800						31,800	227,475
Value.....	\$75,567	\$2,273	\$7,374						\$1,878	\$19,218
All other meat, sold fresh, pounds.....	2,851,930	1,550,000	60,000					5,000		
Value.....	\$230,113	\$131,500	\$4,200					\$300		
Refined lard, pounds.....	5,302,974	63,000				577,000	3,000		17,000	452,800
Value.....	\$335,729	\$6,200				\$41,432	\$200		\$1,200	\$31,946
Neutral lard, pounds.....	364,000	10,000							4,000	
Value.....	\$27,200	\$6,000							\$200	
Oleomargarine oil, gallons.....	1,703,580									
Value.....	\$98,069									
Other oils, gallons.....	150,817						600	7,200		
Value.....	\$65,609						\$240	\$3,240		
Fertilizers, tons.....	8,381		30	38		1,765	200	5		12
Value.....	\$122,687	\$760	\$760			\$7,574	\$4,000	\$90		\$120
Hides, number.....	1,375,560	131,587	11,344	12,023	1,420	102,922	18,587	9,565	19,970	13,180
Pounds.....	58,040,274	6,689,886	576,630	130,756	58,400	5,393,221	851,290	370,883	745,200	401,470
Value.....	\$5,215,936	\$699,813	\$48,787	\$16,973	\$3,871	\$529,217	\$79,611	\$32,637	\$59,500	\$40,407
Wool, pounds.....	4,351,776	18,000	18,000							
Value.....	\$1,296,894	\$3,800	\$1,080							
All other products, value.....	\$5,583,478	\$524,135	\$33,214	\$60,099	\$75	\$166,663	\$38,873	\$7,632	\$13,510	\$12,552
Custom work, value.....	\$64,831		\$1,211			\$7,259	\$250	\$50		
Weight of animals slaughtered:										
Beef—										
Gross weight, on hoof.....	975,022,741	122,650,350	10,558,850	347,200	998,000	79,633,384	13,877,040	6,492,000	12,914,000	8,020,200
Net weight, dressed.....	529,463,512	62,507,290	5,710,820	224,000	471,000	42,162,403	7,211,400	3,278,544	6,482,000	4,384,168
Sheep—										
Gross weight, on hoof.....	278,400,726	43,219,520	2,845,685	1,242,520	8,000	5,583,000	1,159,000	141,400	748,600	594,700
Net weight, dressed.....	142,734,259	21,565,980	1,512,390	745,252	4,000	2,667,000	579,600	78,700	376,120	308,100
Hogs—										
Gross weight, on hoof.....	310,159,385	12,117,400	2,128,500	13,780	10,000	67,548,000	6,053,400	1,910,200	1,427,500	3,087,084
Net weight, dressed.....	243,554,789	9,337,455	1,704,800	10,510	6,800	54,944,640	4,735,420	1,547,120	1,142,000	2,494,520
Calves—										
Gross weight, on hoof.....	72,791,904	5,870,400	252,700	1,388,750	7,500	1,546,120	701,500	896,995	147,500	517,935
Net weight, dressed.....	46,983,798	2,989,525	138,000	948,050	3,750	904,226	422,200	262,525	115,950	298,685
Comparison of products:										
Number of establishments reporting for both years.....	260	28	4	6	1	12	10	4	1	12
Value for census year.....	\$71,672,421	\$5,421,968	\$500,496	\$269,536	\$9,510	\$7,955,271	\$922,046	\$253,171	\$180,794	\$616,955
Value for preceding business year.....	\$67,529,770	\$5,265,463	\$474,500	\$258,490	\$7,000	\$7,183,763	\$867,307	\$238,819	\$200,000	\$579,000
Power:										
Number of establishments reporting.....	110	8	7	1			10	7	4	6
Total horsepower.....	4,616	177	227	25			428	81	120	91
Owned—										
Engines—										
Steam, number.....	129	3	7	1			14	6	4	7
Horsepower.....	4,027	110	222	26			398	76	120	81
Gas or gasoline, number.....	1									1
Horsepower.....	1									10
Water wheels, number.....	1		1							
Horsepower.....	5		5							
Electric motors, number.....	8						1			
Horsepower.....	140						10			
Rented—										
Electric, horsepower.....	93	60								
Other kind, horsepower.....	841	7								
Furnished to other establishments—										
Horsepower.....	23								10	
Establishments classified by number of persons employed, not including proprietors and firm members:										
Total number of establishments.....	348	85	7	7	8	13	11	7	8	13
No employees.....	7			2						
Under 5.....	163	10	2	4	8			6		10
5 to 20.....	130	22	4	1		1	5	2	2	8
21 to 50.....	29	2	1				6	1	1	
51 to 100.....	8	1					1			
101 to 250.....	2									
251 to 500.....	2									
501 to 1,000.....	2									



# SLAUGHTERING AND MEAT PACKING.

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MEAT PACKING: BY STATES AND TERRITORIES, 1900—Continued.

Maine.	Maryland.	Massachu- setts.	Michigan.	Minne- sota.	Missouri.	Montana.	Ne- braska.	New Jersey.	New York.	Ohio.	Pennsyl- vania.	Utah.	Washing- ton.	All other states and terri- tories. (1)
2,984	38,780	73,288	5,824	3,664	5,235	3,396	3,300	55,623	256,245	14,080	19,583	456	1,216	12,637
\$20,964	\$203,180	\$462,634	\$44,900	\$29,537	\$43,075	\$50,490	\$64,200	\$496,083	\$2,039,320	\$100,820	\$151,005	\$4,214	\$10,474	\$89,405
\$70,080	\$14,600	\$9,760			\$0,000	\$4,525			\$1,600		\$62,000		\$1,592	\$1,300
						\$25,000			\$100,824	\$2,000	\$231,500		\$100	\$58,500
\$593	\$4,350	\$20,020	\$3,217	\$3,978	\$3,425	\$2,450	\$714	\$668	\$80,870	\$3,855	\$10,070	\$290	\$2,465	\$5,049
	\$360	\$3,780						\$3,175	\$400	\$86	\$4,000			
\$5	\$225	\$1,075	\$875	\$90	\$310	\$100	\$50	\$835	\$20,500	\$342	\$1,045	\$35	\$45	\$353
\$133	\$4,455	\$51,885	\$3,840	\$875	\$3,740	\$6,820	\$14,025	\$3,060	\$1,832,316	\$1,192	\$29,300		\$18,226	\$45,980
\$4,800	\$250	\$97,442	\$0,820	\$3,190		\$33,149	\$1,000	\$221,866	\$740,229	\$6,980	\$260,355			\$27,429
\$397,506	\$1,836,502	\$4,127,785	\$1,612,656	\$1,007,443	\$311,758	\$934,040	\$262,027	\$7,846,422	\$37,807,106	\$1,051,476	\$7,412,075	\$110,012	\$598,004	\$2,238,311
1,148,500	6,647,180	17,960,160	15,395,100	6,850,000	5,100,000	7,406,067	1,868,500	16,277,350	230,555,496	8,608,430	57,708,976	1,054,000	3,936,500	16,864,050
\$74,470	\$535,024	\$1,865,198	\$1,118,752	\$493,700	\$363,000	\$557,785	\$117,275	\$1,326,405	\$18,538,291	\$585,293	\$4,912,417	\$72,921	\$236,750	\$1,240,915
	133,320								4,393,045					\$5,750
	\$8,239								\$221,760					\$47,500
2,431,164	7,026,000	16,207,400	1,871,023	1,620,500	273,100	1,142,048	12,000	13,570,273	60,162,932	936,100	5,839,748	196,250	1,299,200	1,433,050
\$207,059	\$774,860	\$1,811,978	\$154,935	\$156,423	\$24,434	\$100,395	\$1,200	\$1,082,166	\$5,001,173	\$74,046	\$605,649	\$14,397	\$104,644	\$131,705
247,040	2,474,200	5,173,540	565,800	355,598	410,000	659,954	1,020,000	4,658,125	23,324,717	991,000	1,500,402	49,350	164,650	996,465
\$24,484	\$257,200	\$408,940	\$50,295	\$32,618	\$48,920	\$90,302	\$78,780	\$518,994	\$2,242,979	\$97,033	\$144,301	\$4,401	\$12,560	\$89,955
95,000	95,000	20,000	533,213	2,802,960	4,765,000	1,128,716	530,800	66,264,561	64,792,761	1,622,500	14,609,690	112,500	1,660,000	6,783,550
\$6,900	\$8,500	\$1,295	\$37,947	\$196,945	\$268,200	\$80,891	\$14,000	\$4,265,416	\$4,827,200	\$114,453	\$968,170	\$7,332	\$134,320	\$546,662
	30,000		121,000			50,000			2,000					110,000
	\$1,800		\$7,272			\$3,500			\$160					\$11,000
	30,000		92,603			100,000			1,000					101
	\$2,700		\$9,266			\$10,000			\$100					102
	30,000		60,603			150,000								103
	\$2,100		\$4,844			\$18,500								104
	32,500		70,859		240,000	50,000								105
	\$2,450		\$4,251		\$14,400	\$5,000		24,500	\$513	6,000			39,000	171,000
	15,000					\$9,080		\$1,750	\$5,500	\$540			\$3,300	\$14,620
	\$2,100					\$5,903			\$730	24,000	1,000,000		22,400	21,000
	10,000		48,450		331,000	50,000		1,650,323	\$1,903,021	\$2,100	\$74,000		\$1,792	\$1,488
	\$1,000		\$3,391		\$26,660	\$3,000		\$91,393	\$115,502	\$1,675			36,000	138,000
									\$55,000				\$2,780	\$9,350
									\$21,000					110
									1,626,509					112
									\$986,819					113
									\$17,787					114
									\$60,020					115
									\$3,445					116
									113					117
									\$3,392					118
									\$1,113					119
									\$24,067					120
									\$2,058,580					121
									\$172,676					122
									\$2,217,864					123
									\$25,000					124
									\$787,259					125
									\$356,522					126
									\$3,249,137					127
									\$19,719					128
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<sup>1</sup> Includes establishments distributed as follows: Alabama, 1; Arkansas, 1; Delaware, 1; District of Columbia, 1; New Mexico, 2; North Carolina, 1; Oklahoma, 2; Rhode Island, 1; South Carolina, 1; Virginia, 1; Wisconsin, 2; Wyoming, 1.



TABLE 6.—SLAUGHTERING AND MEAT

	United States.	California.	Colorado.	Connecticut.	Delaware.	District of Columbia.
1 Number of establishments .....	578	28	7	5	8	6
2 Character of organization:						
3 Individual .....	211	8	2	2	1	5
4 Firm and limited partnership .....	190	5	2	2	2	1
5 Incorporated company .....	172	10	5	1		
6 Capital:						
7 Total .....	\$174,094,697	\$2,875,988	\$1,262,075	\$411,750	\$224,220	\$205,800
8 Land .....	\$10,415,240	\$411,474	\$149,800	\$51,500	\$20,000	\$49,000
9 Buildings .....	\$80,859,070	\$688,560	\$494,000	\$104,500	\$38,000	\$8,000
10 Machinery, tools, and implements .....	\$18,681,278	\$425,156	\$88,000	\$60,250	\$41,060	\$37,800
11 Cash and sundries .....	\$114,189,114	\$1,850,798	\$535,275	\$195,500	\$180,160	\$81,000
12 Proprietors and firm members .....	664	19	4	8	6	7
13 Salaried officials, clerks, etc.:						
14 Total number .....	9,658	123	37	30	12	31
15 Total salaries .....	\$9,472,653	\$174,152	\$51,586	\$31,752	\$9,040	\$15,720
16 Officers of corporations—						
17 Number .....	320	8	14	2		
18 Salaries .....	\$940,948	\$26,620	\$25,886	\$5,000		
19 General superintendents, managers, clerks, etc.—						
20 Total number .....	9,338	115	23	28	12	31
21 Total salaries .....	\$8,531,705	\$147,632	\$25,700	\$26,752	\$9,040	\$15,720
22 Men—						
23 Number .....	8,438	109	23	27	12	31
24 Salaries .....	\$8,023,509	\$144,182	\$25,700	\$26,282	\$9,040	\$15,720
25 Women—						
26 Number .....	900	6		1		
27 Salaries .....	\$508,196	\$8,450		\$520		
28 Wage-earners, including pieceworkers, and total wages:						
29 Greatest number employed at any one time during the year .....	81,416	744	232	381	29	97
30 Least number employed at any one time during the year .....	57,119	623	198	352	29	83
31 Average number .....	64,783	660	212	368	29	91
32 Wages .....	\$31,079,715	\$344,189	\$139,510	\$167,925	\$16,602	\$43,207
33 Men, 16 years and over—						
34 Average number .....	80,197	650	210	368	29	89
35 Wages .....	\$29,808,664	\$338,141	\$139,010	\$167,925	\$16,602	\$42,531
36 Women, 16 years and over—						
37 Average number .....	2,935	10	2			2
38 Wages .....	\$849,974	\$6,045	\$500			\$676
39 Children, under 16 years—						
40 Average number .....	1,651					
41 Wages .....	\$361,077					
42 Average number of wage-earners, including pieceworkers, employed during each month:						
43 Men, 16 years and over—						
44 January .....	61,151	649	215	378	29	89
45 February .....	60,000	639	212	378	29	87
46 March .....	59,368	652	217	378	29	90
47 April .....	57,453	653	219	352	29	87
48 May .....	58,096	663	214	352	29	86
49 June .....	58,399	640	204	355	29	86
50 July .....	58,954	640	200	355	29	86
51 August .....	59,260	647	204	355	29	86
52 September .....	59,350	651	208	370	29	89
53 October .....	62,006	670	209	381	29	88
54 November .....	63,576	641	210	381	29	93
55 December .....	64,751	657	207	381	29	95
56 Women, 16 years and over—						
57 January .....	2,955	9	2			2
58 February .....	2,880	8	2			2
59 March .....	2,756	7	2			2
60 April .....	2,667	7	2			2
61 May .....	2,582	8	2			2
62 June .....	2,423	7	2			2
63 July .....	2,717	8	2			2
64 August .....	2,982	10	2			2
65 September .....	3,169	17	2			2
66 October .....	3,318	19	2			2
67 November .....	3,405	15	2			2
68 December .....	3,866	8	2			2
69 Children, under 16 years—						
70 January .....	1,574					
71 February .....	1,578					
72 March .....	1,503					
73 April .....	1,517					
74 May .....	1,549					
75 June .....	1,646					
76 July .....	1,722					
77 August .....	1,759					
78 September .....	1,784					
79 October .....	1,657					
80 November .....	1,797					
81 December .....	1,775					
82 Miscellaneous expenses:						
83 Total .....	\$22,684,837	\$371,684	\$48,965	\$69,913	\$9,610	\$14,735
84 Rent of works .....	\$343,228	\$13,212	\$1,515	\$600	\$3,120	\$2,000
85 Taxes, not including internal revenue .....	\$742,683	\$12,388	\$5,656	\$5,859	\$506	\$750
86 Rent of offices, insurance, interest, and all sundry expenses not hitherto included .....	\$21,588,111	\$344,484	\$36,794	\$63,454	\$5,894	\$10,185
87 Contract work .....	\$10,815	\$1,600				\$1,800
88 Materials used:						
89 Total cost .....	\$606,171,587	\$6,798,826	\$3,029,085	\$2,923,511	\$352,885	\$980,705
90 Slaughtered—						
91 Cattle, number .....	4,680,742	61,706	24,775		5,085	4,050
92 Cost .....	\$206,084,141	\$2,124,777	\$1,036,345		\$101,700	\$180,650
93 Sheep, number .....	5,796,784	218,869	39,694		2,050	2,050
94 Cost .....	\$24,166,692	\$783,926	\$147,826		\$4,200	\$9,875
95 Hogs, number .....	28,742,551	162,302	151,268	254,723	15,200	90,800
96 Cost .....	\$264,424,924	\$1,444,568	\$1,417,472	\$2,547,594	\$193,040	\$506,000
97 Calves, number .....	347,417	8,151	2,440		128	2,340
98 Cost .....	\$3,012,435	\$76,205	\$26,340		\$636	\$20,280
99 All other animals, cost .....	\$262,284	\$36,252	\$4,200			
100 Dressed meat, purchased, fresh or partly cured, cost .....	\$54,212,627	\$1,893,554	\$809,200	\$132,000	\$48,800	\$145,200
101 Fuel .....	\$2,574,878	\$69,290	\$15,612	\$19,100	\$1,917	\$7,693
102 Rent of power and heat .....	\$16,122	\$955	\$875			
103 Mill supplies .....	\$309,058	\$9,212	\$1,950	\$1,485	\$108	\$340
104 All other materials .....	\$46,726,986	\$319,945	\$43,235	\$144,350	\$1,425	\$6,195
105 Freight .....	\$4,381,440	\$102,347	\$26,460	\$78,982	\$1,514	\$14,062

# SLAUGHTERING AND MEAT PACKING.

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PACKING, WHOLESALE: BY STATES, 1900.

Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachu- setts.	Michigan.	Minnesota.	
4	51	25	20	11	15	3	47	11	8	13	1
2	8	6	6	2	10	2	32	4	2	4	2
1	16	10	4	1	2	1	14	2	4	7	3
1	27	9	10	8	3		1.	5	2	2	4
\$109,400	\$70,732,361	\$8,658,084	\$6,264,578	\$16,410,477	\$1,256,106	\$34,800	\$1,318,917	\$9,016,672	\$1,265,151	\$1,211,086	5
\$18,500	\$3,381,255	\$437,536	\$151,750	\$771,728	\$85,160		\$100,009	\$882,182	\$123,945	\$62,000	6
\$27,700	\$10,447,918	\$1,718,347	\$1,198,153	\$2,639,200	\$157,550		\$801,500	\$2,073,715	\$166,040	\$186,540	7
\$24,700	\$6,859,804	\$1,402,127	\$499,375	\$1,658,062	\$210,133	\$3,100	\$183,660	\$1,219,523	\$100,771	\$120,442	8
\$48,500	\$50,093,384	\$5,100,024	\$4,415,800	\$11,841,487	\$803,263	\$31,700	\$728,748	\$4,841,252	\$874,395	\$842,104	9
4	50	27	13	8	15	5	72	8	11	21	10
32	4,181	298	190	1,830	62	4	63	174	63	119	11
\$19,625	\$4,380,649	\$311,103	\$196,056	\$1,620,010	\$51,799	\$1,215	\$46,824	\$185,130	\$57,741	\$97,889	12
4	74	22	12	9	5			2	8		13
\$4,000	\$352,380	\$80,200	\$36,000	\$47,450	\$10,500			\$7,500	\$18,500		14
28	4,107	276	178	1,821	57	4	63	172	55	119	15
\$15,625	\$4,028,269	\$230,903	\$160,056	\$1,572,560	\$41,299	\$1,215	\$46,824	\$177,630	\$39,241	\$97,889	16
28	3,786	255	166	1,515	57	2	61	157	48	103	17
\$15,625	\$3,822,285	\$220,944	\$155,019	\$1,397,200	\$41,299	\$790	\$45,904	\$170,064	\$35,681	\$60,449	18
	321	21	12	306		2	2	15	7	16	19
	\$205,984	\$9,959	\$5,037	\$175,860		\$425	\$920	\$7,566	\$3,560	\$7,440	20
185	31,072	3,952	3,453	9,446	549	21	553	2,538	429	1,016	21
74	24,369	3,227	2,436	6,995	455	21	471	2,226	334	540	22
98	27,626	3,550	2,874	8,068	469	14	514	2,387	375	627	23
\$81,050	\$13,898,950	\$1,587,024	\$1,201,681	\$3,543,777	\$194,887	\$7,220	\$242,089	\$1,113,943	\$180,473	\$280,463	24
97	25,557	3,111	2,630	7,121	465	14	502	2,313	373	610	25
\$80,800	\$13,316,489	\$1,426,800	\$1,156,935	\$3,299,359	\$194,277	\$7,220	\$239,945	\$1,107,261	\$136,028	\$276,191	26
	1,473	387	29	661	4		9	13	2	8	27
	\$427,203	\$101,499	\$9,906	\$190,802	\$560		\$1,668	\$3,582	\$450	\$2,400	28
1	596	52	215	286			3	11		9	29
\$250	\$155,258	\$8,725	\$34,840	\$53,616			\$476	\$3,100		\$1,872	30
118	26,137	3,240	2,951	6,787	532	21	514	2,477	416	673	31
118	26,048	3,140	2,635	6,724	430	21	514	2,346	369	603	32
116	25,335	2,948	2,571	6,460	452	21	505	2,292	362	570	33
87	24,579	2,931	2,523	6,007	437	21	498	2,239	351	543	34
83	24,758	2,958	2,628	6,793	438	21	491	2,237	346	566	35
87	24,421	3,079	2,729	7,002	438	9	497	2,273	346	573	36
81	24,486	3,140	2,624	7,011	453	9	475	2,287	333	563	37
79	24,926	3,104	2,473	7,221	452	9	479	2,250	372	553	38
77	24,769	3,099	2,360	7,636	438	9	495	2,267	379	589	39
110	26,289	3,309	2,421	7,866	437	9	516	2,330	389	630	40
105	27,174	3,166	2,686	7,819	504	9	526	2,370	408	662	41
107	27,764	3,216	2,961	7,527	525	9	518	2,388	404	776	42
	1,543	365	25	685	11		9	14	2	2	43
	1,534	358	25	685	5		9	13	2	2	44
	1,521	344	25	513	1		9	13	2	2	45
	1,409	346	26	525	1		9	12	2	2	46
	1,303	362	32	549	1		9	12	2	2	47
	1,050	401	33	572	1		9	14	2	2	48
	1,209	472	34	616	1		9	14	2	7	49
	1,454	459	33	652	1		9	14	2	10	50
	1,510	409	31	795	1		9	14	2	9	51
	1,632	386	31	810	1		9	14	2	18	52
	1,736	374	27	826	11		9	14	2	23	53
	1,767	367	25	754	11		9	14	2	22	54
2	570	41	292	205			3	12		7	55
3	582	38	281	200			3	11		9	56
2	590	38	167	221			3	9		8	57
1	564	36	172	239			3	11		9	58
	551	44	180	281			3	10		11	59
	530	52	181	320			3	12		15	60
	533	77	181	361			3	11		14	61
	603	73	182	345			3	9		11	62
	611	61	182	356			3	10		12	63
	634	64	172	313			3	12		2	64
	658	53	287	314			3	11		4	65
4	681	47	297	267			3	9		6	66
\$10,745	\$14,158,171	\$522,069	\$437,103	\$2,000,085	\$99,425	\$5,717	\$99,239	\$464,526	\$76,659	\$79,062	67
\$860	\$64,252	\$3,190	\$4,130	\$44,460	\$2,240	\$802	\$12,427	\$3,130	\$745	\$2,600	68
\$1,860	\$273,231	\$47,256	\$19,345	\$108,644	\$6,398	\$127	\$7,310	\$61,793	\$10,054	\$6,848	69
\$8,525	\$13,820,688	\$471,623	\$413,628	\$1,346,931	\$90,787	\$4,788	\$78,002	\$399,603	\$65,860	\$69,114	70
							\$1,500			\$500	71
\$456,855	\$239,757,479	\$37,760,871	\$21,195,066	\$67,402,245	\$3,899,243	\$134,383	\$5,446,717	\$24,603,698	\$3,325,734	\$5,956,371	72
9,186	1,964,273	344,463	71,070	908,519	11,478	925	7,320		2,110	39,200	73
\$198,800	\$90,097,822	\$18,776,065	\$2,271,225	\$37,743,953	\$421,142	\$36,800	\$249,610		\$63,850	\$1,404,491	74
2,700	3,075,220	352,127	12,212	624,672	2,607	3,750			1,055	59,442	75
\$5,150	\$13,339,156	\$1,591,410	\$54,072	\$2,282,246	\$8,196	\$11,250			\$4,702	\$248,920	76
\$5,895	8,026,466	1,921,081	1,914,274	2,841,648	487,134	2,500	663,935	1,376,120	334,013	401,103	77
\$164,500	\$79,539,458	\$13,465,016	\$17,433,707	\$23,472,678	\$3,204,893	\$25,000	\$3,995,229	\$19,853,661	\$2,932,063	\$3,453,232	78
1,675	139,314	8,488	1,252	35,670	1,297	535	752		1,060	2,555	79
\$5,940	\$1,302,686	\$71,027	\$10,436	\$288,254	\$9,133	\$3,175	\$4,420		\$9,320	\$21,052	80
\$2,425	\$70,959	\$100					\$540			\$8,030	81
\$60,800	\$21,378,903	\$2,646,377	\$415,891	\$683,879	\$54,500	\$54,000	\$363,997	\$2,154,746	\$161,675	\$500,293	82
\$2,400	\$703,904	\$80,138	\$140,816	\$335,927	\$26,735	\$433	\$46,175	\$129,490	\$19,878	\$38,452	83
	\$6,920			\$300				\$1,096		\$400	84
\$1,200	\$132,714	\$14,349	\$18,963	\$13,510	\$1,190	\$55	\$4,782	\$14,060	\$1,285	\$3,400	85
\$1,790	\$32,593,245	\$868,654	\$845,420	\$2,650,542	\$33,401	\$3,375	\$148,784	\$1,157,878	\$116,961	\$289,600	86
\$13,350	\$596,707	\$247,135	\$4,536	\$30,956	\$50	\$200	\$138,280	\$1,292,707	\$11,000	\$8,441	87

TABLE 6.—SLAUGHTERING AND MEAT

	United States.	California.	Colorado.	Connecticut.	Delaware.	District of Columbia.
88 Products:						
89 Total value.....	\$698,206,548	\$8,232,680	\$3,562,357	\$3,380,112	\$415,144	\$1,181,312
90 Beef—						
91 Solid fresh, pounds.....	2,391,900,433	31,805,131	14,164,180		1,522,500	1,573,300
92 Value.....	\$170,638,844	\$2,154,147	\$1,050,333		\$106,575	\$145,400
93 Canned, pounds.....	112,449,021	568,382	16,000			
94 Value.....	\$9,167,531	\$31,450	\$1,440			
95 Salted or cured, pounds.....	132,984,035	2,495,762	52,530	450,000	281	400,000
96 Value.....	\$9,423,802	\$172,021	\$4,550	\$45,000	\$45	\$16,000
97 Mutton, sold fresh, pounds.....	264,051,036	9,335,987	1,699,700		78,750	87,180
98 Value.....	\$21,212,814	\$701,140	\$147,376		\$4,675	\$8,718
99 Veal, sold fresh, pounds.....	36,958,896	1,024,528	279,000		7,860	181,500
100 Value.....	\$3,216,196	\$96,984	\$27,520		\$709	\$16,850
101 Pork—						
102 Solid fresh, pounds.....	982,000,421	9,155,109	8,870,600	7,044,000	453,900	2,260,800
103 Value.....	\$67,739,092	\$743,870	\$566,214	\$513,520	\$39,684	\$190,965
104 Salted, pounds.....	1,375,155,558	2,502,691	9,500,000	4,800,000	522,000	1,093,357
105 Value.....	\$88,644,534	\$109,824	\$413,580	\$333,500	\$41,700	\$76,512
106 Hams, pounds.....	787,295,310	11,974,749	4,650,000	3,434,000	782,000	1,227,000
107 Value.....	\$73,769,786	\$1,303,280	\$400,400	\$315,240	\$78,760	\$125,647
108 Smoked bacon, sides and shoulder, pounds.....	985,471,649	14,243,894	3,227,000	11,820,000	601,000	2,486,285
109 Value.....	\$74,852,123	\$1,367,557	\$230,010	\$337,800	\$42,320	\$214,179
110 Sausage, fresh or cured, pounds.....	291,124,591	1,332,347	2,417,600	2,651,700	157,000	2,141,500
111 Value.....	\$21,396,846	\$113,200	\$146,492	\$167,000	\$11,860	\$191,330
112 All other meat, sold fresh, pounds.....	77,556,281	745,977	140,000			200,000
113 Value.....	\$7,582,965	\$59,783	\$9,400			\$10,000
114 Refined lard, pounds.....	886,135,443	3,935,612	7,672,000	6,163,334	968,000	1,404,000
115 Value.....	\$52,284,619	\$307,937	\$417,430	\$390,400	\$70,080	\$169,780
116 Neutral lard, pounds.....	128,981,282	172,500	6,000			20,000
117 Value.....	\$8,561,150	\$10,433	\$480	\$59,000		\$1,820
118 Oleomargarine oil, gallons.....	17,402,590					
119 Value.....	\$10,514,473					
120 Other oils, gallons.....	8,094,762	5,275				
121 Value.....	\$3,374,749	\$2,699				
122 Fertilizers, tons.....	160,129	1,670	100	2,880	30	
123 Value.....	\$3,177,445	\$37,323	\$1,230	\$80,100	\$450	
124 Hides, number.....	4,906,392	69,837	26,940	50	5,213	6,300
125 Pounds.....	278,437,633	3,531,977	1,551,700	350	305,000	223,500
126 Value.....	\$28,709,975	\$360,511	\$113,610	\$42	\$17,266	\$17,897
127 Wool, pounds.....	8,830,370	99,710	200			
128 Value.....	\$2,038,930	\$19,942	\$30			
129 All other products, value.....	\$41,824,201	\$511,414	\$31,702	\$38,510	\$1,020	\$9,214
130 Custom work, value.....	\$76,473	\$9,100				
131 Weight of animals slaughtered:						
132 Cattle—						
133 Gross weight, on hoof.....	4,938,475,865	60,844,894	25,710,000		3,052,000	4,050,000
134 Net weight, dressed.....	2,696,146,926	32,938,803	14,022,550		1,526,350	2,170,000
135 Sheep—						
136 Gross weight, on hoof.....	492,574,476	18,977,310	3,510,400		159,500	166,000
137 Net weight, dressed.....	249,761,744	9,131,608	1,725,112		80,125	86,250
138 Hogs—						
139 Gross weight, on hoof.....	6,374,499,561	29,300,534	36,405,700	54,933,913	4,047,000	11,942,500
140 Net weight, dressed.....	4,965,925,575	23,336,290	29,320,200	45,363,632	3,254,400	9,487,700
141 Calves—						
142 Gross weight, on hoof.....	53,260,926	1,813,961	410,000		19,432	328,900
143 Net weight, dressed.....	33,526,409	1,025,242	279,000		10,732	181,500
144 Comparison of products:						
145 Number of establishments reporting for both years.....	467	17	4	5	2	0
146 Value for census year.....	\$665,510,992	\$7,078,851	\$2,854,401	\$3,380,112	\$278,034	\$1,181,312
147 Value for preceding business year.....	\$615,733,547	\$7,070,866	\$2,365,000	\$2,993,949	\$269,993	\$1,095,504
148 Power:						
149 Number of establishments reporting.....	500	16	7	5	2	0
150 Total horsepower.....	90,553	1,035	627	335	112	312
151 Owned—						
152 Engines—						
153 Steam, number.....	1,075	24	17	6	3	10
154 Horsepower.....	79,518	938	612	335	112	297
155 Gas or gasoline, number.....	24	2				
156 Horsepower.....	425	16				
157 Electric motors, number.....	568					
158 Horsepower.....	10,021					
159 Other power, number.....	4					
160 Horsepower.....	95					
161 Rented—						
162 Electric, horsepower.....	480	30	15			
163 Other kind, horsepower.....	12	1				
164 Furnished to other establishments, horsepower.....	188					
165 Establishments classified by number of persons employed, not including proprietors and firm members:						
166 Total number of establishments.....	573	23	7	5	3	0
167 No employees.....	1					
168 Under 5.....	98	4				
169 5 to 20.....	210	9	3	2	1	2
170 21 to 50.....	138	6	2	1	1	
171 51 to 100.....	52	2	1			4
172 101 to 250.....	29	1				
173 251 to 500.....	12	1		2		
174 501 to 1,000.....	14					
175 Over 1,000.....	19					

# SLAUGHTERING AND MEAT PACKING.

401

PACKING, WHOLESALE: BY STATES, 1900—Continued.

Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachu- setts.	Michigan.	Minnesota.	
\$557,831	\$279,842,885	\$42,891,243	\$25,296,518	\$76,829,139	\$4,541,482	\$156,236	\$6,209,857	\$27,505,698	\$3,724,761	\$6,803,112	88
3,300,000	1,001,320,043	212,195,474	27,299,798	445,493,463	4,216,339	510,000	2,308,000	.....	1,072,525	19,809,666	89
\$205,000	\$71,219,927	\$15,989,386	\$1,899,068	\$30,622,996	\$298,292	\$37,900	\$189,640	.....	\$70,646	\$1,189,202	90
5,200	76,296,560	5,343,207	1,627,920	14,034,995	.....	1,800	6,000	.....	.....	.....	91
\$312	\$5,446,283	\$395,116	\$85,406	\$1,341,215	.....	\$180	.....	.....	.....	.....	92
50,000	67,917,743	1,588,988	1,305,205	8,907,600	601,334	.....	175,300	1,116,500	17,285	807,115	93
\$4,800	\$5,066,862	\$172,980	\$84,838	\$540,960	\$40,036	.....	\$16,750	\$62,000	\$1,185	\$56,449	94
118,000	145,454,885	15,332,070	1,081,086	24,257,945	100,276	112,500	200	.....	54,595	2,965,342	95
\$8,630	\$11,614,616	\$1,375,753	\$91,238	\$1,871,164	\$9,095	\$12,730	\$25	.....	\$4,957	\$203,032	96
110,000	16,769,680	735,483	197,801	8,763,298	89,683	32,620	40,800	.....	107,000	285,312	97
\$3,980	\$1,402,438	\$97,517	\$18,016	\$274,381	\$9,049	\$3,684	\$4,745	.....	\$10,620	\$22,821	98
1,408,000	356,448,731	24,456,275	30,227,091	85,152,483	4,741,510	398,333	11,924,713	44,487,608	11,503,214	14,552,028	99
\$107,440	\$24,868,977	\$1,702,160	\$2,237,437	\$5,001,307	\$362,296	\$32,000	\$915,147	\$3,525,294	\$733,598	\$850,162	100
782,000	522,096,302	30,704,461	135,613,117	78,884,690	21,371,238	202,500	8,769,909	67,884,874	12,375,700	23,819,650	101
\$53,740	\$36,179,893	\$1,819,740	\$9,408,886	\$4,814,529	\$1,001,135	\$12,600	\$626,583	\$3,785,017	\$773,692	\$1,362,540	102
230,000	223,284,156	42,058,638	39,741,810	67,996,957	10,662,435	220,000	12,800,600	57,184,634	8,295,567	5,920,898	103
\$23,900	\$22,746,708	\$3,552,687	\$3,565,063	\$4,940,298	\$974,201	\$28,200	\$1,814,003	\$4,719,658	\$623,224	\$667,504	104
220,000	185,240,920	117,737,185	30,781,171	138,455,260	10,680,870	140,000	20,154,859	92,227,868	15,009,216	7,718,147	105
\$17,800	\$14,494,759	\$8,222,656	\$2,399,670	\$9,667,119	\$791,864	\$10,400	\$1,625,178	\$8,108,673	\$1,051,953	\$671,336	106
647,000	96,586,421	8,532,981	8,917,769	24,905,403	4,089,156	65,000	10,277,652	22,800,805	8,599,898	3,679,898	107
\$42,187	\$7,881,864	\$679,760	\$662,596	\$1,467,522	\$289,931	\$4,450	\$706,588	\$1,674,612	\$208,734	\$275,740	108
832,000	57,986,886	5,732,510	1,800	6,489,044	42,684	.....	37,000	21,086	160,000	2,466,636	109
\$45,840	\$3,159,827	\$373,351	890	\$412,267	\$1,779	.....	\$2,921	\$1,265	\$10,000	\$271,634	110
92,000	326,130,241	45,088,290	63,086,918	91,949,141	6,824,540	173,000	6,955,261	68,643,633	2,098,116	8,248,174	111
\$5,840	\$18,658,450	\$2,777,173	\$3,590,506	\$4,969,091	\$369,724	\$11,300	\$455,922	\$4,220,098	\$143,812	\$507,922	112
25,400	45,455,528	3,583,150	7,354,874	24,033,748	1,381,570	.....	5,896,552	1,000,000	188,317	.....	113
\$1,512	\$3,596,474	\$260,829	\$491,049	\$1,255,038	\$90,050	.....	\$331,686	\$60,000	\$9,682	.....	114
.....	9,760,701	1,146,488	176,703	1,928,813	.....	.....	.....	.....	.....	.....	115
.....	\$5,907,572	\$750,628	\$37,854	\$1,204,905	.....	.....	.....	.....	.....	.....	116
.....	4,385,191	175,983	266,509	1,268,691	.....	.....	.....	.....	.....	.....	117
.....	\$2,010,394	\$84,666	\$98,277	\$586,487	.....	.....	.....	.....	.....	.....	118
175	51,849	8,709	6,921	26,118	1,675	.....	295	8,707	430	\$76,821	119
\$2,840	\$1,204,945	\$139,011	\$34,139	\$504,080	\$23,256	.....	\$4,190	\$70,710	\$6,245	\$20,515	120
9,611	2,103,415	352,951	72,255	880,762	12,775	1,180	8,072	.....	8,170	41,555	121
380,440	123,309,352	22,699,324	3,907,803	49,076,135	742,393	66,850	395,340	.....	140,700	2,247,136	122
\$24,318	\$12,563,343	\$2,565,994	\$337,526	\$5,496,695	\$74,101	\$3,907	\$28,997	.....	\$12,851	\$227,450	123
3,600	8,389,307	.....	.....	2,000	.....	.....	.....	.....	.....	.....	124
\$1,200	\$1,935,373	.....	.....	\$375	\$200	.....	.....	.....	.....	.....	125
\$2,742	\$25,949,345	\$2,061,886	\$210,925	\$1,855,162	\$116,473	\$3,825	\$65,952	\$1,254,488	\$7,662	\$499,858	126
\$750	\$300	.....	\$1,275	13,578	.....	.....	\$20,950	\$13,983	\$7,000	\$30	127
7,790,000	2,099,506,022	395,743,511	74,573,710	961,609,827	10,888,967	930,000	6,602,000	.....	2,102,410	41,879,920	128
3,804,750	1,134,386,763	222,787,621	41,144,172	523,454,771	5,752,879	510,000	3,479,000	.....	1,081,320	21,237,859	129
202,500	259,684,321	30,466,196	1,100,840	50,859,686	158,127	225,000	.....	.....	103,950	3,941,232	130
95,700	133,251,174	15,586,613	532,103	26,561,060	78,210	112,500	.....	.....	52,595	2,955,964	131
4,017,500	1,913,417,755	335,669,541	451,547,489	651,788,374	85,473,502	515,000	85,588,321	431,016,694	68,911,930	87,559,045	132
2,875,930	1,489,691,733	269,617,295	322,458,005	504,500,285	67,102,481	407,500	66,589,723	343,614,967	54,720,300	67,929,170	133
179,500	21,942,668	1,310,600	199,407	5,857,680	151,498	59,200	77,840	.....	153,400	407,880	134
100,200	14,063,920	805,273	130,820	3,615,542	89,683	32,625	46,440	.....	107,600	273,890	135
3	42	25	15	9	10	2	39	11	8	7	136
\$254,939	\$277,472,607	\$42,891,243	\$23,824,046	\$76,191,207	\$4,392,894	\$137,170	\$4,137,545	\$27,505,698	\$3,724,761	\$5,863,299	137
\$258,700	\$254,322,753	\$40,703,181	\$24,613,416	\$72,611,901	\$3,840,179	\$128,000	\$4,014,838	\$30,647,950	\$3,198,406	\$4,709,898	138
4	48	22	15	11	13	8	41	10	8	12	139
127	27,870	4,868	4,099	12,802	435	52	1,595	2,707	609	939	140
6	181	58	43	66	23	8	47	27	14	18	141
119	24,007	4,464	3,078	10,778	425	52	1,594	2,584	574	919	142
1	166	86	16	209	1	.....	.....	.....	18	.....	143
8	3,603	404	40	83	10	.....	1	105	35	.....	144
.....	.....	.....	1,005	1,715	.....	.....	.....	.....	.....	.....	145
.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	146
.....	.....	.....	.....	90	.....	.....	.....	.....	.....	.....	147
.....	.....	.....	.....	10	.....	.....	.....	.....	.....	.....	148
.....	260	.....	.....	.....	.....	.....	.....	18	.....	10	149
.....	145	1	.....	.....	.....	.....	.....	30	.....	.....	150
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	151
4	51	25	20	11	15	3	47	11	8	13	152
.....	8	5	3	1	5	1	19	.....	.....	.....	153
.....	19	9	5	2	4	2	18	2	1	3	154
2	9	6	5	2	4	.....	7	3	5	1	155
2	5	.....	2	.....	1	.....	2	1	.....	1	156
.....	.....	3	2	2	.....	.....	.....	2	2	.....	157
.....	2	.....	.....	1	1	.....	.....	1	.....	.....	158
.....	4	.....	2	.....	.....	.....	.....	1	.....	.....	159
.....	8	2	1	8	.....	.....	.....	1	.....	.....	160
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	161

TABLE 6.—SLAUGHTERING AND MEAT

	Missouri.	Nebraska.	New Jersey.	New York.	North Dakota.	Ohio.
1 Number of establishments.....	31	8	22	58	8	60
2 Character of organization:						
3 Individual.....	15	1	10	31	1	18
4 Firm and limited partnership.....	5			15	1	25
5 Incorporated company.....	11	7	3	7	1	17
6 Capital:						
7 Total.....	\$7,844,054	\$16,488,845	\$1,083,847	\$7,809,162	\$104,871	\$5,224,226
8 Land.....	\$392,756	\$823,209	\$110,000	\$725,365	\$10,500	\$274,665
9 Buildings.....	\$1,668,141	\$4,060,054	\$253,000	\$1,213,556	\$30,750	\$688,071
10 Machinery, tools, and implements.....	\$1,059,749	\$1,327,895	\$182,421	\$800,888	\$11,900	\$482,606
11 Cash and sundries.....	\$4,728,408	\$10,277,687	\$488,426	\$4,569,353	\$51,221	\$3,778,884
12 Proprietors and firm members.....	27	1	30	67	3	75
13 Salaried officials, clerks, etc.:						
14 Total number.....	232	721	82	381	8	313
15 Total salaries.....	\$244,475	\$684,240	\$72,226	\$260,774	\$8,760	\$266,001
16 Officers of corporations—						
17 Number.....	21	8	3	14	1	47
18 Salaries.....	\$51,080	\$27,816	\$9,500	\$32,380	\$2,400	\$71,926
19 General superintendents, managers, clerks, etc.—						
20 Total number.....	211	713	79	317	7	266
21 Total salaries.....	\$198,395	\$566,424	\$62,726	\$228,394	\$6,360	\$194,075
22 Men—						
23 Number.....	194	677	74	234	6	249
24 Salaries.....	\$185,824	\$582,867	\$60,622	\$194,457	\$5,860	\$187,189
25 Women—						
26 Number.....	17	36	5	83	1	17
27 Salaries.....	\$7,571	\$23,557	\$2,104	\$33,987	\$500	\$9,886
28 Wage-earners, including pieceworkers, and total wages:						
29 Greatest number employed at any one time during the year.....	4,036	6,997	394	1,719	35	1,959
30 Least number employed at any one time during the year.....	2,454	5,344	330	1,374	33	1,551
31 Average number.....	3,043	6,083	352	1,530	34	1,700
32 Wages.....	\$1,416,680	\$2,986,828	\$186,737	\$777,738	\$15,977	\$775,288
33 Men, 16 years and over—						
34 Average number.....	2,920	5,596	350	1,442	33	1,652
35 Wages.....	\$1,392,645	\$2,858,466	\$186,477	\$752,662	\$15,677	\$762,404
36 Women, 16 years and over—						
37 Average number.....	8	173		78	1	29
38 Wages.....	\$2,160	\$57,425		\$23,332	\$300	\$3,666
39 Children, under 16 years—						
40 Average number.....	115	314	2	10		19
41 Wages.....	\$21,875	\$70,937	\$260	\$1,744		\$4,228
42 Average number of wage-earners, including pieceworkers, employed during each month:						
43 Men, 16 years and over—						
44 January.....	2,677	5,112	381	1,496	34	1,798
45 February.....	2,690	5,100	378	1,467	34	1,737
46 March.....	3,521	5,235	374	1,453	34	1,655
47 April.....	2,691	5,299	359	1,417	32	1,592
48 May.....	2,550	5,612	334	1,387	32	1,632
49 June.....	2,639	5,852	311	1,390	32	1,685
50 July.....	3,122	5,883	309	1,377	32	1,551
51 August.....	3,250	5,778	310	1,373	32	1,515
52 September.....	3,037	5,735	344	1,401	32	1,583
53 October.....	2,888	5,980	360	1,481	34	1,599
54 November.....	2,863	5,876	364	1,521	34	1,742
55 December.....	3,110	5,688	373	1,542	34	1,832
56 Women, 16 years and over—						
57 January.....	7	138		67	1	29
58 February.....	7	139		68	1	29
59 March.....	7	165		69	1	29
60 April.....	14	170		69	1	29
61 May.....	8	146		70	1	29
62 June.....	10	152		92	1	29
63 July.....	10	171		88	1	29
64 August.....	17	156		89	1	29
65 September.....	16	137		90	1	29
66 October.....	3	245		82	1	29
67 November.....		193		83	1	24
68 December.....		215		67	1	29
69 Children, under 16 years—						
70 January.....	109	278	3	10		24
71 February.....	115	282	3	10		24
72 March.....	130	286	3	10		20
73 April.....	119	315	3	10		16
74 May.....	107	316	2	10		16
75 June.....	116	369	2	10		19
76 July.....	122	321	2	10		19
77 August.....	123	363	2	10		16
78 September.....	116	336	2	10		16
79 October.....	104	304		10		16
80 November.....	114	304	2	10		24
81 December.....	107	300	3	10		24
82 Miscellaneous expenses:						
83 Total.....	\$350,599	\$1,591,078	\$97,274	\$520,208	\$3,975	\$619,628
84 Rent of works.....	\$3,005	\$13,708	\$7,585	\$35,988	\$720	\$26,120
85 Taxes, not including internal revenue.....	\$14,742	\$43,862	\$6,097	\$23,843	\$430	\$24,262
86 Rent of offices, insurance, interest, and all sundry expenses not hitherto included.....	\$327,352	\$1,528,508	\$83,592	\$452,697	\$7,025	\$569,246
87 Contract work.....	\$500			\$1,680	\$800	
88 Materials used:						
89 Total cost.....	\$38,391,243	\$62,888,762	\$5,443,255	\$16,980,708	\$198,175	\$17,006,794
90 Slaughtered—						
91 Beeves, number.....	334,552	526,545	4,410	45,986	1,700	77,325
92 Cost.....	\$14,559,993	\$24,413,087	\$207,600	\$2,005,555	\$65,000	\$2,994,656
93 Sheep, number.....	245,407	723,865	55,449	33,688	900	39,337
94 Cost.....	\$1,008,862	\$3,075,686	\$277,466	\$137,231	\$3,400	\$142,703
95 Hogs, number.....	1,828,753	2,732,074	255,858	1,095,548	12,500	1,273,822
96 Cost.....	\$18,816,386	\$27,833,464	\$2,381,151	\$3,664,588	\$121,400	\$11,100,837
97 Calves, number.....	17,590	5,154	7,414	20,771	400	17,891
98 Cost.....	\$120,856	\$57,678	\$74,516	\$164,620	\$4,000	\$146,460
99 All other animals, cost.....	11,725	56,674	12,173	2,000		900
100 Dressed meat, purchased, fresh or partly cured, cost.....	\$1,842,384	\$4,426,618	\$2,266,059	\$5,294,941		\$1,141,022
101 Fuel.....	\$155,874	\$364,495	\$23,919	\$73,298	\$375	\$38,554

## SLAUGHTERING AND MEAT PACKING.

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PACKING, WHOLESALE: BY STATES, 1900—Continued.

Oregon.	Pennsylvania.	Rhode Island.	Tennessee.	Texas.	Utah.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states and territories. <sup>1</sup>	
9	68	6	8	12	5	3	14	3	11	5	1
2	28	-----	2	1	1	1	2	1	2	1	2
3	31	4	2	3	4	1	6	1	5	1	3
4	9	2	4	8	-----	1	6	1	4	3	4
\$760,448	6,009,347	\$727,850	\$651,740	\$1,232,267	\$33,902	\$156,500	\$941,736	\$313,000	\$3,784,218	\$121,721	5
\$189,021	\$700,563	\$9,800	\$45,800	\$53,871	\$22,869	\$34,000	\$38,100	\$22,000	\$268,882	\$4,000	6
\$238,600	\$1,291,502	\$17,400	\$119,589	\$244,329	\$7,000	\$23,000	\$127,500	\$55,000	\$525,152	\$28,803	7
\$115,356	\$675,700	\$25,700	\$129,227	\$222,952	\$10,772	\$21,500	\$125,942	\$33,000	\$425,330	\$46,372	8
\$217,571	\$3,341,582	\$674,950	\$357,624	\$711,115	\$43,761	\$78,000	\$650,244	\$203,000	\$2,564,862	\$44,546	9
9	101	9	5	6	10	4	15	3	17	3	10
41	349	16	15	49	6	17	79	16	122	12	11
\$47,130	\$289,105	\$17,636	\$17,865	\$61,797	\$2,472	\$13,140	\$73,328	\$11,800	\$144,833	\$7,270	12
9	9	5	9	10	-----	3	3	5	10	3	13
\$16,400	\$19,200	\$8,000	\$12,500	\$20,800	-----	\$4,940	\$6,120	\$6,000	\$35,000	\$3,000	14
32	340	11	6	39	6	14	76	11	112	9	15
\$30,730	\$269,955	\$9,636	\$4,865	\$40,997	\$2,472	\$8,200	\$67,208	\$5,800	\$109,838	\$4,270	16
30	323	11	6	38	5	14	72	11	105	9	17
\$29,930	\$264,058	\$9,636	\$4,865	\$40,457	\$2,172	\$8,200	\$65,438	\$5,800	\$105,735	\$4,270	18
2	17	-----	-----	1	1	-----	4	-----	7	-----	19
\$800	\$5,912	-----	-----	\$540	\$300	-----	\$1,770	-----	\$4,098	-----	20
219	7,457	211	349	535	40	57	253	92	1,672	149	21
145	1,261	183	109	345	31	30	195	75	1,119	117	22
172	1,388	199	156	414	34	42	209	84	1,361	75	23
\$37,821	\$733,932	\$102,424	\$60,945	\$179,505	\$14,978	\$17,884	\$135,696	\$42,646	\$560,808	\$34,638	24
166	1,364	196	152	394	34	42	207	76	1,359	75	25
\$86,441	\$728,951	\$101,588	\$60,775	\$173,438	\$14,978	\$17,884	\$134,996	\$40,642	\$560,438	\$34,638	26
1	12	-----	4	19	-----	-----	2	6	2	-----	27
\$480	\$3,895	-----	\$170	\$5,867	-----	-----	\$900	\$1,620	\$375	-----	28
5	7	3	-----	1	-----	-----	-----	2	-----	-----	29
\$900	\$1,576	\$836	-----	\$200	-----	-----	-----	\$384	-----	-----	30
166	1,399	188	197	457	34	57	216	83	1,552	73	31
166	1,386	188	180	433	33	52	214	73	1,407	64	32
150	1,377	191	139	473	32	42	216	73	1,339	66	33
136	1,320	194	118	447	34	42	210	69	1,268	64	34
136	1,319	196	122	408	34	34	230	77	1,271	59	35
156	1,292	193	122	349	35	34	207	77	1,305	52	36
185	1,301	195	137	341	34	30	196	77	1,287	122	37
185	1,339	199	76	326	35	32	198	77	1,172	126	38
162	1,368	199	90	352	33	32	199	69	1,176	73	39
172	1,388	204	115	357	33	37	198	74	1,339	64	40
191	1,409	200	247	370	31	51	204	84	1,645	61	41
187	1,478	201	278	366	38	56	201	84	1,649	75	42
1	11	-----	-----	22	-----	-----	2	6	1	-----	43
1	10	-----	-----	21	-----	-----	2	6	1	-----	44
1	11	-----	-----	23	-----	-----	2	6	1	-----	45
1	11	-----	-----	19	-----	-----	2	6	2	-----	46
1	15	-----	-----	18	-----	-----	2	6	2	-----	47
1	16	-----	-----	17	-----	-----	2	6	2	-----	48
1	14	-----	-----	17	-----	-----	2	6	2	-----	49
1	14	-----	-----	17	-----	-----	2	6	2	-----	50
1	16	-----	-----	18	-----	-----	2	6	2	-----	51
1	10	-----	3	14	-----	-----	2	6	1	-----	52
1	11	-----	23	19	-----	-----	2	6	1	-----	53
1	11	-----	26	24	-----	-----	2	6	1	-----	54
5	7	3	-----	1	-----	-----	-----	2	-----	-----	55
5	7	3	-----	-----	-----	-----	-----	2	-----	-----	56
5	6	3	-----	-----	-----	-----	-----	2	-----	-----	57
5	7	3	-----	2	-----	-----	-----	2	-----	-----	58
5	7	3	-----	1	-----	-----	-----	2	-----	-----	59
5	6	3	-----	1	-----	-----	-----	2	-----	-----	60
5	7	3	-----	1	-----	-----	-----	2	-----	-----	61
5	6	3	-----	2	-----	-----	-----	2	-----	-----	62
5	6	4	-----	2	-----	-----	-----	2	-----	-----	63
5	6	4	-----	1	-----	-----	-----	2	-----	-----	64
5	7	4	-----	-----	-----	-----	-----	2	-----	-----	65
5	7	4	-----	-----	-----	-----	-----	2	-----	-----	66
\$35,763	\$372,368	\$48,794	\$25,268	\$66,749	\$5,075	\$2,538	\$66,156	\$4,623	\$405,589	\$6,439	67
\$3,026	\$34,842	\$10,373	\$347	\$5,120	\$1,800	-----	\$9,033	-----	\$21,362	\$916	68
\$4,754	\$26,167	\$802	\$1,513	\$5,070	\$611	\$938	\$3,804	\$1,575	\$10,015	\$533	69
\$27,988	\$309,074	\$32,619	\$23,258	\$56,559	\$2,664	\$1,600	\$53,319	\$3,048	\$374,212	\$4,990	70
-----	\$2,285	-----	\$150	-----	-----	-----	-----	-----	-----	-----	71
\$1,359,361	\$15,128,096	\$2,164,400	\$1,453,128	\$3,170,536	\$291,477	\$477,230	\$3,736,658	\$1,133,954	\$11,850,136	\$524,500	72
14,451	40,916	-----	8,988	24,375	4,707	1,800	33,197	4,670	45,470	7,490	73
\$549,650	\$1,945,533	-----	\$243,015	599,514	\$160,418	\$36,000	\$1,454,260	\$200,200	\$1,720,361	182,120	74
47,319	85,235	-----	4,200	6,649	9,104	50	106,676	2,560	36,502	4,510	75
\$158,520	\$333,228	-----	\$12,700	\$13,311	\$35,092	\$150	\$357,647	\$5,400	\$140,047	\$16,270	76
21,862	751,057	188,200	115,572	208,270	1,750	32,000	61,284	79,120	947,176	24,550	77
\$213,040	\$6,443,115	\$1,459,300	\$1,060,324	\$1,886,067	\$15,000	\$271,200	\$680,788	\$785,010	\$3,627,543	\$257,550	78
1,661	31,927	-----	1,900	7,544	710	300	6,055	760	21,328	460	79
\$12,470	\$294,746	-----	\$10,900	\$60,205	\$5,930	\$1,500	\$65,095	\$4,404	\$137,298	\$2,200	80
\$10,364	\$25,663	-----	\$50	\$21	-----	-----	\$5,691	-----	\$14,467	-----	81
\$294,621	\$5,236,548	\$559,300	\$73,757	\$173,738	\$59,099	\$130,000	\$61,068	\$117,950	161,402	\$21,000	82
\$12,639	\$76,731	\$8,625	\$14,145	\$53,858	\$800	\$2,210	\$10,160	\$4,025	\$54,025	\$13,150	83

<sup>1</sup> Includes establishments distributed as follows: Alabama, 1; Arkansas, 1; New Hampshire, 1; South Dakota, 1; Wyoming, 1.

TABLE 6.—SLAUGHTERING AND MEAT

	Missouri.	Nebraska.	New Jersey.	New York.	North Dakota.	Ohio.
Materials used—Continued.						
Total cost—Continued.						
84 Rent of power and heat.....	\$60		\$720	\$1,602		\$585
85 Mill supplies.....	\$20,197	\$18,172	\$3,067	\$11,874	\$200	\$14,798
86 All other materials.....	\$1,726,119	\$2,414,462	\$138,794	\$529,110	\$3,000	\$1,131,764
87 Freight.....	\$98,797	\$183,436	\$62,790	\$95,889	\$300	\$249,171
Products:						
88 Total value.....	\$42,229,127	\$71,018,839	\$6,199,795	\$19,624,187	\$256,160	\$19,609,304
89 Beef—						
Sold fresh, pounds.....	160,844,314	305,918,049	2,517,020	21,928,500	1,055,000	35,044,020
Value.....	\$11,680,514	\$22,509,745	\$184,536	\$1,512,187	\$62,625	\$2,530,900
90 Canned, pounds.....	2,220,000	10,156,391		677,980		1,200,000
Value.....	\$140,000	\$564,854		\$42,480		\$78,500
91 Salted or cured, pounds.....	17,978,683	11,945,633	245,600	6,266,142		4,692,000
Value.....	\$1,076,481	\$773,966	\$32,540	\$574,825		\$240,740
92 Mutton, sold fresh, pounds.....	9,960,098	32,979,157	3,451,000	1,095,180	43,500	1,341,055
Value.....	\$758,171	\$2,696,984	\$261,285	\$161,828	\$3,915	\$138,546
93 Veal, sold fresh, pounds.....	1,312,989	812,589	729,160	1,854,640	51,000	1,473,318
Value.....	\$134,121	\$67,029	\$74,616	\$161,963	\$4,590	\$137,784
94 Pork—						
Sold fresh, pounds.....	101,936,224	84,101,389	10,253,710	43,203,960	380,000	44,603,599
Value.....	\$6,580,427	\$5,604,322	\$802,974	\$3,013,211	\$24,400	\$3,240,261
100 Salted, pounds.....	93,266,664	201,807,678	7,776,468	25,931,082	100,000	23,135,640
Value.....	\$4,869,923	\$11,958,021	\$522,588	\$1,688,843	\$9,000	\$1,539,237
101 Hams, pounds.....	33,844,254	66,273,113	15,008,818	44,533,108	400,000	38,046,139
Value.....	\$2,986,608	\$6,321,300	\$1,463,123	\$4,354,399	\$42,250	\$3,538,830
102 Smoked bacon, sides, and shoulder, pounds.....	52,392,149	78,409,619	18,308,525	51,749,929	400,000	53,168,262
Value.....	\$3,810,491	\$5,894,728	\$1,557,289	\$3,830,833	\$39,650	\$4,173,926
103 Sausage, fresh or cured, pounds.....	10,285,213	21,323,639	6,258,444	15,899,263	166,000	14,391,065
Value.....	\$593,989	\$1,483,558	\$461,033	\$1,222,909	\$11,500	\$1,026,000
104 All other meat, sold fresh, pounds.....						
Value.....				\$54,700		\$19,308
105 Refined lard, pounds.....	40,548,889	79,188,586	8,567,664	26,519,781	135,000	29,513,654
Value.....	\$2,310,669	\$4,839,132	\$533,536	\$1,745,221	\$8,250	\$1,892,866
106 Neutral lard, pounds.....	11,425,517	15,612,418	1,450,833	2,747,900		2,803,300
Value.....	\$610,124	\$986,368	\$87,050	\$162,346		\$210,850
107 Oleomargarine oil, gallons.....	1,434,787	2,302,914		34,490		76,000
Value.....	\$857,419	\$1,382,115		\$17,245		\$38,000
108 Other oils, gallons.....	357,529	419,004		31,448		
Value.....	\$158,736	\$128,998		\$15,846		
109 Fertilizers, tons.....	18,695	15,369	2,486			4,004
Value.....	\$347,309	\$250,808	\$57,815	\$32,730		\$58,680
110 Hides, number.....	352,142	520,469	11,660	60,757	2,100	95,204
Value.....	19,191,547	31,148,539	337,275	2,686,700	127,800	4,453,867
111 Wool, pounds.....	\$2,101,925	\$2,903,001	\$32,602	\$258,129	\$11,770	\$426,709
Value.....			134,000			
112 All other products, value.....	\$3,262,270	\$2,603,360	\$87,153	\$774,292	\$37,210	\$266,717
113 Custom work, value.....				\$250	\$1,000	\$1,500
Weight of animals slaughtered:						
Beef—						
128 Gross weight, on hoof.....	394,627,509	592,082,734	4,618,000	49,369,500	1,965,000	74,660,494
129 Net weight, dressed.....	181,543,627	333,371,242	2,517,020	27,377,650	1,055,000	41,334,496
Sheep—						
130 Gross weight, on hoof.....	19,621,258	65,415,617	4,670,729	3,308,550	81,000	2,832,662
131 Net weight, dressed.....	9,955,592	31,577,511	2,451,787	1,085,580	43,500	1,436,055
Hogs—						
132 Gross weight, on hoof.....	418,360,473	688,491,252	46,423,868	207,408,826	3,100,000	257,312,059
133 Net weight, dressed.....	336,661,168	521,602,090	36,904,312	164,681,614	2,895,000	202,425,850
Calves—						
134 Gross weight, on hoof.....	2,069,482	1,042,237	1,143,700	2,901,440	66,000	2,008,550
135 Net weight, dressed.....	1,218,468	681,349	729,692	1,890,520	51,000	1,473,816
Comparison of products:						
136 Number of establishments reporting for both years.....	27	7	18	45	3	47
137 Value for census year.....	\$39,063,955	\$80,570,054	\$5,548,500	\$17,884,235	\$256,160	\$18,148,971
138 Value for preceding business year.....	\$33,240,844	\$50,667,334	\$5,250,024	\$16,262,632	\$238,612	\$16,549,564
Power:						
139 Number of establishments reporting.....	27	7	19	45	2	54
140 Total horsepower.....	6,210	8,379	766	2,481	26	3,305
Owned—						
Engines—						
141 Steam, number.....	51	39	27	68	2	90
142 Horsepower.....	4,980	7,160	738	2,276	26	3,152
143 Gas or gasoline, number.....						
144 Horsepower.....						
145 Electric motors, number.....	129	49		39		9
146 Horsepower.....	1,230	1,219		6		128
147 Other power, number.....				185		
148 Horsepower.....						
Rented—						
149 Electric, horsepower.....			28	30		25
150 Other kind, horsepower.....				1		
151 Furnished to other establishments, horsepower.....				12		
Establishments classified by number of persons employed, not including proprietors and firm members:						
152 Total number of establishments.....	31	8	22	53	3	60
153 No employees.....						
154 Under 5.....	3	1	3	8	1	14
155 5 to 20.....	14		10	25	1	22
156 21 to 50.....	6	1	7	9	1	14
157 51 to 100.....	2		2			6
158 101 to 250.....	2	1				8
159 251 to 500.....	2			2		
160 501 to 1,000.....	1	2		1		1
161 Over 1,000.....	1	8				

# SLAUGHTERING AND MEAT PACKING.

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PACKING, WHOLESALE: BY STATES, 1900—Continued.

Oregon.	Pennsylvania.	Rhode Island.	Tennessee.	Texas.	Utah.	Virginia.	Washington.	West Vir- ginia.	Wisconsin.	All other states and territories. <sup>1</sup>	
\$409	\$1,550			\$100	\$720		\$276		\$54		84
\$1,259	\$12,180	\$1,370		\$3,330	\$78		\$2,250	\$530	\$3,645	\$1,860	85
\$9,681	\$475,494	\$47,455	\$32,865	\$355,944	\$14,040	\$22,050	\$39,015	\$13,200	\$606,783	\$17,350	86
\$96,698	\$233,258	\$83,850	\$4,447	\$14,448	\$250	\$13,900	\$280,408		\$884,511	\$13,000	87
\$1,638,480	\$17,826,607	\$2,410,466	\$1,671,218	\$3,904,491	\$343,444	\$559,620	\$4,293,953	\$1,337,578	\$13,601,125	\$602,247	88
7,583,840	26,472,771		3,681,900	10,795,852	2,616,450	585,000	17,482,389	2,540,000	25,796,779	2,503,000	89
\$552,507	\$2,147,802		\$255,587	\$588,995	\$171,348	\$31,300	\$1,324,314	\$186,700	\$1,588,571	\$188,200	90
	\$4,240								\$2,186		91
602,500	2,515,208		14,400	2,000	144,210	5,000	1,921,260		\$5,445		92
\$58,175	\$191,168		\$720	\$300	\$11,409	\$250	\$139,825		\$48,796	1,000	93
2,800,600	3,764,545		217,000	266,414	500,680	3,000	4,999,681	88,600	\$50,067	\$60	94
\$164,780	\$373,415		\$14,000	\$22,040	\$34,197	\$210	\$374,885	\$7,965	1,562,953	209,857	95
198,410	2,870,742		217,500	973,612	209,690	18,000	771,500	48,100	\$128,859	\$18,585	96
\$18,210	\$321,035		\$11,850	\$87,542	\$21,516	\$1,720	\$70,370	\$4,178	1,755,872	37,714	97
									\$162,654	\$2,760	98
781,520	31,287,251	10,952,400	2,535,511	5,138,863	386,534	628,000	5,227,071	2,368,500	24,740,494	1,005,000	99
\$62,887	\$2,520,200	\$699,370	\$153,931	\$333,958	\$26,503	\$46,320	\$477,800	\$166,195	\$1,459,627	\$86,025	100
1,467,400	12,184,548	7,494,000	7,531,817	5,806,344	34,800	2,738,000	646,400	530,000	73,557,159	340,500	101
\$102,322	\$393,910	\$439,660	\$525,719	\$896,894	\$2,821	\$195,810	\$55,440	\$37,100	\$4,337,065	\$26,810	102
1,501,564	44,629,801	4,628,850	2,981,400	5,289,601	35,280	1,044,560	6,412,300	5,122,400	25,775,477	755,901	103
\$162,564	\$4,207,412	\$419,027	\$280,816	\$481,108	\$4,885	\$101,460	\$714,883	\$511,616	\$2,228,503	\$77,000	104
2,094,147	36,610,385	5,637,075	2,513,853	11,849,398	176,500	1,150,000	5,229,400	3,651,600	9,448,637	1,003,055	105
\$190,720	\$2,800,348	\$360,105	\$198,096	\$333,340	\$15,259	\$97,000	\$497,665	\$256,812	\$675,487	\$87,100	106
\$49,891	15,412,150	2,183,700	281,500	2,085,953	151,709	280,000	934,905	427,000	7,630,689	308,450	107
\$33,255	\$1,233,816	\$158,048	\$18,243	\$123,939	\$12,805	\$21,000	\$73,151	\$24,870	\$554,324	\$22,640	108
46,000	\$4,720	\$74,500	17,000	539,400	32,376		7,600	100,000	200,983	70,000	109
\$5,000	\$64,093	\$25,215	\$800	\$30,880	\$4,775		\$760	\$5,000	\$18,467	\$4,200	110
1,018,732	26,805,932	3,935,200	1,804,200	4,334,111	60,604	850,000	1,621,000	1,846,000	19,260,924	492,000	111
\$95,752	\$1,733,624	\$245,625	\$105,891	\$232,651	\$5,290	\$55,500	\$152,575	\$110,900	\$1,073,302	\$36,350	112
2,500	5,340		636,900	2,141,216	\$23,728	\$3,340	25,000		2,690,051	13,333	113
\$150	\$200		\$44,572	\$133,993		\$2,600	\$1,500		\$152,544	\$900	114
	494,372								48,322		115
	\$244,637								\$24,048		116
3,035	16,933			976,840			4,200		3,931	22,500	117
\$1,446	\$6,000			\$195,548			\$2,480		\$1,051	\$7,200	118
327	3,101		880	553			3,780	200	3,237	100	119
\$5,615	\$88,016		\$5,735	\$9,424			\$92,400	\$3,000	\$48,324	\$1,450	120
19,933	72,793		12,618	31,908	5,417	2,100	30,252	5,430	66,793	7,690	121
\$61,140	2,758,319		467,400	1,379,101	245,850	84,000	2,123,930	248,400	2,866,255	388,600	122
\$79,301	\$268,959		\$30,803	\$118,067		\$6,412	\$202,570	\$22,032	\$294,889	\$28,530	123
200,000									553		124
\$40,000									\$110		125
\$85,376	\$721,637	\$61,816	\$15,495	\$239,103	\$9,408	\$38	\$111,835	\$1,215	\$798,038	\$19,055	126
	\$10,575						\$1,500		\$150	\$482	127
15,089,880	44,473,101		7,308,000	21,258,700	4,938,450	1,260,000	37,423,700	4,670,000	44,025,536	5,942,000	128
8,002,690	24,579,381		8,696,360	10,670,800	2,744,225	540,000	20,199,020	2,540,000	24,042,678	2,986,000	129
4,673,840	6,312,444		420,000	555,995	382,790	5,000	10,582,195	164,000	3,112,334	431,500	130
2,827,550	3,095,789		217,000	288,554	483,616	3,000	5,075,471	88,500	1,572,645	210,680	131
4,823,660	188,984,778	33,300,000	22,599,650	41,569,304	404,000	5,940,000	12,584,380	17,339,000	218,651,563	5,122,000	132
3,880,992	110,715,354	27,212,000	17,419,640	32,959,805	311,250	4,788,000	10,268,509	13,884,000	175,720,972	3,904,500	133
297,854	4,421,841		360,000	1,697,621	100,500	30,000	1,080,920	77,300	2,392,520	59,000	134
198,410	2,606,030		217,500	937,234	67,000	18,000	749,050	48,100	1,788,364	34,400	135
7	60	6	5	5	5	2	11	2	9	3	136
\$852,458	\$16,471,756	\$2,410,466	\$1,423,838	\$2,163,007	\$343,444	\$247,620	\$3,845,953	\$1,294,263	\$13,538,280	\$330,827	137
\$749,968	\$14,733,450	\$2,222,278	\$1,130,553	\$1,846,478	\$309,428	\$225,380	\$3,174,046	\$1,246,905	\$14,772,714	\$263,673	138
7	62	5	4	12	5	2	8	3	11	4	139
299	4,271	248	560	1,795	86	185	460	376	2,071	562	140
9	102	9	5	22	4	5	50	9	27	10	141
267	4,030	248	550	1,589	20	185	418	329	2,041	562	142
	3			3				2			143
	34							27			144
2	11		1	7				2			145
30	198		10	155				20			146
											147
											148
2				2	15		42		6		149
											150
											151
9	68	6	8	12	5	3	14	3	11	5	152
	12	1		2	8		1	1		1	153
5	25	2	4	4	1	1	6	1		2	154
3	22	1	2	2	1	2	6			1	155
	8	2	1	1			1	1		1	156
1			1	3						2	157
	1									1	158
											159
											160
											161

<sup>1</sup> Includes establishments distributed as follows: Alabama, 1; Arkansas, 1; New Hampshire, 1; South Dakota, 1; Wyoming, 1.



In connection with these tables, the fact should be noted that in New York and New Jersey, states showing a decrease in value of products for the last decade, the value of products of establishments engaged in slaughtering only considerably exceeded, in 1900, the value of products of the establishments conducting packing operations. On the other hand, in Illinois, Kansas, Nebraska, Missouri, and Indiana, the packing industry led the slaughtering industry by a large margin. The figures are significant. They illustrate the importance of the demand of the market, in the large eastern cities, for fresh meat for local consumption, although a considerable proportion of the meat from eastern establishments is exported. The immense proportion of the western packing trade shows the local demand was inconsiderable as compared with the amounts necessary to supply the demand in other states and foreign countries.

TABLE 7.—COMBINED SLAUGHTERING AND MEAT PACKING: QUANTITY AND COST OF MATERIALS USED, 1890 AND 1900, WITH PER CENT OF INCREASE.

	1900	1890	Per cent of increase.
Total cost.....	\$688,588,577	\$480,962,211	42.1
Beeves slaughtered:			
Number.....	5,580,911	5,422,044	2.0
Cost.....	\$247,365,812	\$193,848,810	27.9
Sheep slaughtered:			
Number.....	9,190,490	6,178,449	48.8
Cost.....	\$37,137,542	\$24,858,179	52.5
Hogs slaughtered:			
Number.....	30,654,333	22,849,451	37.2
Cost.....	\$278,786,961	\$207,228,609	34.5
All other animals slaughtered:			
Cost.....	\$7,916,399	\$5,246,661	50.9
Dressed meat:			
Cost.....	\$54,715,496	\$25,674,343	113.1
Fuel.....	\$2,747,606	\$1,669,396	76.1
Rent of power and heat.....	\$30,946	\$26,240	22.6
All other materials, including mill supplies and freight.....	\$54,932,815	\$23,510,978	133.6

A comparative summary between 1890 and 1900, of quantities and cost of materials used, is presented in Table 7. The value of "all other animals slaughtered" shows an increase of 50.9 per cent. This item consisted almost wholly of poultry, and affords evidence of the extent to which this phase of slaughtering has increased among the concerns engaged in the slaughtering of cattle, hogs, and sheep. The total for the value of hogs killed amounted to \$278,736,961, an increase of 34.5 per cent in the decade. During the same period, the number of hogs killed increased in a greater ratio than their value, showing a decreased value for the single hog. The number of cattle killed increased only 2 per cent, while the cost increased 27.9 per cent. The number of sheep killed increased 48.8 per cent, while the value increased 52.5 per cent, showing an increase in the cost of the single sheep. The value of dressed meat purchased increased from \$25,674,343 to \$54,715,496, or 113.1 per cent, showing the extent to which establishments engaged in packing only increased. This item is largely a duplication of the

value reported of the animals slaughtered. The increase in the cost of fuel of 75.1 per cent was due principally to the more general use and improvement of the cold storage and refrigeratory processes, and the introduction of electric transportation in plants of some of the larger concerns. The increase of 133.6 per cent in the cost of all other materials was caused in part by the cost of materials needed in the more extended utilization of the "waste" materials, and the materials used in box factories, plants for the manufacture of tin cans and cases, etc., the increasing pressure of competition forcing the establishments to manufacture many of the articles previously purchased from outside concerns. This table shows that the cost of cattle per animal increased from \$35.66 to \$44.72, and the cost of the single sheep from \$3.94 to \$4.05, while that of the single hog decreased from \$9.27 to \$9.09.

Table 8 is a comparative summary between 1890 and 1900, of the quantities and value of products, with the percentage of increase.

TABLE 8.—COMBINED SLAUGHTERING AND MEAT PACKING: QUANTITY AND VALUE OF PRODUCTS, 1890 AND 1900, WITH PER CENT OF INCREASE.

	1900	1890	Per cent of increase.
Total value.....	\$785,562,433	\$561,611,668	39.9
Beef, sold fresh:			
Pounds.....	2,920,458,297	2,708,819,960	7.8
Value.....	\$211,068,934	\$152,561,963	38.9
Beef, canned:			
Pounds.....	112,449,021	133,428,456	115.7
Value.....	\$9,167,581	\$8,950,582	2.4
Beef, salted or cured:			
Pounds.....	137,589,303	576,280,781	176.1
Value.....	\$9,661,834	\$23,318,414	168.6
Mutton, sold fresh:			
Pounds.....	404,138,601	267,353,788	51.2
Value.....	\$32,963,219	\$21,998,023	49.8
Pork, sold fresh:			
Pounds.....	1,223,038,988	1,125,648,541	8.7
Value.....	\$84,019,387	\$66,719,585	25.9
Pork, salted:			
Pounds.....	1,375,524,758	1,264,956,237	8.7
Value.....	\$88,674,016	\$77,737,470	14.1
Hams:			
Pounds.....	787,526,978	529,387,213	48.8
Value.....	\$73,793,012	\$48,732,908	51.4
Smoked bacon, sides, and shoulders:			
Pounds.....	985,722,212	666,229,376	48.0
Value.....	\$74,873,847	\$44,664,041	67.6
Sausage, fresh or cured:			
Pounds.....	292,164,075	149,281,545	95.7
Value.....	\$21,472,413	\$9,298,335	130.9
Refined lard:			
Pounds.....	891,438,417	586,485,829	66.2
Value.....	\$52,620,348	\$33,401,563	57.5
Neutral lard:			
Pounds.....	129,845,282	104,986,465	23.2
Value.....	\$3,583,350	\$6,740,246	27.4
Oleomargarine oil:			
Gallons.....	19,111,120	16,600,652	15.1
Value.....	\$11,482,542	\$12,202,117	15.9
Other oils:			
Gallons.....	8,245,569	4,427,555	86.2
Value.....	\$3,440,368	\$3,590,012	14.2
Fertilizers:			
Tons.....	168,510	115,400	46.0
Value.....	\$3,300,132	\$2,343,777	40.8
Hides:			
Number.....	6,281,952	5,346,919	17.5
Pounds.....	336,527,907	354,481,326	112.5
Value.....	\$33,925,911	\$21,245,782	59.7
Wool:			
Pounds.....	13,132,146	11,127,851	18.6
Value.....	\$3,335,824	\$2,009,133	66.0
All other products, including custom work.....	\$63,174,775	\$26,067,717	142.3

<sup>1</sup>Decrease.

Two notable features of this table are the decrease in the quantity and value of the salted and cured beef,

and the increase in the value of "all other products," due to the increase in the production and value of the so-called by-products. Salted beef, while it has decreased both in quantity and in total value, yet has increased in value per pound, as is indicated by the fact that the percentage of value did not fall so fast as did the percentage of quantity produced. The value of "all other products" has increased from \$26,067,717 to \$63,174,775, or 142.3 per cent. Compared with the rate of increase in the total value of all products of 39.9 per cent, it increased very nearly three and one-half times as fast. Of the increase of \$223,950,765 in the value of all products, the increase of \$37,107,058 in the value of "all other products" constituted 16.6 per cent, or very nearly one-sixth. The production of beef, sold fresh, is so large as to be almost incomprehensible—2,920,458,297 pounds were produced in 1900, an increase of 212,138,337 pounds, or 7.8 per cent, over 1890. The value of this beef increased in greater proportion, advancing from an average price of 5.6 cents per pound in 1890 to 7.2 cents per pound in 1900, or 28.6 per cent. Of canned beef, 20,979,435 fewer pounds were canned in 1900 than in 1890, while the value increased by \$216,949. Beef, salted or cured, suffered a decline in production of 438,700,428 pounds, falling from 576,289,731 pounds to 137,589,303 pounds, or 76.1 per cent. The decrease in value was \$13,656,580, or 58.6 per cent. Of mutton sold fresh, there was a gain of 136,829,813 pounds, or 51.2 per cent. The value of the fresh mutton increased \$10,965,196, or 49.8 per cent. The quantity of pork sold fresh and of pork salted each increased 8.7 per cent. The values of these items, however, show considerable variation, the value of the fresh pork increasing 25.9 per cent, and of the pork salted 14.1 per cent. Both show an increased value per pound.

The production of hams increased 258,139,760 pounds, or 48.8 per cent, while the increase in value was \$25,060,104, or 51.4 per cent. The production of smoked bacon, sides, and shoulders in-

creased 48 per cent, and the value 67.6 per cent. In 1900 both the production of these and their value exceeded the production and value of hams. The production of sausage, fresh and cured, almost doubled in quantity during the decade, increasing 95.7 per cent, while the gain in value was 130.9 per cent. The quantity of both refined and neutral lard shows a large percentage of increase, indicating, when compared with the production of fresh and salt pork, that a greater portion of the carcass was being devoted to lard than formerly. This is due probably to the fact that lard is considered one of the most valuable products of the hog. The production of oleo oil increased 15.1 per cent in quantity, but fell 5.9 per cent in value. While this decrease in value was largely due to increased production, caused by improved methods of production, yet it is not possible to ascribe the whole decrease to this fact, since the price of this oil is fixed in Rotterdam, the greatest oleo market in the world, where American oleo oil is brought into competition with that from Germany, the Netherlands, and other nations. Under "other oils" the production increased 86.2 per cent, while the value fell 4.2 per cent. The value per ton of fertilizers also fell, while the quantity of production increased. The number of hides increased, although their total weight fell off, showing a decrease in the weight of the average hide, while their value increased 59.7 per cent. The value of the wool increased in a much larger proportion than did the quantity, the value increasing 66 per cent and the quantity 18.5 per cent. This product of 13,182,146 pounds of pulled wool amounted to 35.6 per cent of the 37,000,000 pounds of pulled wool produced in the United States during the calendar year of 1900, as estimated by the National Association of Wool Manufacturers.

Table 9 is interesting in showing the extent to which this industry has tended to group itself about certain centers, and the relative importance of these centers.

TABLE 9.—SUMMARY, CITIES HAVING A PRODUCT VALUED AT \$1,000,000 AND OVER: 1900.

	Allegheny, Pa.	Baltimore, Md.	Boston, Mass.	Buffalo, N. Y.	Chicago, Ill.	Cincinnati, Ohio.	Cleveland, Ohio.	Dayton, Ohio.
Number of establishments.....	8	73	6	24	38	27	10	10
Capital.....	\$1,497,666	\$1,344,953	\$40,915	\$5,173,694	\$67,137,569	\$2,893,064	\$1,827,288	\$242,925
Salaries officials, clerks, etc., number.....	62	57	14	208	4,010	98	173	12
Salaries.....	\$57,800	\$44,724	\$8,996	\$146,523	\$4,233,994	\$103,830	\$135,886	\$9,900
Wages.....	438	508	34	928	25,345	856	577	147
Wages-earners.....	\$233,028	\$233,898	\$23,030	\$436,869	\$12,875,676	\$414,621	\$235,023	\$75,881
Miscellaneous expenses.....	\$111,546	\$99,546	\$14,006	\$342,878	\$13,829,825	\$437,839	\$175,132	\$10,332
Materials used:								
Total cost.....	\$3,338,805	\$6,257,558	\$1,144,276	\$10,026,676	\$218,241,331	\$8,806,652	\$6,759,023	\$959,661
Beefes slaughtered, number.....	13,521	15,357	12,325	63,451	1,666,847	62,267	13,949	8,363
Cost.....	\$643,079	\$665,122	\$606,125	\$2,591,030	\$78,347,641	\$1,879,390	\$886,059	\$312,515
Sheep slaughtered, number.....	40,529	184,480	19,530	243,093	2,878,440	50,200	12,782	3,289
Cost.....	\$152,636	\$787,620	\$52,546	\$382,962	\$12,583,093	\$136,744	\$63,910	\$10,551
Hogs slaughtered, number.....	182,295	564,035	.....	624,915	6,966,960	588,327	532,909	69,001
Cost.....	\$1,638,782	\$3,408,829	.....	\$5,490,289	\$72,041,592	\$5,331,026	\$4,519,927	\$594,041
All other animals slaughtered, cost.....	\$31,137	\$269,580	\$220,184	\$284,854	\$1,114,460	\$187,770	\$30,692	\$8,643
Dressed meat, cost.....	\$445,456	\$343,107	\$234,000	\$285,616	\$21,006,384	\$1,076,700	\$26,052	\$2,760
All other materials.....	\$377,665	\$283,300	\$31,421	\$491,925	\$88,348,161	\$195,022	\$1,232,333	\$31,151

TABLE 9.—SUMMARY, CITIES HAVING A PRODUCT VALUED AT \$1,000,000 AND OVER: 1900—Continued.

	Allegheny, Pa.	Baltimore, Md.	Boston, Mass.	Buffalo, N. Y.	Chicago, Ill.	Cincinnati, Ohio.	Cleveland, Ohio.	Dayton, Ohio.
Products:								
Total value	\$3,996,807	\$7,066,461	\$1,329,010	\$11,601,167	\$256,527,949	\$10,370,177	\$7,514,470	\$1,007,523
Beef—								
Sold fresh, pounds	8,258,977	6,984,180	6,214,500	30,504,150	848,262,243	23,998,890	8,141,940	4,835,220
Value	\$663,268	\$570,764	\$638,575	\$2,058,750	\$61,964,934	\$1,507,763	\$821,170	\$292,690
Salted or cured, pounds	59,700	307,820		1,600,000	67,860,743	4,650,000		32,000
Value	\$3,150	\$24,959		\$105,000	\$5,062,662	\$234,850		\$4,790
Canned, pounds				500,000	76,296,560	1,200,000		
Value				\$35,000	\$6,446,283	\$78,500		
Mutton—								
Sold fresh, pounds	1,369,520	6,966,000	703,200	9,879,720	187,228,651	1,460,850	626,818	123,915
Value	\$163,486	\$768,860	\$58,614	\$770,826	\$11,053,224	\$125,965	\$62,631	\$9,113
Pork—								
Sold fresh, pounds	6,261,038	10,276,713		24,843,910	345,967,335	24,732,702	15,814,790	1,181,600
Value	\$506,182	\$795,207		\$1,787,751	\$24,416,666	\$1,745,133	\$1,223,916	\$90,247
Salted, pounds	2,507,806	7,694,909		12,939,640	464,500,797	9,248,127	13,380,522	97,000
Value	\$165,385	\$650,783		\$813,946	\$32,293,588	\$618,446	\$939,101	\$9,965
Hams, pounds	6,868,842	10,969,840	2,000,000	15,253,572	215,263,955	28,137,011	11,531,435	1,756,120
Value	\$695,134	\$1,135,283	\$180,000	\$1,999,099	\$21,562,171	\$2,076,895	\$1,099,415	\$168,050
Smoked bacon, sides, and shoulders, pounds	5,403,251	18,218,089	500,000	28,916,752	159,607,524	28,927,418	24,171,198	2,427,480
Value	\$508,763	\$1,871,110	\$40,000	\$2,008,615	\$12,688,911	\$1,687,498	\$2,082,880	\$175,967
Sausage, fresh or cured, pounds	4,698,460	9,455,752	780,000	6,556,800	91,756,941	6,133,780	5,452,405	610,100
Value	\$320,136	\$647,538	\$51,000	\$443,215	\$7,588,254	\$422,669	\$418,747	\$35,061
Refined lard, pounds	5,565,171	4,440,261	100,000	13,417,215	316,745,272	17,736,463	7,160,443	1,038,500
Value	\$363,805	\$289,882	\$70,000	\$917,459	\$18,124,463	\$1,099,945	\$484,693	\$140,057
Neutral lard, pounds		5,196,552		2,847,900	44,785,888	633,300	2,000,000	150,000
Value		\$319,666		\$141,346	\$3,534,188	\$38,000	\$160,000	\$7,500
Oleo oil, gallons	494,372			34,490	8,671,660	76,000		
Value	\$244,687			\$17,245	\$5,227,763	\$38,000		
Other oils, gallons	3,100	5,000		27,648	4,335,991			
Value	\$1,550	\$2,000		\$14,726	\$1,990,300			
Fertilizers, tons	2,520	590	250	2,312	39,852	2,206	1,616	125
Value	\$79,287	\$8,600	\$2,500	\$34,870	\$898,455	\$33,433	\$23,307	\$1,100
Hides, number	23,037	55,237	38,223	100,089	1,779,678	87,038	16,725	9,539
Pounds	833,590	1,167,330	873,230	3,968,057	104,873,510	3,479,270	797,817	561,950
Value	\$90,843	\$93,860	\$78,820	\$353,460	\$10,778,897	\$328,692	\$79,551	\$40,771
Wool, pounds		5,460		518,826	8,889,207			
Value		\$1,885		\$103,765	\$1,935,873			
All other products, including custom work	\$211,181	\$486,564	\$209,501	\$646,094	\$30,966,762	\$334,388	\$119,050	\$121,774

	Denver, Colo.	Detroit, Mich.	East St. Louis, Ill.	Indianapolis, Ind.	Jersey City, N. J.	Kansas City, Kans.	Louisville, Ky.	Milwaukee and Cudahy, Wis.
Number of establishments	7	16	3	7	13	8	12	7
Capital	\$833,613	\$1,184,776	\$3,183,288	\$3,807,246	\$473,485	\$15,114,601	\$1,218,426	\$3,573,690
Salaries officials, clerks, etc., number	27	61	156	130	27	1,771	52	113
Salaries	\$36,496	\$59,681	\$138,250	\$128,834	\$26,882	\$1,579,439	\$45,739	\$140,333
Wage-earners	171	383	2,159	1,943	183	7,713	440	1,293
Wages	\$103,274	\$177,856	\$385,497	\$785,226	\$130,707	\$3,381,510	\$189,417	\$530,483
Miscellaneous expenses	\$33,184	\$70,587	\$305,594	\$218,939	\$58,342	\$1,919,411	\$100,312	\$385,102
Materials used:								
Total cost	\$2,404,458	\$3,628,540	\$26,370,543	\$17,400,330	\$5,872,946	\$65,082,581	\$3,828,486	\$11,405,166
Beeves slaughtered, number	26,716	19,648	361,873	77,595	17,530	918,206	13,088	45,442
Cost	\$1,095,817	\$633,105	\$13,842,581	\$3,825,588	\$900,540	\$37,811,089	\$482,242	\$1,720,449
Sheep slaughtered, number	41,513	37,410	254,060	22,607	269,957	635,655	8,507	30,139
Cost	\$204,363	\$124,845	\$929,861	\$72,993	\$1,065,717	\$2,294,133	\$19,496	\$138,363
Hogs slaughtered, number	91,866	295,728	1,134,662	1,221,743	490,607	2,599,841	474,915	890,374
Cost	\$838,452	\$2,554,579	\$9,212,843	\$10,083,574	\$2,861,294	\$21,402,061	\$3,157,874	\$8,217,533
All other animals slaughtered, cost	\$25,300	\$20,140	\$271,264	\$51,279	\$345,543	\$229,335	\$12,068	\$149,185
Dressed meat, cost	\$209,990	\$158,000	\$297,863	\$2,450,977	\$465,630	\$525,077	\$50,000	\$141,353
All other materials	\$30,536	\$137,771	\$816,131	\$915,929	\$174,222	\$2,700,836	\$160,816	\$1,038,303
Products:								
Total value	\$2,858,947	\$4,047,749	\$27,676,818	\$18,781,442	\$6,243,217	\$73,787,771	\$4,444,978	\$13,045,979
Beef—								
Sold fresh, pounds	15,000,250	9,241,600	185,903,693	44,859,495	11,891,650	447,087,638	5,142,439	28,682,779
Value	\$1,090,318	\$613,189	\$11,301,559	\$2,775,363	\$932,505	\$30,692,151	\$362,082	\$1,575,821
Salted or cured, pounds	25,000			555,585		8,915,600	588,894	828,796
Value	\$1,250			\$124,098		\$630,280	\$39,036	\$58,267
Canned, pounds				86,976		14,034,995		52,186
Value				\$3,722		\$1,841,215		\$5,445
Mutton—								
Sold fresh, pounds	2,146,245	1,881,000	10,229,819	960,360	11,290,773	24,260,625	260,276	1,582,803
Value	\$178,179	\$115,088	\$740,819	\$69,979	\$860,116	\$1,890,008	\$20,615	\$127,259
Pork—								
Sold fresh, pounds	6,240,000	10,287,200	58,281,492	8,518,426	48,273,851	79,695,858	4,043,610	23,632,491
Value	\$882,300	\$693,282	\$3,868,464	\$605,148	\$3,108,578	\$4,573,597	\$299,978	\$1,831,817
Salted, pounds	8,858,000	11,680,000	55,672,697	22,180,134	1,000,000	71,712,076	21,130,738	71,987,711
Value	\$345,000	\$727,400	\$3,764,849	\$1,317,137	\$60,000	\$4,376,466	\$1,077,835	\$4,242,598
Hams, pounds	2,850,000	7,386,000	8,417,044	32,365,020	1,509,000	58,040,207	10,490,435	24,637,987
Value	\$180,000	\$545,060	\$767,001	\$2,617,900	\$135,000	\$4,488,458	\$957,501	\$2,124,199
Smoked bacon, sides, and shoulders, pounds	1,950,000	13,790,000	16,827,989	106,327,000	2,248,176	124,838,028	10,296,026	8,009,373
Value	\$122,000	\$968,200	\$1,084,579	\$7,357,198	\$179,454	\$5,575,144	\$760,982	\$568,063
Sausage, fresh or cured, pounds	2,057,800	2,962,500	2,641,619	4,044,370	500,000	21,570,287	3,859,566	7,219,189
Value	\$128,024	\$187,000	\$158,694	\$277,686	\$30,000	\$1,279,985	\$271,087	\$526,134
Refined lard, pounds	4,950,000	790,000	8,657,723	33,759,536	2,234,682	37,978,088	6,306,946	17,799,281
Value	\$235,000	\$60,300	\$321,663	\$2,061,663	\$128,105	\$4,746,010	\$332,528	\$972,163
Neutral lard, pounds			669,645	3,576,980		23,676,743	1,881,570	2,690,051
Value			\$58,791	\$250,350		\$1,231,428	\$90,050	\$162,544
Oleo oil, gallons			1,089,041	24,800		1,923,813		49,322
Value			\$679,809	\$47,745		\$1,204,905		\$24,048
Other oils, gallons			49,200	100,000		1,203,691		3,931
Value			\$20,084	\$45,500		\$580,487		\$1,651
Fertilizers, tons	150	360	13,257	4,464		11,775	1,675	3,157
Value	\$1,710	\$5,400	\$309,074	\$65,623		\$225,317	\$23,256	\$47,324
Hides, number	23,825	22,578	390,801	83,507	48,093	890,963	15,019	66,448
Pounds	1,700,680	1,055,790	23,118,317	5,301,425	1,472,980	49,935,665	798,677	2,828,136
Value	\$120,812	\$86,065	\$2,170,931	\$561,279	\$127,357	\$5,514,643	\$82,063	\$293,964
Wool, pounds						2,000		
Value						\$375		
All other products, including custom work	\$78,754	\$66,765	\$2,557,037	\$536,048	\$632,102	\$2,521,297	\$128,465	\$955,212

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TABLE 9.—SUMMARY, CITIES HAVING A PRODUCT VALUED AT \$1,000,000 AND OVER: 1900—Continued.

	Newark, N. J.	New York, N. Y.	Paterson, N. J.	Pawtucket, R. I.	Philadel- phia, Pa.	Pittsburg, Pa.	Portland, Oreg.	Providence, R. I.	St. Joseph and South St. Joseph, Mo.
Number of establishments .....	10	52	8	3	58	5	4	3	5
Capital .....	\$363,777	\$9,267,261	\$399,800	\$501,480	\$1,882,782	\$786,810	\$604,282	\$252,720	\$5,200,899
Salaried officials, clerks, etc., number .....	39	355	11	11	141	47	34	16	131
Salaries .....	\$92,708	\$410,854	\$15,464	.....	\$111,925	\$42,713	\$39,790	\$17,086	\$106,001
Wage-earners .....	176	1,932	75	84	617	150	121	122	2,218
Wages .....	\$94,993	\$1,303,526	\$41,562	\$47,280	\$372,610	\$98,950	\$54,025	\$68,024	\$980,749
Miscellaneous expenses .....	\$10,275	\$39,033	\$30,965	\$12,129	\$221,674	\$28,001	\$29,700	\$30,597	\$190,550
Materials used:									
Total cost .....	\$3,276,004	\$38,013,877	\$1,042,952	\$1,045,754	\$10,821,065	\$1,779,600	\$1,109,939	\$1,155,026	\$27,645,318
Beefes slaughtered, number .....	2,000	806,261	.....	1,000	83,682	7,395	10,857	.....	220,849
Cost .....	\$165,000	\$18,460,183	.....	\$35,000	\$4,882,008	\$409,711	\$415,200	.....	\$10,198,052
Sheep slaughtered, number .....	28,000	1,218,925	4,409	.....	152,896	21,072	42,459	.....	218,543
Cost .....	\$134,000	\$5,014,732	\$233,226	.....	\$678,280	\$84,128	\$139,400	.....	\$900,094
Hogs slaughtered, number .....	168,850	991,113	86,708	76,000	282,908	72,609	15,818	57,200	1,387,591
Cost .....	\$1,684,808	\$6,438,117	\$945,213	\$320,800	\$2,387,626	\$543,502	\$155,400	\$629,000	\$14,322,513
All other animals slaughtered, cost .....	\$92,000	\$1,657,340	\$45,778	\$2,800	\$268,493	\$114,628	\$5,450	.....	\$28,422
Dressed meat, cost .....	\$1,090,556	\$4,084,532	\$56,300	\$59,300	\$2,277,645	\$596,992	\$288,021	\$456,000	\$467,554
All other materials .....	\$109,540	\$2,308,973	\$62,440	\$118,354	\$432,018	\$30,639	\$103,468	\$70,026	\$1,728,673
Products:									
Total value .....	\$3,537,896	\$42,879,218	\$1,370,486	\$1,134,946	\$12,020,462	\$2,054,521	\$1,306,996	\$1,316,220	\$29,704,973
Beef—									
Sold fresh, pounds .....	2,220,000	216,481,931	.....	500,000	57,752,000	4,326,676	5,616,400	.....	124,422,447
Value .....	\$177,600	\$17,523,685	.....	\$33,600	\$4,988,255	\$382,500	\$398,301	.....	\$3,593,981
Salted or cured, pounds .....	90,000	8,420,240	50,000	.....	1,933,433	.....	500,000	.....	3,220,000
Value .....	\$16,000	\$580,838	\$5,500	.....	\$125,646	.....	\$38,000	.....	\$195,400
Canned, pounds .....	.....	.....	.....	.....	.....	40,000	.....	.....	2,220,000
Value .....	.....	.....	.....	.....	.....	\$4,000	.....	.....	\$140,000
Mutton—									
Sold fresh, pounds .....	1,160,000	51,524,941	1,898,000	.....	6,877,098	698,585	2,100,400	.....	8,341,712
Value .....	\$118,000	\$4,311,494	\$215,080	.....	\$684,760	\$70,758	\$146,928	.....	\$637,672
Pork—									
Sold fresh, pounds .....	4,488,310	75,641,107	3,693,000	6,198,000	25,964,220	1,860,500	320,000	4,164,400	79,629,518
Value .....	\$350,403	\$5,067,432	\$290,575	\$406,840	\$1,965,083	\$140,380	\$26,516	\$294,130	\$4,967,097
Salted, pounds .....	4,449,627	9,706,403	1,516,541	1,500,000	3,837,702	257,666	1,348,000	5,934,000	30,354,128
Value .....	\$295,087	\$630,577	\$109,200	\$93,000	\$292,784	\$47,400	\$90,370	\$346,660	\$4,090,819
Hams, pounds .....	7,479,348	24,154,716	2,884,000	1,811,500	11,964,220	5,121,530	1,366,764	2,606,000	17,393,204
Value .....	\$711,896	\$2,389,300	\$294,000	\$180,150	\$1,181,430	\$497,320	\$146,884	\$212,900	\$1,447,332
Smoked bacon, sides, and shoulders, pounds .....	12,485,488	20,822,653	1,488,782	3,298,500	9,245,491	2,972,811	1,845,147	2,007,000	31,991,549
Value .....	\$1,026,927	\$1,652,841	\$127,600	\$168,792	\$707,174	\$234,876	\$169,400	\$165,290	\$2,178,381
Sausage, fresh or cured, pounds .....	4,040,509	7,768,101	692,000	598,500	5,347,447	601,667	349,891	1,585,200	1,366,778
Value .....	\$293,209	\$649,098	\$55,400	\$47,780	\$444,980	\$88,585	\$28,266	\$110,268	\$80,041
Refined lard, pounds .....	4,654,864	12,804,781	2,379,000	1,777,400	8,556,106	1,668,153	918,132	2,158,500	26,716,200
Value .....	\$279,444	\$789,569	\$154,890	\$115,609	\$572,292	\$111,553	\$87,035	\$130,016	\$1,457,135
Neutral lard, pounds .....	1,450,833	750,000	.....	.....	.....	.....	.....	.....	8,472,001
Value .....	\$87,050	\$42,000	.....	.....	.....	.....	.....	.....	\$432,912
Oleo oil, gallons .....	.....	1,626,509	.....	.....	8,333	.....	.....	.....	1,084,787
Value .....	.....	\$936,819	.....	.....	\$2,500	.....	.....	.....	\$647,419
Other oils, gallons .....	.....	137,767	.....	.....	.....	4,000	3,085	.....	342,229
Value .....	.....	\$60,029	.....	.....	.....	\$1,446	\$1,446	.....	\$154,146
Fertilizers, tons .....	160	3,221	326	800	153	140	187	.....	11,377
Value .....	\$2,405	\$68,942	\$5,410	\$4,500	\$2,875	\$1,040	\$2,815	.....	\$216,369
Hides, number .....	8,000	446,291	3,270	1,400	105,822	17,496	11,407	.....	224,431
Pounds .....	270,000	21,699,599	35,875	65,000	5,195,580	527,980	568,900	.....	13,376,391
Value .....	\$18,900	\$2,047,699	\$3,587	\$4,550	\$425,466	\$49,588	\$57,065	.....	\$1,437,813
Wool, pounds .....	75,000	2,099,050	134,000	.....	33,400	.....	200,000	.....	.....
Value .....	\$25,000	\$681,710	\$41,700	.....	\$7,600	.....	\$40,000	.....	.....
All other products, including custom work .....	\$140,975	\$5,447,095	\$67,544	\$31,125	\$619,629	\$468,271	\$73,971	\$56,956	\$2,979,106

	St. Louis, Mo.	St. Paul, Minn.	San Francis- co, Cal.	Seattle, Wash.	Sioux City, Iowa.	Somerville, Mass.	South Oma- ha, Nebr.	Washington, D. C.
Number of establishments .....	25	6	26	8	3	4	6	7
Capital .....	\$2,008,249	\$250,998	\$2,305,362	\$570,850	\$1,209,695	\$6,801,141	\$15,657,418	\$248,200
Salaried officials, clerks, etc., number .....	103	16	114	48	21	45	712	82
Salaries .....	\$142,673	\$11,390	\$177,490	\$44,990	\$24,250	\$70,618	\$677,256	\$15,784
Wage-earners .....	841	84	532	182	892	1,435	5,940	116
Wages .....	\$448,287	\$42,262	\$323,931	\$89,105	\$471,944	\$692,999	\$2,916,732	\$63,607
Miscellaneous expenses .....	\$171,902	\$21,097	\$306,408	\$45,761	\$105,222	\$314,036	\$1,475,848	\$19,935
Materials used:								
Total cost .....	\$11,120,325	\$989,749	\$8,622,994	\$2,666,655	\$6,856,684	\$14,233,788	\$60,150,480	\$2,013,827
Beefes slaughtered, number .....	9,200	123,113	102,815	18,132	54,372	18,948	529,435	14,975
Cost .....	\$4,671,591	\$325,800	\$3,445,742	\$834,216	\$1,647,456	\$648,182	\$24,482,287	\$763,275
Sheep slaughtered, number .....	85,179	18,225	501,645	65,275	6,500	371,832	723,505	17,850
Cost .....	\$180,428	\$62,500	\$1,521,458	\$213,100	\$31,723	\$1,860,420	\$3,076,611	\$88,675
Hogs slaughtered, number .....	464,075	50,476	138,323	44,880	505,764	900,490	2,478,723	127,300
Cost .....	\$4,703,069	\$380,507	\$1,143,635	\$435,520	\$4,554,562	\$9,004,900	\$25,054,340	\$914,000
All other animals slaughtered, cost .....	\$145,534	\$19,625	\$301,645	\$42,875	\$3,480	\$213,450	\$177,102	\$53,600
Dressed meat, cost .....	\$1,243,320	\$168,422	\$1,535,477	\$517,308	\$191,868	\$1,550,864	\$4,426,518	\$145,200
All other materials .....	\$326,893	\$32,895	\$675,037	\$263,576	\$428,095	\$1,461,472	\$2,942,672	\$49,077
Products:								
Total value .....	\$12,943,376	\$1,288,864	\$9,991,599	\$3,072,195	\$8,982,896	\$15,692,242	\$67,889,749	\$2,210,860
Beef—								
Sold fresh, pounds .....	40,086,867	4,780,000	56,680,253	9,715,200	18,991,479	8,795,200	302,040,449	8,128,300
Value .....	\$3,301,408	\$394,600	\$3,463,632	\$730,740	\$1,351,029	\$663,792	\$22,576,825	\$669,800
Salted or cured, pounds .....	14,758,683	.....	2,402,848	921,250	1,305,205	.....	11,925,632	400,000
Value .....	\$881,031	.....	\$164,966	\$69,825	\$84,888	.....	\$771,966	\$16,000
Canned, pounds .....	.....	.....	399,569	.....	1,027,920	.....	10,150,391	.....
Value .....	.....	.....	\$40,401	.....	\$85,466	.....	\$504,854	.....
Mutton—								
Sold fresh, pounds .....	1,838,586	613,250	21,097,445	3,191,875	871,880	14,850,000	32,990,407	719,180
Value .....	\$143,743	\$61,103	\$1,526,238	\$232,750	\$74,073	\$1,188,000	\$2,695,109	\$69,278
Pork—								
Sold fresh, pounds .....	26,471,711	1,160,000	12,659,898	4,262,000	9,850,441	28,815,680	80,936,436	6,823,300
Value .....	\$1,844,430	\$79,300	\$962,614	\$402,960	\$787,090	\$2,305,254	\$5,395,871	\$555,965
Salted, pounds .....	12,656,870	100,000	1,493,450	262,400	36,947,224	4,000,000	179,456,388	1,033,372
Value .....	\$763,454	\$5,500	\$124,357	\$26,240	\$2,402,019	\$320,000	\$10,729,379	\$76,512
Hams, pounds .....	15,460,059	1,500,898	8,616,357	5,939,500	14,571,292	29,000,000	58,199,346	1,227,000
Value .....	\$1,441,701	\$200,870	\$903,293	\$637,693	\$1,889,273	\$2,000,000	\$5,551,145	\$126,647
Smoked bacon, sides, and shoulders, pounds .....	19,270,600	970,000	10,005,888	4,616,400	9,588,093	47,700,000	75,015,619	2,496,285
Value .....	\$1,581,810	\$57,200	\$936,359	\$445,595	\$780,048	\$4,240,944	\$5,689,488	\$214,179

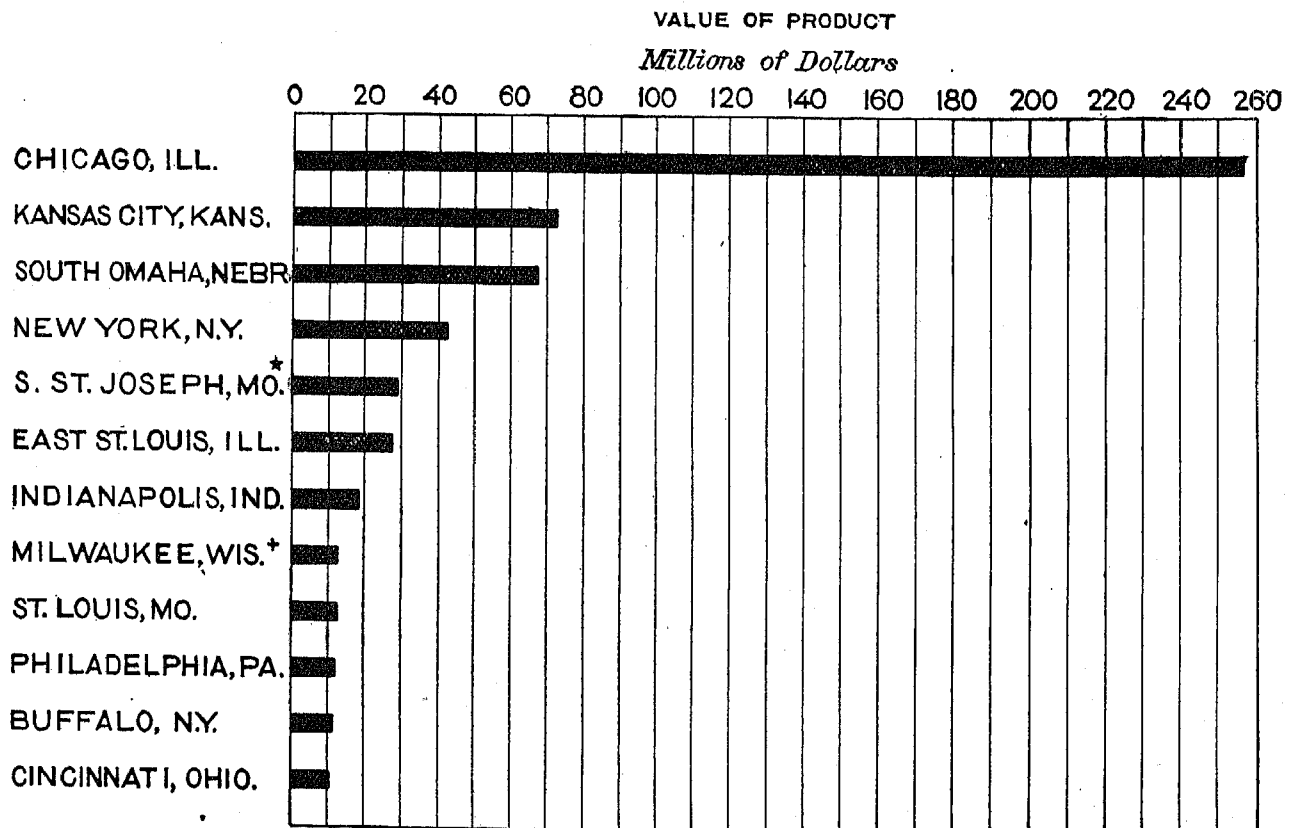
## MANUFACTURES.

TABLE 9.—SUMMARY, CITIES HAVING A PRODUCT VALUED AT \$1,000,000 AND OVER: 1900—Continued.

	St. Louis, Mo.	St. Paul, Minn.	San Francisco, Cal.	Seattle, Wash.	Sioux City, Iowa.	Somerville, Mass.	South Omaha, Nebr.	Washington, D. C.
Products—Continued.								
Total value—Continued.								
Sausage, fresh or cured, pounds .....	9,146,940	505,000	702,975	604,500	3,031,639	9,004,900	21,321,139	2,141,500
Value .....	\$527,498	\$42,300	\$57,257	\$47,595	\$180,902	\$720,390	\$1,483,458	\$191,330
Refined lard, pounds .....	18,973,689	1,000,000	1,652,687	1,287,000	18,451,414	40,000,000	75,228,106	1,404,000
Value .....	\$865,689	\$70,000	\$124,168	\$126,825	\$1,068,831	\$2,400,000	\$4,671,699	\$106,780
Neutral lard, pounds .....	2,953,516				5,410,420		15,612,418	26,000
Value .....	\$177,212				\$351,677		\$986,368	\$1,820
Oleo oil, gallons .....	350,000				175,708	82,021	2,302,914	
Value .....	\$210,000				\$87,854	\$31,250	\$1,382,115	
Other oils, gallons .....	15,300	600	3,710	4,200			419,004	
Value .....	\$4,690	\$192	\$2,188	\$2,480			\$128,998	
Fertilizers, tons .....	7,318	370	1,002	3,600	2,247	3,542	14,394	120
Value .....	\$130,940	\$5,110	\$25,227	\$90,000	\$29,211	\$66,600	\$239,114	\$2,160
Hides, number .....	142,186	10,900	118,135	21,757	55,067	61,698	526,484	37,015
Pounds .....	6,885,531	509,750	5,960,608	1,208,580	2,908,140	1,607,480	31,337,139	988,250
Value .....	\$666,130	\$36,055	\$582,876	\$120,987	\$288,668	\$149,117	\$2,917,958	\$88,977
Wool, pounds .....			18,000			1,450,000		
Value .....			\$3,800			\$442,250		
All other products, including custom work ..	\$453,690	\$334,534	\$1,064,122	\$108,605	\$21,917	\$1,164,645	\$2,103,407	\$97,412

Chicago led in value of products, as is shown in the diagram accompanying the table. After Chicago came Kansas City, then South Omaha, New York city, St. Joseph and South St. Joseph, Mo., East St. Louis,

Indianapolis, Milwaukee and Cudahy, Wis., St. Louis, Philadelphia, Buffalo, and Cincinnati, in the order named. The relative importance of these cities, in the value of products, is shown in the following diagram:



\* Including St. Joseph, Mo.

+ Including Cudahy, Wis.

In number of establishments Baltimore ranked first, with 73 establishments, followed by Philadelphia with 58, and New York city with 52, while Chicago, with 38, stood fourth. In the order of capital invested, wages paid, and number of wage-earners, the relative rank of the cities followed closely the same rank as under the value of production. The widest variations occurred in the average amount of capital invested and average

value of product per establishment in the different cities. South Omaha had the largest average single establishment, with an average investment of \$2,609,570, Kansas City's average capitalization per establishment was \$1,889,325; Chicago's, \$1,766,788; South St. Joseph's (with St. Joseph), \$1,040,180. In the average value of products per establishment, South Omaha led with \$11,314,958; Kansas City had \$9,223,471; Chicago,

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\$6,750,736; and South St. Joseph (with St. Joseph), \$5,940,995.

Table 10 presents the statistics of exports of live stock, and Table 11 the figures for the exports of meat products, as shown by the tables of the Bureau of Sta-

tistics for the fiscal years from 1890 to 1900, both inclusive. A comparison of Table 11 with Table 8, on page 22, shows the proportion of the total product that is sent abroad.

TABLE 10.—QUANTITY AND VALUES OF ANIMALS IMPORTED, AND OF DOMESTIC AND FOREIGN ANIMALS EXPORTED: 1890-1900.<sup>1</sup>

ARTICLES.	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890
<i>Imports.</i>											
Cattle, free:											
Number .....	1,045	624	577	204	784	14,956	312	174	132	2,740	3,932
Value .....	\$202,615	\$95,353	\$76,631	\$24,360	\$15,091	\$99,104	\$5,849	\$21,024	\$27,077	\$49,826	\$72,831
Cattle, dutiable:											
Number .....	179,961	199,128	291,012	\$28,778	217,092	134,825	1,280	3,119	2,036	9,652	26,760
Value .....	\$2,055,079	\$2,225,009	\$2,836,592	\$2,565,497	\$1,494,705	\$666,749	\$13,355	\$24,658	\$20,389	\$53,652	\$171,916
Sheep, free:											
Number .....	2,427	2,396	3,047	2,382	3,950	1,942	2,537	4,932	4,316	9,606	16,308
Value .....	\$48,324	\$46,132	\$42,805	\$32,640	\$42,843	\$30,885	\$63,022	\$111,197	\$112,134	\$127,221	\$118,444
Sheep, dutiable:											
Number .....	379,365	343,515	339,267	403,251	318,742	289,519	240,031	454,552	376,498	336,159	377,491
Value .....	\$1,316,702	\$1,153,949	\$1,068,517	\$987,028	\$810,682	\$651,733	\$725,169	\$1,571,780	\$1,328,396	\$1,091,885	\$1,149,765
<i>Exports, domestic.</i>											
Cattle:											
Number .....	397,286	389,490	439,255	392,190	372,461	331,722	359,278	287,094	394,607	374,679	394,836
Value .....	\$30,636,153	\$30,516,833	\$37,327,500	\$36,357,451	\$34,560,672	\$30,603,796	\$33,461,922	\$26,032,428	\$35,099,095	\$30,445,249	\$31,261,131
Hogs:											
Number .....	51,180	33,031	14,411	23,751	21,049	7,130	1,553	27,375	31,963	95,654	91,143
Value .....	\$394,813	\$227,241	\$110,487	\$295,998	\$227,297	\$72,424	\$14,753	\$397,162	\$364,031	\$1,146,630	\$909,042
Sheep:											
Number .....	125,772	143,286	199,690	244,120	491,565	405,748	132,370	37,260	46,960	60,947	67,521
Value .....	\$783,477	\$853,555	\$1,213,886	\$1,531,645	\$3,076,334	\$2,630,686	\$332,768	\$126,394	\$161,105	\$261,109	\$243,077
<i>Exports, foreign.</i>											
Cattle:											
Number .....	8,971	4,307	23	1			3	16			8
Value .....	\$118,583	\$63,770	\$1,230	\$50			\$45	\$690			\$5,875
Sheep:											
Number .....	106	61	67	22	89	80		11			
Value .....	\$1,999	\$875	\$390	\$92	\$361	\$256		\$330			

<sup>1</sup> Statistical Abstract of the United States Treasury Department, 1899-1900.

TABLE 11.—QUANTITY AND VALUE OF SLAUGHTERING AND MEAT PRODUCTS IMPORTED, AND OF DOMESTIC AND FOREIGN SLAUGHTERING AND MEAT PRODUCTS EXPORTED: 1890-1900.<sup>1</sup>

ARTICLES.	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890
<i>Imports.</i>											
Bones, crude .....	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	\$224,039	\$157,046	\$306,049	\$307,033	\$360,573	\$345,668	\$322,009	\$353,286
Bones, horns, and hoofs, un-											
manufactured .....	\$380,063	\$704,959	\$492,544	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )
Bristles, crude, not sorted,											
bunched, or prepared, pounds.	27,140	21,421	1,203	630	726	4,741	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value .....	\$22,330	\$12,399	\$416	\$385	\$1,620	\$1,892	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Bristles, sorted, bunched, or											
prepared, pounds .....	2,503,018	1,895,156	1,533,837	1,347,270	1,571,804	1,296,753	892,520	1,598,818	1,495,003	1,404,832	1,261,609
Value .....	\$2,130,537	\$1,445,853	\$1,248,703	\$1,216,794	\$1,433,728	\$1,212,259	\$929,231	\$1,508,258	\$1,455,058	\$1,357,938	\$1,286,219
Glue, pounds .....	5,577,082	5,358,063	4,103,814	4,925,620	6,276,926	4,751,048	4,132,524	6,170,162	5,541,776	5,501,142	5,715,210
Value .....	\$537,492	\$479,460	\$423,507	\$472,312	\$555,979	\$416,394	\$400,240	\$567,756	\$495,519	\$497,320	\$471,820
Grease and oils, pounds .....	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	35,149,929	11,093,737	4,887,238	1,963,211	16,372,186	13,933,332
Value .....	\$779,666	\$696,674	\$593,239	\$984,332	\$1,232,001	\$1,330,388	\$420,059	\$692,781	\$488,871	\$703,021	\$438,216
Hide cuttings, raw, and other											
glue stock .....	\$1,223,521	\$708,968	\$408,282	\$289,686	\$279,692	\$263,175	\$280,062	\$365,525	\$303,202	\$353,943	\$348,440
Hides of cattle, pounds .....	163,865,165	130,396,020	126,243,595	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value .....	\$19,408,217	\$13,621,946	\$13,624,989	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Hoofs, horns, and parts of, un-											
manufactured .....	( <sup>4</sup> )	( <sup>4</sup> )	( <sup>4</sup> )	\$150,134	\$568,445	\$268,800	\$235,232	\$554,902	\$797,529	\$587,444	\$236,648
Meat products:											
Meat and meat extracts .....	\$365,589	\$263,845	\$345,108	\$601,808	\$493,393	\$479,336	\$412,666	\$558,284	\$430,048	\$521,322	\$407,038
All other .....	\$105,726	\$109,647	\$80,031	\$424,334	\$39,129	\$5,244	\$12,291	\$16,717	\$15,386	\$66,335	\$196,696
Sausages, bologna .....	\$95,944	\$93,714	\$32,646	\$76,303	\$30,887	\$98,188	\$102,610	\$98,659	\$82,507	\$77,664	\$75,503
Sausage casings .....	\$646,889	\$622,949	\$537,871	\$542,317	\$588,657	\$419,345	\$495,118	\$583,217	\$566,650	\$572,817	\$494,958
<i>Exports of domestic.</i>											
Bones, hoofs, horn, and horn											
tips, strips, and waste .....	\$199,194	\$195,759	\$174,361	\$230,140	\$321,680	\$288,034	\$260,675	\$319,848	\$218,639	\$335,710	\$271,533
Glue, pounds .....	2,349,014	2,368,087	2,318,711	1,400,863	1,760,470	1,178,323	999,052	736,446	580,815	986,552	723,696
Value .....	\$225,344	\$222,072	\$209,441	\$132,531	\$166,930	\$114,493	\$101,372	\$74,722	\$66,403	\$110,292	\$38,434
Grease, grease scraps, and all											
soap stock .....	\$2,944,322	\$2,576,307	\$1,964,565	\$2,070,111	\$1,516,763	\$904,071	\$1,380,299	\$1,067,723	\$1,298,598	\$2,038,886	\$1,506,819
Hides and skins, other than											
fur, pounds .....	7,486,256	10,140,840	11,536,073	31,119,166	39,545,324	36,002,859	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value .....	\$804,674	\$929,117	\$1,015,032	\$2,388,630	\$3,868,946	\$2,310,323	\$3,972,494	\$1,497,003	\$1,223,895	\$1,333,655	\$1,823,635
Hair, and manufactures of .....	\$676,688	\$503,712	\$635,716	\$517,469	\$455,880	\$505,029	\$353,729	\$459,648	\$370,169	\$894,544	\$344,558
Oil, lard, gallons .....	738,724	917,007	775,102	961,407	833,935	553,421	681,031	486,812	901,575	1,092,448	1,214,611
Value .....	\$337,260	\$412,447	\$305,325	\$419,803	\$426,401	\$304,033	\$449,571	\$336,613	\$406,601	\$562,986	\$603,343

<sup>1</sup> Statistical Abstract of the United States Treasury Department, 1899-1900.

<sup>2</sup> Not separately reported.

<sup>3</sup> Included with "hoofs, horns, etc."

<sup>4</sup> Included with "bones, hoofs, etc."



TABLE 11.—QUANTITY AND VALUE OF SLAUGHTERING AND MEAT PRODUCTS IMPORTED, AND OF DOMESTIC AND FOREIGN SLAUGHTERING AND MEAT PRODUCTS EXPORTED: 1890-1900<sup>1</sup>—Continued.

ARTICLES.	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890
<i>Exports of domestic—Continued.</i>											
<b>Meat products:</b>											
<b>Beef products—</b>											
Beef, canned, pounds..	55,553,745	38,385,472	37,109,570	54,019,772	68,698,180	64,102,263	55,974,910	79,089,493	87,028,084	109,585,727	82,638,507
Value .....	\$5,233,982	\$3,503,293	\$3,279,657	\$4,656,303	\$5,636,958	\$5,720,933	\$5,120,851	\$7,222,824	\$7,876,454	\$9,068,906	\$6,787,193
Beef, fresh, pounds .....	329,078,609	282,139,974	274,768,074	290,895,936	224,783,225	191,338,487	193,891,824	206,294,724	220,554,617	194,046,638	173,237,596
Value .....	\$29,643,880	\$23,545,185	\$22,966,556	\$22,658,742	\$18,974,107	\$16,832,800	\$16,700,168	\$17,754,041	\$18,053,732	\$15,322,054	\$12,862,384
Beef, salted or pickled, pounds .....	47,306,513	46,564,876	44,314,479	67,712,940	70,709,209	62,473,825	62,682,667	58,423,963	70,204,736	90,286,979	97,508,410
Value .....	\$2,697,340	\$2,525,784	\$2,368,467	\$3,514,126	\$3,975,113	\$3,558,230	\$3,572,054	\$3,185,321	\$3,987,329	\$5,048,788	\$5,250,068
Beef, other, cured, pounds .....	2,319,165	1,579,313	1,589,052	939,448	514,303	821,673	1,218,334	898,920	953,712	1,621,833	102,110
Value .....	\$197,051	\$145,996	\$150,051	\$83,701	\$59,371	\$73,569	\$100,631	\$87,776	\$92,524	\$147,518	\$9,233
Tallow, pounds .....	89,030,943	107,851,009	81,744,809	75,108,834	52,759,212	25,804,300	54,661,524	61,819,153	89,780,010	111,689,251	112,745,879
Value .....	\$4,398,204	\$4,367,356	\$3,141,653	\$2,782,595	\$2,323,764	\$1,293,059	\$2,766,164	\$3,129,059	\$4,425,680	\$5,501,049	\$5,212,188
<b>Hog products—</b>											
Bacon, pounds .....	512,153,729	562,651,480	650,108,938	600,399,448	425,352,187	452,549,976	416,657,577	391,758,175	507,919,830	514,676,557	531,899,677
Value .....	\$38,975,915	\$41,557,067	\$46,380,918	\$34,187,147	\$33,442,847	\$37,776,293	\$38,338,843	\$35,781,470	\$39,384,938	\$37,404,989	\$39,149,635
Hams, pounds .....	196,414,412	225,846,750	200,185,861	165,247,302	129,086,351	105,494,123	86,970,571	82,178,154	76,856,559	84,410,108	76,691,279
Value .....	\$20,416,367	\$20,774,084	\$18,987,525	\$16,970,021	\$12,669,763	\$10,960,567	\$9,845,062	\$9,938,096	\$7,767,717	\$8,245,685	\$7,907,125
Pork, canned, pounds .....	8,496,074	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value .....	\$658,402	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Pork, fresh, pounds .....	25,946,905	41,310,364	12,224,285	1,306,424	744,656	818,581	1,168,647	912,644	377,746	818,875	279,463
Value .....	\$1,925,772	\$2,722,661	\$815,075	\$94,816	\$43,739	\$80,660	\$92,095	\$79,817	\$30,246	\$56,358	\$16,406
Pork, salted or pickled, pounds .....	133,199,683	137,197,200	88,133,078	66,768,920	69,498,378	58,266,893	63,575,881	52,459,722	80,336,481	81,317,364	79,788,968
Value .....	\$8,243,797	\$7,917,066	\$4,906,961	\$3,297,214	\$3,973,401	\$4,138,400	\$5,087,773	\$4,116,946	\$4,792,049	\$4,787,343	\$4,753,488
Lard, pounds .....	661,813,663	711,259,851	709,344,045	568,315,640	509,534,256	474,895,274	447,566,867	365,093,501	460,045,776	498,348,927	471,083,598
Value .....	\$41,939,164	\$42,208,465	\$39,710,672	\$29,126,435	\$33,589,851	\$30,821,508	\$40,089,809	\$34,643,993	\$33,201,021	\$34,414,323	\$33,455,529
Lard compounds and substitutes for (cottonole, lardine, etc.), pounds .....	25,852,685	22,144,717	21,343,028	16,261,991	1,649,923	444,045	524,390	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value .....	\$1,475,064	\$1,200,231	\$1,118,659	\$857,708	\$102,279	\$31,309	\$39,698	\$44,832	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Casings for sausages .....	\$2,307,671	\$1,671,052	\$1,821,619	\$1,514,651	\$1,771,680	\$1,581,891	\$1,280,514	\$1,409,280	\$878,675	\$841,075	\$697,772
Mutton, pounds .....	773,760	379,110	329,169	361,955	422,950	591,449	2,197,900	108,214	101,463	190,395	250,711
Value .....	\$64,313	\$29,427	\$27,961	\$28,341	\$31,793	\$47,832	\$174,404	\$9,175	\$9,022	\$18,969	\$21,793
Oil, the oil, pounds .....	146,789,681	142,390,492	132,679,277	113,506,152	103,276,756	78,098,878	123,295,895	113,939,363	91,581,703	80,231,035	63,218,098
Value .....	\$10,593,856	\$9,183,659	\$7,904,413	\$6,742,061	\$8,087,905	\$7,107,018	\$11,942,842	\$11,207,250	\$9,011,889	\$7,859,130	\$6,476,258
Oleomargarine (imitation butter), pounds .....	4,256,067	5,549,322	4,828,536	4,864,351	6,063,699	10,100,897	3,898,950	3,479,322	1,610,837	1,086,743	2,535,926
Value .....	\$416,544	\$509,703	\$386,297	\$472,856	\$587,269	\$992,464	\$475,003	\$418,386	\$195,587	\$255,024	\$297,261
<b>All other meat products—</b>											
Canned .....	\$1,724,064	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
All other .....	\$3,941,894	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Stearin, pounds .....	( <sup>4</sup> )	1,174,167	3,987,258	1,388,555	668,535	36,429	321,898	( <sup>2</sup> )	1,350,513	1,347,386	2,520,142
Value .....	( <sup>4</sup> )	\$55,821	\$188,579	\$70,534	\$34,289	\$2,157	\$17,938	\$14,669	\$66,470	\$62,194	\$103,013
<i>Exports of foreign.</i>											
Bones, crude .....	( <sup>2</sup> )	\$4,158	\$5,861	\$91	( <sup>2</sup> )	\$13,454	\$4,007	\$1,910	\$1,908	\$1,681	\$1,053
Bristles, crude, not sorted, bunched, or prepared, pounds .....	446	4,321	40	( <sup>2</sup> )	( <sup>2</sup> )	3,593	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value .....	\$220	\$2,740	\$18	( <sup>2</sup> )	( <sup>2</sup> )	\$974	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Bristles, sorted, bunched, or prepared, pounds .....	42,154	46,366	25,481	36,268	33,015	23,317	60,880	26,046	36,153	43,385	47,226
Value .....	\$21,952	\$19,150	\$21,571	\$36,096	\$21,465	\$16,468	\$41,331	\$24,092	\$28,043	\$34,608	\$39,471
Glue, pounds .....	3,359	7,215	23,109	16,247	65,484	8,971	40,148	29,748	( <sup>2</sup> )	6,524	6,691
Value .....	\$245	\$679	\$2,809	\$1,486	\$6,615	\$865	\$3,035	\$1,908	\$1,570	\$706	\$521
Grease .....	\$9,699	\$20,650	\$4,247	\$1,138	\$4,807	\$1,525	\$8,578	\$5,691	\$378	\$1,038	\$2,550
Hide cuttings .....	\$1,408	\$2,477	( <sup>2</sup> )	\$1,367	\$140	\$602	\$96	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Hoofs, horns, and parts of, unmanufactured .....	\$1,315	( <sup>2</sup> )	( <sup>2</sup> )	\$392	\$147	\$488	\$129	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Sausages, bologna .....	\$28	\$15	\$24	\$269	\$234	\$36	\$54	\$81	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
<b>Meat products:</b>											
Meats and meat extracts .....	\$2,894	\$15,464	\$6,662	\$6,953	\$2,387	\$1,980	\$1,745	\$4,012	\$777	\$4,860	\$891
All other .....	\$4,545	\$61,075	\$5,132	\$1,304	\$810	\$205	\$978	\$115	\$2	\$73	\$277
Hides and skins, other than fur: Cattle hides, pounds .....	2,330,290	3,548,455	7,057,057	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
Value .....	\$296,478	\$432,460	\$678,167	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )

<sup>1</sup> Statistical Abstract of the United States Treasury Department, 1899-1900.<sup>2</sup> Not separately reported.<sup>3</sup> Included with "lard."<sup>4</sup> Included with "lard compounds."HISTORICAL AND DESCRIPTIVE.<sup>1</sup>

The year 1493 witnessed the first importation of cattle to America, when it is said Columbus brought cattle, sheep, and hogs with him on his second voyage. The Portuguese took cattle to Newfoundland and Nova Scotia in 1553, where they increased rapidly.<sup>2</sup> Black cattle, swine, and sheep were introduced into Florida

<sup>1</sup> For valuable data used in the preparation of this historical and descriptive sketch, acknowledgment is made to "Ice and Refrigeration," Volume 21, Nos. 1 to 6, July, 1901, to December, 1901, both inclusive; History of American Manufactures, by J. L. Bishop; Philip D. Armour in "One Hundred Years of American Commerce," Volume II, edited by Hon. Chauncey M. Depew; the Yearbooks of the United States Department of Agriculture; and the Statistical Annuals published by the Cincinnati Price Current.

<sup>2</sup> History of American Manufactures, by J. L. Bishop, Vol. I, page 427.

about 1565, and neat cattle into Canada by the French in 1608. In 1609 the English colony at Jamestown possessed between 500 and 600 hogs and some sheep. They were killed or carried off by the natives or eaten by the colonists in their destitution. Sir Ralph Lane brought cattle from the West Indies to Virginia in 1610, the slaughter of which was forbidden on pain of death. In 1611 Sir Thomas Gates arrived with a hundred or more cows and some swine. To this stock were added in 1613 a few obtained by a raid on the French settlements in Arcadia. In 1620 the cattle had increased to 500 and in 1649 to 20,000. They were early exported to New England, and many were killed to supply the

shipping from London, Bristol, Holland, and New England. By 1656 the sale of beef, pork, and bacon to the shipping and to the West Indies was a source of much profit.

In New England the first neat cattle, consisting of three heifers and a bull, were introduced into the Plymouth Colony by Edward Winslow in the spring of 1624. The number grew to about 200 in 1629.<sup>1</sup>

From that time cattle increased rapidly in number and rose in value. During the Indian wars live stock was a precarious property, but nevertheless continued to increase and furnished articles for exportation. The continued arrival of new settlers kept up the demand for cattle and maintained their price at from £20 to £30 a head. Their number increased rapidly, but they were too valuable for slaughter. As emigration decreased, stock was well diffused through New England, and the colonists became consumers and exporters of beef in considerable quantity. The West India Company imported domestic cattle for breeding into New Netherlands in 1625. In 1678, 400 cattle were killed in the city of New York, and in 1694 the number reached nearly 4,000.<sup>2</sup> Stock raising and the production of beef for the New York and Philadelphia markets, furnished a profitable industry for the settlers in New Jersey. In 1627 the Swedes were supplied with neat cattle by the Swedish West India Company.<sup>3</sup> In 1697 an Englishman, residing in Pennsylvania, stated that 20 fat bullocks besides many sheep, calves, and hogs were killed each week in Philadelphia, even in mid-summer. A fat cow could be bought for £3 and salted beef and pork were regularly exported.<sup>4</sup> Before the Revolution great numbers of cattle were raised in Georgia, North Carolina, and South Carolina. They were raised at small cost, being allowed to run wild in the woods. Many farmers owned from 500 to 1,500 head each. Little beef was exported. The cattle were sold in the lean state and driven to Pennsylvania where they were fattened for market.<sup>4</sup>

The cattle of the Northern colonies were fewer in number, but owing to the severe climate received more attention, and greater care was bestowed in the selection of animals for breeding. On the frontier stock raising was an important factor, the cattle furnishing food and other necessities for the rough life of the pioneer. These herds of the colonies, with those brought to Spanish America, were the chief progenitors of the American cattle of to-day. Cattle raising followed the settlement of the country, and crossed the Alleghenies with the pioneers into the fertile valley of the Ohio.

The rise of slaughtering, and packing of meat in the

United States as a distinct industry, dates back to 1818, when a packer is reported as conducting packing operations at Cincinnati. Slaughtering operations at Chicago began in 1823, but packing was not instituted until 1827. In that year a Chicago establishment packed some pork for a firm in Detroit, but the packing statistics of Chicago were of small account until 1850. It is said that 9,600 hogs were packed there in 1834, but it was not until 1861-62 that Chicago attained preeminence as a packing center. In the winter season of 1832-33, there were several establishments at Cincinnati, and in that season it is claimed that 85,000 hogs were slaughtered there. The development of the agricultural resources of the Ohio Valley cheapened the cost of raising stock, and the demands of the Southern and Eastern markets caused an increased production, particularly of hogs. These facilities for stock raising naturally caused the inauguration of packing operations, and small plants sprang up in the more important towns. At first these centers were confined closely to the towns upon the rivers, owing to the greater facility of transportation by water.

In those days the packing was confined almost exclusively to the curing and packing of hog products. Much of the slaughtering was done by farmers in the winter, who, after supplying their own demands, sold the remainder of the carcass to some neighboring storekeeper or small packer, who, in turn, cured the carcass for market. Curing operations were sometimes conducted on flatboats that floated down the rivers, after the spring breakup to the larger cities on the Mississippi, particularly New Orleans, where the cured product was exchanged for sugar, molasses, rice, and other products of the Southern states. A large proportion of the pork, hams, etc., reaching New Orleans, was shipped to Baltimore, Philadelphia, New York, Boston, and other cities along the Atlantic coast. Cincinnati at this time was the chief center of the packing industry, owing to its location in the stock-raising region, and to its superior banking facilities, for the packing industry demanded that large sums be paid in ready cash. Again, it was often necessary to employ large gangs of laborers and coopers at short notice, thus making the location of a packing plant most advantageous where these demands could be most readily supplied. The necessities of the trade also demanded an ample supply of salt, and this could be obtained readily only at Cincinnati. An added advantage was found in the denser population that afforded a market for the surplus product. In 1844 there were 26 packing houses at Cincinnati; in 1853-54 the number had increased to 41, and in 1855-56, was 42. A large packing plant had been established at Louisville, Ky., prior to 1844. Other important packing places during the period were Columbus, Chillicothe, Circleville, and Hamilton, in

<sup>1</sup> History of American Manufactures, by J. L. Bishop, Vol. I, page 429 ff.

<sup>2</sup> Ibid., page 439.

<sup>3</sup> Ibid., page 444.

<sup>4</sup> Ibid., page 449.



Ohio; Lafayette, Lawrenceburg, Madison, Terre Haute, and Vincennes, in Indiana; Alton, Beardstown, Pekin, Peoria, and Quincy, in Illinois, and many places of lesser importance.<sup>1</sup> The volume of packing at Cincinnati during the decade prior to 1851-52 was 27 per cent of the total for the West. Cincinnati slaughtered 475,000 hogs in the packing year 1848-49. As settlement moved westward, the extension of the cornfields gave an impetus to stock raising, and the Western cities assumed increasing importance as slaughtering and packing centers.

About 20,000 hogs were killed at Chicago in 1850-51, and from that time the amount of business done in Chicago increased rapidly. The early fifties saw the beginning of railroad operations in the West. Naturally, this had a great influence on the packing business, and to this cause much of Chicago's prominence as a packing center may be traced. Up to this time St. Louis was unimportant as a packing center, and other prominent packing cities of to-day, such as Kansas City, South Omaha, and South St. Joseph, were unknown to the packing world. These cities did not assume importance until later. Cincinnati was the leading packing center in the United States until 1861-62, when Chicago took the lead, which it has retained. With its \$256,527,949 worth of products during the census year of 1900, the city of Chicago stands as the chief center of the slaughtering and meat-packing industry of the United States. The preparation of animal food products at this point has come to be one of the greatest

industrial and commercial enterprises that has been evolved by the American people. This has not been due to accident nor wholly to the alert and businesslike qualities of her citizens. It has been chiefly because of Chicago's location. Nature located Chicago. As early as 1673, Joliet saw that if a canal were cut through half a league of prairie, boats could pass from the lake of Illinois (Lake Michigan) into the St. Louis River (the Illinois, including the Des Plaines). A city possessing such a location, between the lakes and the great West, was naturally early seen to be a gateway of commerce, and Chicago became the center for the vast systems of transportation that converge there to-day and that include more than one-half of the railroad systems of the United States. The Union Stock Yards was founded in 1865, when 320 acres of land were purchased, and the yard opened in December, 1865. This plant is now worth at least \$10,000,000, and on the square mile of land upon which the yards are located are the slaughtering and packing houses that, in 1900, reported a capital invested of over \$67,000,000. More than 50,000 men found employment in and about the stock yards in 1900, in the packing establishments, and in the service necessary to the handling of the stock. Within the stock yards are 200 acres of yardage, 20 miles of street, 20 miles of water troughs, 75 miles of drainage and water pipes, and 150 miles of railroad track, which is the property of the stock-yards company, which also owns and operates the locomotives. The table below shows the number of cattle, hogs, and sheep, received, shipped, and slaughtered at Chicago, from 1870 to 1900, inclusive.

LIVE STOCK RECEIVED, SHIPPED, AND SLAUGHTERED IN CHICAGO, ILL.: 1870 TO 1900.<sup>1</sup>

YEARS.	HOGS.			CATTLE.			SHEEP.		
	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.
1870.....	1,698,158	924,453	768,705	582,964	391,709	141,255	349,853	116,711	233,142
1871.....	2,380,083	1,162,286	1,217,797	543,050	401,927	141,123	315,053	135,084	179,969
1872.....	3,252,623	1,835,594	1,417,029	684,075	510,025	174,050	310,211	145,016	165,195
1873.....	4,437,750	2,197,557	2,240,193	761,428	574,181	187,247	291,734	115,235	176,499
1874.....	4,258,379	2,330,361	1,928,018	843,966	622,929	221,037	333,655	180,555	153,100
1875.....	3,912,110	1,582,643	2,329,487	920,843	696,534	224,309	418,948	243,604	175,314
1876.....	4,190,006	1,181,635	3,058,371	1,096,745	797,724	299,021	364,095	195,925	168,170
1877.....	4,025,970	951,221	3,074,749	1,033,151	703,402	329,749	310,240	155,354	154,886
1878.....	6,339,654	1,256,906	5,072,748	1,083,068	699,108	383,960	310,420	156,727	153,693
1879.....	6,448,330	1,692,361	4,755,969	1,215,732	726,908	488,829	325,119	159,266	165,853
1880.....	7,059,355	1,394,990	5,664,365	1,382,477	886,614	495,863	335,810	156,518	179,292
1881.....	6,474,844	1,289,679	5,185,165	1,498,550	938,712	559,838	493,624	253,930	239,694
1882.....	5,817,504	1,747,722	4,069,782	1,582,530	921,009	661,521	628,887	314,200	314,087
1883.....	5,640,625	1,319,392	4,321,233	1,878,944	966,758	912,186	749,917	374,463	375,464
1884.....	5,851,967	1,392,615	3,959,352	1,817,697	791,884	1,025,813	801,630	290,352	511,278
1885.....	6,937,535	1,797,446	5,140,089	1,905,518	744,093	1,161,425	1,008,698	260,277	743,321
1886.....	6,718,781	2,090,784	4,627,977	1,968,900	704,675	1,259,225	1,008,790	266,612	742,178
1887.....	5,470,852	1,312,001	3,658,851	2,382,008	791,433	1,590,525	1,360,862	445,094	915,768
1888.....	4,921,712	1,751,829	3,169,883	2,611,543	968,385	1,643,158	1,615,014	601,241	913,773
1889.....	5,998,526	1,786,650	4,211,867	3,023,281	1,259,971	1,763,310	1,332,469	711,815	1,121,154
1890.....	7,663,828	1,985,700	5,678,128	3,484,280	1,260,309	2,223,971	2,182,667	929,854	1,252,818
1891.....	8,600,305	2,962,514	5,638,291	3,250,359	1,066,264	2,184,095	2,153,637	688,205	1,465,392
1892.....	7,714,435	2,926,145	4,788,290	3,571,796	1,121,675	2,450,121	2,145,079	433,368	1,661,711
1893.....	6,057,278	2,149,410	3,907,868	3,133,406	900,183	2,233,223	3,031,174	442,865	2,588,309
1894.....	7,433,228	2,465,058	5,018,170	2,974,363	950,738	2,023,625	3,099,625	333,398	2,766,227
1895.....	7,835,233	2,100,613	5,734,620	2,588,558	785,092	1,803,466	3,406,739	474,646	2,932,093
1896.....	7,659,472	1,896,312	5,763,160	2,600,476	818,326	1,782,150	3,590,655	561,239	3,029,416
1897.....	8,363,724	1,629,984	6,733,740	2,554,924	843,392	1,711,532	3,606,640	638,110	2,968,530
1898.....	9,166,095	1,340,544	7,825,551	2,480,897	865,642	1,615,255	3,589,439	543,425	3,046,014
1899.....	8,721,525	1,893,439	7,032,086	2,514,436	811,874	1,702,562	3,682,332	336,991	3,345,341
1900.....	8,696,097	1,452,183	7,243,914	2,729,046	934,649	1,794,397	3,548,885	487,254	3,061,631

<sup>1</sup> Compiled from data furnished by Cincinnati Price Current.

With the development of the country west of the Mississippi, St. Louis took its rise as a packing center. Covered with corn fields, the territory adjoining St.

Louis is devoted largely to the live-stock industry, particularly the rising of hogs. The following table shows the growth of the slaughtering industry at St. Louis:

LIVE STOCK RECEIVED, SHIPPED, AND SLAUGHTERED IN ST. LOUIS, MO.: 1868 TO 1900.<sup>1</sup>

YEARS.	HOGS.			CATTLE.			SHEEP.		
	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.
1868.....	801,560	16,277	285,283	115,352	37,277	78,075	79,315	6,415	72,900
1869.....	844,848	39,076	305,772	124,665	69,867	64,698	96,626	12,416	84,210
1870.....	810,850	17,156	298,694	201,422	129,748	71,674	94,477	11,649	82,828
1871.....	688,370	118,918	519,457	199,527	130,018	69,509	118,899	37,465	81,434
1872.....	759,076	188,700	570,376	263,404	164,870	98,534	115,904	29,640	86,264
1873.....	973,512	224,878	748,639	279,678	180,662	99,016	86,434	18,902	67,532
1874.....	1,126,586	458,710	672,876	360,925	226,678	134,247	114,913	36,677	79,336
1875.....	628,569	126,729	501,840	335,742	216,701	119,041	125,679	87,784	87,895
1876.....	877,180	232,876	644,284	349,043	220,430	128,618	157,831	67,886	89,945
1877.....	896,319	314,287	582,032	411,969	261,566	160,403	200,502	87,569	112,938
1878.....	1,461,634	528,627	923,007	406,235	261,723	144,512	168,095	74,438	93,652
1879.....	1,762,724	686,099	1,076,625	420,654	226,255	194,399	182,648	88,088	94,565
1880.....	1,840,684	770,769	1,069,915	424,720	228,879	195,841	205,969	95,522	112,447
1881.....	1,672,153	889,909	782,244	503,862	293,092	210,770	334,426	170,895	164,031
1882.....	846,228	264,584	581,644	443,169	188,486	254,683	443,120	215,071	198,049
1883.....	1,151,785	609,388	542,397	405,090	249,523	155,567	398,612	217,370	181,242
1884.....	1,474,475	678,874	795,601	450,717	315,433	135,284	380,822	248,545	132,277
1885.....	1,455,585	789,487	666,048	386,320	233,249	153,071	362,858	233,391	129,467
1886.....	1,264,471	520,362	744,109	377,550	212,958	164,592	328,985	202,728	126,257
1887.....	1,052,240	324,735	727,505	464,828	277,406	187,422	417,425	287,018	180,407
1888.....	929,280	294,869	634,361	546,875	336,206	210,669	456,669	316,675	189,938
1889.....	1,120,930	420,930	700,000	508,190	297,879	210,311	358,495	255,375	103,120
1890.....	1,359,791	665,471	694,320	689,014	361,705	277,309	385,496	251,728	106,768
1891.....	1,830,599	704,378	676,191	779,449	464,794	314,655	402,989	277,885	125,103
1892.....	1,310,311	715,969	594,342	801,811	465,328	336,483	376,922	243,035	128,887
1893.....	1,105,108	575,846	529,262	908,257	473,966	429,291	397,725	281,476	166,249
1894.....	1,439,856	642,699	847,157	778,871	281,260	492,311	359,895	90,526	269,369
1895.....	1,440,342	605,480	834,862	851,275	272,856	578,419	510,060	119,148	391,512
1896.....	1,997,895	885,462	1,112,433	953,613	350,036	605,577	632,872	254,602	378,270
1897.....	2,065,238	887,896	1,227,348	960,763	366,127	594,636	660,880	212,243	448,137
1898.....	2,136,328	873,516	1,562,812	795,611	254,619	540,992	477,091	127,124	349,967
1899.....	2,147,144	878,067	1,569,077	766,032	224,177	541,855	452,566	97,722	354,844
1900.....	2,160,972	513,561	1,643,411	795,800	207,998	587,802	484,133	65,199	368,934

<sup>1</sup> Compiled from data furnished by Cincinnati Price Current.

Up to 1870 slaughtering at Kansas City was of relatively small importance. Cattle were driven overland from the Southwest, the journey often consuming as much as three months. At Kansas City they were loaded on cars for shipment to Eastern markets or driven overland to markets in the interior. In 1870 the Kansas City stock yards had their inception in a movement to afford better facilities for handling live stock at that point. As far back as 1873, three small packing houses were located at Kansas City, and in 1875, 48,492 cattle, 47,560 hogs, and 7,585 sheep were

slaughtered there. In 1886, of the total number of animals received, 24.6 per cent of the cattle, 76.2 per cent of the hogs, and 51.8 per cent of the sheep were slaughtered; in 1900 these figures had grown to 56.7 per cent for cattle, 92.8 per cent for hogs, and 75.2 per cent for sheep. The stock yards are situated close to the business center of the city and occupy about 200 acres. The following figures show the number of animals slaughtered at Kansas City each year from 1875 to 1900, inclusive:

LIVE STOCK RECEIVED, SHIPPED, AND SLAUGHTERED IN KANSAS CITY, MO.: 1875 TO 1900.<sup>1</sup>

YEARS.	HOGS.			CATTLE.			SHEEP.		
	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.
1875.....	68,850	15,790	47,560	174,754	126,262	48,492	25,827	17,742	7,585
1876.....	158,777	26,264	127,513	183,378	120,340	63,038	55,045	22,400	32,585
1877.....	192,645	15,973	176,672	215,768	126,570	89,198	42,190	28,329	13,861
1878.....	427,777	91,671	336,106	175,344	131,761	43,588	86,700	30,483	6,217
1879.....	588,908	208,851	380,057	211,415	155,881	55,584	61,684	47,782	18,902
1880.....	676,477	152,920	523,557	244,709	194,421	50,288	50,611	36,285	14,326
1881.....	1,014,304	195,524	818,780	285,863	223,989	61,874	79,924	61,078	18,846
1882.....	963,036	191,325	771,711	439,671	359,012	80,659	80,724	52,652	28,072
1883.....	1,879,401	313,879	1,065,522	460,780	387,598	73,182	119,665	61,977	57,688
1884.....	1,723,586	590,133	1,133,453	533,526	443,001	90,525	237,964	105,973	131,991
1885.....	2,358,718	801,162	1,557,556	506,627	402,381	104,246	221,801	115,755	106,046
1886.....	2,264,484	588,005	1,726,479	490,971	370,350	120,621	172,659	82,234	89,425
1887.....	2,423,262	524,492	1,898,770	669,224	483,372	185,852	209,955	103,126	106,880
1888.....	2,008,964	413,987	1,595,047	1,056,086	632,622	378,464	351,050	169,932	181,118
1889.....	2,073,910	381,434	1,742,476	1,220,343	744,510	475,833	370,772	174,851	195,921
1890.....	2,865,171	558,227	2,306,944	1,472,229	923,552	548,677	535,869	336,207	199,662
1891.....	2,590,109	605,457	1,993,652	1,270,917	789,093	481,824	386,780	173,271	208,489
1892.....	2,397,477	591,623	1,805,854	1,479,078	810,010	669,068	438,268	219,230	219,038
1893.....	1,948,373	520,694	1,427,679	1,600,807	761,676	839,131	569,517	198,892	372,625
1894.....	2,647,077	496,804	2,050,273	1,689,198	764,592	924,601	589,555	196,061	393,494
1895.....	2,457,697	286,340	2,171,357	1,613,454	719,704	893,750	864,713	287,294	577,419
1896.....	2,605,575	341,699	2,263,876	1,714,632	819,799	894,733	993,126	303,693	689,433
1897.....	3,850,796	268,841	3,086,955	1,817,526	875,756	941,770	1,134,286	306,356	827,880
1898.....	3,672,909	373,219	3,299,690	1,757,964	851,186	906,778	980,303	330,865	649,438
1899.....	2,959,078	257,718	2,701,355	1,912,019	919,573	992,446	953,241	308,403	644,838
1900.....	3,094,139	223,963	2,870,176	1,969,718	853,303	1,116,415	860,449	216,272	644,177

<sup>1</sup> Compiled from data furnished by Cincinnati Price Current.

The rise of South Omaha as a slaughtering and packing center dates from 1884. The figures below show the development of the industry at this point:

LIVE STOCK RECEIVED, SHIPPED, AND SLAUGHTERED IN OMAHA, NEBR.: 1884 TO 1900.<sup>1</sup>

YEARS. <sup>2</sup>	HOGS.			CATTLE.			SHEEP.		
	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.	Received.	Shipped.	Slaught- tered.
1884.....	1,863	500	1,863	86,898	81,955	4,943	4,188	1,273	2,915
1885.....	130,867	71,919	58,948	114,163	83,283	30,980	18,985	8,408	10,577
1886.....	890,487	187,369	208,118	144,467	78,120	71,837	40,195	17,728	22,467
1887.....	1,011,706	140,726	870,980	235,728	151,419	84,304	76,014	56,444	19,570
1888.....	1,283,600	333,228	950,372	340,469	206,064	134,405	158,503	118,208	40,295
1889.....	1,206,605	179,916	1,026,689	467,840	227,921	239,419	159,603	103,250	56,253
1890.....	1,078,314	275,688	1,397,676	606,699	283,880	322,819	156,186	94,464	61,722
1891.....	1,462,423	245,046	1,217,377	593,044	287,780	325,314	170,849	89,416	81,433
1892.....	1,705,687	381,723	1,323,964	738,186	322,092	456,094	185,457	83,445	102,012
1893.....	1,435,271	363,116	1,072,155	852,642	309,776	542,866	242,581	91,814	150,767
1894.....	1,904,238	400,640	1,503,598	829,171	311,627	517,544	252,218	115,704	139,451
1895.....	1,188,421	100,705	1,087,716	602,222	287,810	314,312	208,638	113,793	94,840
1896.....	1,197,638	78,790	1,118,848	570,515	237,421	335,094	333,332	131,454	201,878
1897.....	1,610,981	83,061	1,527,920	810,949	355,175	455,774	427,160	205,017	421,543
1898.....	2,101,387	172,024	1,929,363	812,244	322,194	490,050	1,085,186	438,171	601,065
1899.....	2,216,482	25,999	2,190,483	837,663	283,474	554,089	1,086,319	342,247	744,072
1900.....	2,200,926	36,996	2,163,930	828,204	274,479	553,725	1,276,775	552,234	724,541

<sup>1</sup> Compiled from data furnished by Cincinnati Price Current.

<sup>2</sup> Previous to 1897 the movement represents years ending with November.

The prominence that has been attained by South St. Joseph, Mo., in the slaughtering and packing industry was the result of a remarkable development between 1897 and 1900. The receipts at South St. Joseph for 1898, 1899, and 1900 were as follows:

YEARS.	Cattle.	Hogs.	Sheep.
1898.....	232,074	1,034,085	121,407
1899.....	294,950	1,401,794	258,432
1900.....	390,361	1,078,521	390,308

About eighty years ago, when packing was begun at Cincinnati, and even until the late sixties, packing was confined to the curing and salting of pork products and some barreling of beef. The barreling of beef was carried on in the West to a considerable extent and the products sent to the Eastern markets. Beef barreled in the Eastern cities was sent all over the world on board ship. The development in the packing of beef on a large scale has been due to the adoption of the various systems of artificial refrigeration within the last thirty years. No other one factor has had so much influence upon the meat industry. All meat curing depends for its success upon thorough chilling, properly conducted, of the carcass. Artificial refrigeration has practically lengthened the packing year from four months to twelve months, by rendering summer slaughtering possible. The importance of artificial refrigeration to the meat trade would be hard to overestimate. The most important step in the development of American beef as an article of commerce, was the invention of the refrigerator car by William Davis of Detroit. The patents were issued in 1868, and in September, 1869, the first cargo of fresh beef was shipped from Chicago to Boston. This was the commencement of a great industry in the United States, and the initial step toward the foreign trade. The cars now used by the great meat packers of the West are founded on the Davis patent of 1868.<sup>1</sup>

<sup>1</sup> Ice and Refrigeration, September, 1901, Vol. 21, No. 3, page 98.

The object of chilling and freezing meat is not only that it shall be preserved, but also that it be so frozen that it can be thawed, fresh and sweet, with its nutritive qualities intact. To attain this end, the problem is to chill the meat without driving the animal heat inward and thereby causing decay of the marrow and bone. With proper treatment in freezing, however, the quality of the meat need not be impaired. For fifteen to eighteen hours the temperature of the meat is kept at 36° F., and it is then chilled or refrigerated for twenty-four to thirty hours.

The canning of beef was attempted in Chicago in the sixties and enjoyed some growth, but the packers did not take it up on a large scale until 1879. Of late years the production of canned beef has fallen from 133,428,456 pounds in 1890 to 123,249,021 pounds in 1900, and the exports from 82,638,507 pounds in 1890 to 55,553,745 pounds in 1900.

Prior to 1875 the dressed beef trade was not of much importance. The invention of the refrigerator car and its improvement gave a great impetus to the industry. The exportation of fresh beef began in 1876 in a small way. In the early days of cattle raising in the West they were brought East on the hoof and slaughtered in local abattoirs. The journey of 1,500 to 2,000 miles East affected the physical condition of the animal to the extent that it caused the quality of the beef to deteriorate. The adoption of the refrigerator car made it possible to slaughter these cattle in the West, and the Western packers were quick to fill the demand created for the slaughter of these cattle, and ship the product East, thus preserving all the good qualities of the beef. To-day the Western packer competes with the local producer in the Eastern market, and his beef is in far better condition than when it came East on the hoof to be slaughtered at the end of a long, tiresome journey.

Until within comparatively late years little attempt was made to utilize the waste products of the abattoir. The blood was allowed to drain away, and the disposal

of heads, feet, tankage, and other waste material was a source of expense, men being hired to cart it away and bury it. After a time industries grew up in the vicinity of the slaughtering establishments, using as their raw materials the waste product of the abattoir. Glue, tallow, soap, and fertilizers were among the articles so produced from the waste. With increasing competition the packing house gradually absorbed these industries, until the utilization of "waste" materials constituted a source of no little profit. The aim is that nothing shall be wasted. The large packing houses utilize the horns, hoofs, bones, sinews, hide trimmings, and the other so-called waste materials. From these are manufactured glue, gelatin, brewers' isinglass, curled hair, bristles, wool felt, hair felt, laundry soap and soap powders, toilet soaps, glycerin, anhydrous ammonia, fertilizers, dried blood (after the albumen is extracted), bone meal, cut bones, poultry food, albumen, neat's-foot oil, pepsin, knife handles, and many other things. Each large establishment has its chemical laboratory, where expert chemists are constantly seeking for new combinations to render more valuable and extensive the already long list of by-products.

It is obvious to even the most casual observer, that an industry putting out a product in a single year of over \$785,000,000 is of the utmost importance to the people of the United States. It is essentially Western in its location and growth. The largest establishments are located in the Mississippi Valley. The states leading in the production of live stock for slaughter are west of the Mississippi. Indeed, a large part of the industrial welfare of the West may be said to be based upon the live-stock industry. The territory devoted to the raising of hogs on a large scale is coextensive with the corn belt. The corn crop, the hay crop, and the grasses take on an added value when converted into the form of meat products. The corn crop is the foundation upon which depends the live-stock industry, and this industry is coming more and more to be a question of corn supply. Sheep raising is confined chiefly to the upper Rocky Mountain states, owing to the fact that the successful raising of sheep depends upon the availability of pasturage. From this western stock-raising territory, the movement is northward and eastward to Chicago, Kansas City, South Omaha, St. Louis, South St. Joseph, and the other great slaughtering centers. The geographical movement of the slaughtering and packing area furnishes a view of the settlement and development of the West.

The advantages of the transportation facilities possessed by Chicago, backed with the wide area devoted to stock raising, spreading westward from Lake Michigan to the Rocky Mountains, give that city the lead in this industry. The tendency, however, is for the slaughtering centers to move still nearer the corn belt. The rise within recent years of Kansas City and South Omaha, and more lately of South St. Joseph, may be traced directly

to this factor, and to the improved railroad facilities that followed any enlargement of the territory devoted to corn production. Within recent years, overpasturage on many of the Western grazing lands has caused the number of cattle to decrease. Increasing attention devoted to sheep raising, too, has caused a crowding of the cattle, and settlers have been crowding in and fencing the ranges. The place of the large herds that formerly ranged the plains during the entire year is being taken by the small herds that range the free grazing lands in the summer and are carefully pastured and fed during the winter. A loss of one-third of the herd from exposure was a common thing under the old conditions, but under the new system this element of loss is almost wholly removed. Greater attention is being paid to breeding, and almost fabulous prices have been paid for high-class animals for breeding purposes. Another comparatively new development is the extension of the feeding or fattening operations for market. The conversion of the surplus corn into beef, pork, and mutton, yields a large profit to the feeder. Poor-grade stock is bought in the fall, fattened during the winter, and later is sent back to market to be sold at a considerable advance.

The Union Stock Yards at Chicago present a monument to the opportunity and good business sense of the American people. To the stranger entering the yards for the first time, the scene is novel. He enters the main entrance beneath an iron arch bearing an inscription that informs him that the territory within is the "Union Stock Yards, chartered 1865." Once within, factories, pens, and viaducts surround him on every side. Noise and confusion reign everywhere, but the apparent confusion is well ordered; and, considering the immense number of animals that are constantly being handled, the wonder is that they are handled with so much facility. On every hand is heard the "hi-yah" of the drovers and the deep lowing of the cattle. Everywhere is movement.

The stock arrives at the yard in the night or early morning, often after a long, hard ride of hundreds of miles. The company owning the stock yards owns also the transportation facilities within the yards, and, as the animals come in, they are given into charge of the company, which become responsible for both the cargo and the freight, attending to all matters of ownership, consignment, and fees. The company remains responsible for the stock until all charges are paid and the stock delivered to the broker or buyer. The live-stock broker has become a necessity; he is the medium of understanding between the buyer and the seller, and by him all difficulties are adjusted. Through him the seller knows exactly what it will cost to have his stock shipped, fed, watered, and sold. As soon as possible after the arrival at the yard, the herds are driven to pens, fed, and watered, and after that the selling begins. Owners, buyers, sellers, agents of the packing

houses, and commission men mingle in the excitement of the market. The examination and weighing of the animals follow the sale. An official statement of the weight is given the seller. The animals are then driven to the slaughterhouse. The worry and exhaustion of the cattle, occasioned by the long ride, have heated them so much that a period, generally of about twenty-four hours, is given to allow their temperature to cool to the normal point. Hogs, however, are not allowed this respite, but are sprinkled and immediately driven to a large solid wheel, with chains fastened at intervals along the rim. With these chains the hog is shackled by one hind leg. The wheel revolves, slowly raising the squealing porker. As he gets near the top, the hog is detached automatically from the wheel, and a hook attached to a sloping rail carries the victim to the butcher. With a swift motion, almost mechanical because of its long practice, the throat is cut lengthways, and the carcass is run along a short distance to allow the blood to drain out, which is drawn off and used largely in the manufacture of fertilizers. After a short time has been allowed for this draining, the carcass is plunged into a bath of scalding water. It is then brought automatically to a table, across which it is dragged through a scraping machine by an endless chain. This machine does the work better than it could be done by hand, leaving the bristles in much better condition. It does its work very thoroughly, its blades being mounted on cylinders coming in contact with every part of the body. To insure perfect results, the body is then gone over by hand scrapers, after which the carcass is thoroughly washed with a hose. Next the head is nearly severed, the gambrels are cut, and the body suspended by them from the rail.

The body is then opened and dressed, the leaf lard is removed, the head is taken off, the tongue removed, and, lastly, the body is split in two. All this is done at the rate of 20 hogs per minute. Thence the two halves go to the chill room, where they remain about twenty-four hours, until after the animal heat has left the body and it is thoroughly chilled. After this the sides are run to the cutting tables. In the cutting, too, many changes have taken place since the early days. Formerly the only cuts were hams, sides, shoulders, and cuts for barreled pork. In this connection Mr. Philip D. Armour said: "To-day (1895) the variety of cuts is bewildering to an outsider. The world to-day is the packer's market, and he has to study the peculiarities and preferences of each country, and even each county. The idiosyncrasies in the cutting and curing of home-killed bacon is reflected to-day in our cuts. Wiltshires, Cumberlands, Staffordshires, Yorkshires, etc., are only a few of such distinguishing styles."<sup>1</sup> A hog dresses about 80 per cent of its live weight, about 20 per cent being offal. Fresh meat comprises about 10 per cent of the dressed hog, and the other 90 per cent is cured.

From the cutting room the various parts intended for curing are sent by chutes to the curing rooms, where some cuts lie for at least sixty days in dry salt, and the shoulders, sides, hams, etc., intended for smoking lie for a like period in vats of sweet pickle. After these pieces intended for smoking have lain in pickle for five to eight weeks (the time required and the strength of the pickle varying according to the size of the cut), they are removed to the soaking tank and soaked for about twenty-four hours, in order that the heavier salting toward the surface of the cut may be brought to a uniformity with the center. From here the hams go to the trimming table, whence they are taken to the smokehouse, where they are smoked for about twenty-four hours. They then go to the storeroom, or the department where the hams and bacon are branded and labeled, and some are covered with canvas.

The manufacture of sausage brings to the packer greater profit for the amount of meat used than any other part of the hog. Sausage is made of trimmings which are the remnants of everything. Material for sausage comes from the ham-trimming department, from the butcher's bench at the market stall, from the killing room, and from the beef houses, particularly where the heads and hoofs are trimmed. The meat is chopped, mixed, and stuffed by machinery. The spices, such as sage, pepper, salt, ginger, and mustard, are mixed with the meat prior to its passage through the chopping machine, in order that it may be more thoroughly mixed. The ginger and mustard are added to counteract the action of the fatty greases on the stomach. From the chopping table the meat goes to a mixing trough to be mixed with large quantities of water necessary to make the mass sufficiently pliable that the casings may be filled with little difficulty. Here potato flour is also added to give consistency to the material. At this point the constituent parts are 40 per cent meat and spice, 40 per cent potato flour, and 20 per cent water. The potato meal neutralizes the taste of the pork, and the spices keep the stomach right.

The intestines, from which the casings are made, are one of the most valuable products of the hog. The labor involved in preparing them for commercial use is much greater than that demanded in the preparation of any other part of the hog. In some packing houses the old plan of doing the work entirely by hand, cleaning the intestines by turning them inside out and scraping with knife blades, still obtains, but in all the larger houses this work is done by a machine of marvelous rapidity, and it does its work more thoroughly than is possible by hand. Stuffing is done by a machine composed of two large cylinders, one a steam cylinder, the other a sausage-stuffing cylinder, and a piston rod directly connected with the piston rod of the large cylinder. The steam cylinder is of such an area that with 80 pounds steam pressure we have 190 pounds of pressure to the square inch in the stuffing cylinder. This causes sufficient pressure to force the sausage from

<sup>1</sup> One Hundred Years of American Commerce, Vol. II, page 386.

the small orifice at the bottom of the cylinder, to which is attached a tube over which the sausage casings are slipped, and the pressure when the cylinder is filled is sufficient to fill the skins at a speed of a mile a minute. From this machine the sausages are delivered at a table at which stand several men who tie them in links. This process done, the sausage is ready for marketing.

Lard is another important product of the hog. The packer divides it into two kinds—leaf lard and steam lard. Leaf lard comes from the surplus fat that accumulates in the hog, incased in a skin somewhat similar to that inclosing the intestines, only of frailer fabric. From the hog this leaf is washed and then goes to the rendering kettle. The leaf is cut into strips about three inches wide which is again cut into squares about three inches long. This cutting has to be done with much care, for mangling the leaf is detrimental to the production of good lard. The kettle is generally an open-jacketed one with a space for steam between the two parts of the kettle. A heavy shaft suspended through the kettle horizontally has arms attached which pass close to the bottom. This shaft in revolving keeps the mass in constant motion. This kettle holds about 10 tierces, and is kept constantly full, the steam being turned on in the jacketed space at a pressure of about 15 pounds and a temperature of about 222° F. The water taken on in washing the leaf first arises as vapor, and continues to vaporize as long as any water is left. After a time the surface begins to sink, showing that some of the leaf has melted, and the shaft and stirrers are started and the temperature is raised to about 250° F. Cut leaf is added from time to time to keep the kettle full, so that it is full of lard to the brim when the rendering is completed. After about five hours the cooking is finished, and the steam is turned off. A small amount of salt is thrown into the kettle, and after an hour of settling the lard is drawn off from the bottom through an opening over which there is a fine screen of wire cloth. From here the lard is run to an open tank where it cools to a temperature of 160° F., when it is drawn into tin pails of about 20 quarts each, and from these filled into packages of wood or tin, and placed in a room where a blast of air of a temperature of about 40° to 45° is blown over it. The rapid cooling causes a shrinkage on the surface and gives a crinkled effect that was formerly believed to be an indication of its purity. The color of leaf lard is creamy. Nearly everything to-day enters into leaf lard from leaf to belly trimmings. Much leaf lard is made into neutral oil. This oil is free from animal smell and taste.

Stock for making steam lard comes from all sources and every grade of hog products, from the feet trimmings, or feet themselves, to the skull or head bones. The rendering is done in tight iron cylinders from 30 to 72 inches in diameter and from 6 to 16 feet deep, generally suspended through one floor with a discharge at

the bottom of about 12 inches in diameter, and an inlet opening on the top of about 16 inches in diameter. Both these openings are covered. The pressure of steam used varies. After the rendering is completed and the steam pressure removed, the tank is allowed to settle. The refuse, such as bones and flesh tissue, sinks to the bottom of the tank, and is used in making fertilizers; above appears a layer of water, and above this, in turn, is the lard. The lard is drawn off into large steam jacketed kettles holding 20 to 30 tierces each. These kettles are then heated to above the boiling point of water. This is the refining process, and is continued until the water in the lard ceases to rise as vapor from the kettle. As soon as the water is evaporated the lard settles and is pumped into a large cooler before it is prepared for shipment. The failure to remove all the water in this process of refining is the cause of rancid or spoiled lard.

In the manufacture of fertilizers it is a serious question to reduce the offensiveness of the odor arising from the gases to the smallest possible degree. The odors penetrate every crack and corner, and leave their characteristic taste and smell everywhere. For this reason the building in which the fertilizer operations are conducted is situated at a distance from the other buildings of the plant. The material from which fertilizer is made is derived from various sources, chiefly from the rendering and cooking tanks. Fertilizer is a compound, and contains large amounts of ammonia and nitrates, and its value depends upon the amount of these constituents. Fertilizer material is generally cooked on the top floor of the building, and after being thoroughly cooked it is passed through a drying press. The material is pressed in order to reduce the water and save steam in drying, and to secure any grease possible, which adds nothing to the fertilizing properties. The drying presses are usually square boxes, about 16 inches long, 12 inches wide, and 3 inches deep, and are operated either by hydraulic power or by a screw press. After pressing, a rapid drying is given the material at a temperature of over 260° F., a reel revolving rapidly being necessary to prevent burning. Several different kinds of drying machines are in use. After drying, the fertilizer is put in bags, in which condition it is shipped to the manufacturer of fertilizer compounds.

In killing cattle, a day is generally allowed them to recover their normal temperature after the excitements of their journey. After they have cooled, the cattle are driven up an incline to the top of a 4 or 5 story building, into a long, narrow lane of a width sufficient to allow only two cattle to stand abreast. As the two animals in the lead reach the end of the lane, a partition is lowered behind them. This process is repeated for the next pair, and so on to the end of the lane. As soon as the line is secured, a man wielding a heavy hammer traverses a platform that runs along outside near the top of the lane, and with a swinging blow,



which strikes the animal between and above the eyes, fells the cattle. The side of the lane is then raised, the floor of the lane tilted, and the carcasses are precipitated upon the slaughtering floor. Next the body is shackled by the hind legs, hoisted and hooked to a rail, along which it slides to the butcher, who, with a quick thrust, severs the large vein of the neck. A pan is quickly shoved in to collect the blood, and the floor is arranged so that whatever quantity of the blood may escape the pan is drained into a large tank. Next the carcass is headed, lowered to the floor, and adjusted in such manner that the hide may be removed most easily. In this operation, in the larger establishments, the division of labor is carried to a high degree. Each workman engaged in removing the hide cuts only a certain portion, and the amount done by each is surprisingly small, but this is compensated for in the additional quickness with which the work is accomplished. Next the beef is sent to the chill room, where it is refrigerated about forty-eight hours, when that which is intended for sale as fresh meat is run to the loading platforms, divided into fore and hind quarters, and loaded into refrigerator cars for shipment to all points of the United States and to foreign countries. The killing of sheep differs little from the killing of cattle:

The meat used in canning is generally cow beef, and of an inferior grade. It is cooked in huge kettles and is handled with pitchforks. As soon as cooked, it is pressed into cans, which are capped, soldered, sealed, and inspected by steaming to ascertain if any air holes remain. These holes are closed, and the cans are washed, painted, and labeled, when they are ready for shipment to any climate, since, being airtight, they are proof against climatic changes.

Not the least interesting features of the large packing house are the auxiliary plants that have grown up, such as the tin shop where the cans are made, the box factory where boxes for shipment are manufactured, and the car shops where the refrigerator cars are built and repaired.

#### MEAT INSPECTION.

The reputation of American meats in the markets of the world depends upon the care and thoroughness with which the meat is inspected. This inspection is conducted by the Bureau of Animal Industry of the Department of Agriculture, and the cost of the work is borne by the Government.

On arrival at the stock yards all animals intended for slaughter are subjected to an ante-mortem examination by a Government inspector. Any animal that is found to be diseased, or not fit for human food, is condemned and marked by having a metal tag, stamped "U. S.—Condemned," placed in its ear. These condemned animals are killed under the supervision of an employee of the Bureau of Animal Industry, whose duty it is to see that the products of such animals are rendered in such manner that they shall not be fit for human food. At the time of slaughter all animals are again examined, and if found to be diseased, the carcass is marked with a yellow condemnation tag, and removed and rendered so that no part of it can be placed on sale for food. Provision is made to insure the proper rendering of the condemned carcasses by requiring the return to the inspector of a numbered stub removed from the tag of condemnation at the time the rendering is done. This insures the proper rendering of the carcasses. Only those carcasses and meats are inspected that are intended for interstate or export trade.

Each article of food made from inspected carcasses must bear a label on which appears the official number by which the establishment is known to the Department of Agriculture, and a statement to the effect that the article has been inspected according to law. A copy of this label is filed with the Department of Agriculture at Washington to serve as a mark of identification that the products to which it has been attached were properly inspected. Each package shipped has stenciled upon it "For export" or "Interstate trade," as the case may be, and, further, the official number of the establishment, the number of pieces or pounds in the package, and the trade-mark of the firm. Upon such packages the official of the Department pastes meat-inspection stamps, which are immediately canceled, certifying to the wholesomeness of the product, and its fitness for food. These stamps must be obliterated as soon as the package is opened.

Live stock intended for export are examined at certain designated stock yards, and again at the ports of export. The Department of Agriculture has also representatives at certain foreign ports.

The importance that meat inspection has attained is shown in the table below. The work began in 1891 and has grown steadily since that time. The following table illustrates the growth:

NUMBER OF ANIMALS INSPECTED AT SLAUGHTER FOR ABATTOIRS HAVING INSPECTION, FISCAL YEARS 1891 TO 1900.

FISCAL YEAR.	Number of abattoirs.	Number of cities.	Cattle.	Calves.	Sheep.	Hogs.	Horses.	Total.
1891	9	6	83,889					83,889
1892	28	12	3,167,009	59,089	588,361			3,809,459
1893	37	16	3,922,079	92,947	870,512			4,885,538
1894	46	17	3,861,594	96,331	1,020,764	7,648,146		12,626,835
1895	55	19	3,701,042	116,093	1,428,601	13,616,539		18,865,276
1896	102	26	3,985,484	256,905	4,629,790	14,250,191		23,122,376
1897	128	38	4,242,216	273,124	5,209,161	16,803,771		26,553,272
1898	135	35	4,418,738	244,330	5,496,904	20,893,199		31,053,171
1899	138	41	4,382,020	246,184	5,608,090	23,836,943	3,332	34,071,575
1900	148	45	4,841,166	315,093	6,119,886	23,336,884	5,569	34,619,138

In 1881 Germany, France, and other continental nations of Europe forbade the importation of American pork, alleging that it was unhealthful, being infected with trichinæ. By these measures the trade was crushed, and for ten years afterwards nearly every market on the Continent was closed to American pork. Notwithstanding considerable opposition to governmental inspection, the work was undertaken in 1892, when 38,152,874 pounds for export were inspected. The amount inspected has constantly increased. The microscopic inspection of pork is performed largely by women. The following extract from the regulations of the Bureau of Animal Industry shows the method of operation:

When the slaughtered hog is passed into the cooling room of said establishment, the inspector in charge, or his assistants, will take from each carcass three samples of muscle—one from the "pillar of the diaphragm," one from the psoas muscle, and the other from the inner aspect of the shoulder, and also from the base of the tongue when that organ is retained for exportation; and said samples will be placed in small tin boxes, and a numbered tag will be placed upon the carcass from which said samples have been taken, and a duplicate of said tag will be placed in the box with said samples. The small boxes will be placed in a large tin box provided with a lock. The boxes containing the samples from the hogs in the cooling room so tagged will be taken to the microscopist for such establishment, who shall thereupon cause a microscopic examination of the contents of each box containing samples to be made, and shall furnish a written report to the inspector, giving

the result of said microscopic examination, together with the numbers of all carcasses affected with trichinæ. The samples of pork microscopically examined shall be classified as follows:

Class A. Samples in which there are no signs of trichinæ, living or dead, calcified cysts, or other bodies or substances having any resemblance to trichinæ or trichinæ cysts.

Class B. Samples in which there are disintegrated trichinæ or trichinæ cysts, calcified trichinæ or trichinæ cysts, or bodies having any resemblance thereto.

Class C. Samples in which there are living or dead trichinæ bodies not disintegrated.

All carcasses coming within Class C are removed from the cooling room and disposed of by tanking, or they may be rendered into edible lard at a temperature of 150° F., or made into cooked meat products if the temperature is raised to the boiling point a sufficient time to cook thoroughly the interior of the pieces. Carcasses belonging to Class B are rejected for shipment to countries requiring inspection and certification. In all this work (the microscopic examination, the cutting up of carcasses, the marking of parts, and the keeping of records) the most careful and painstaking efforts are maintained. The result is that the pork exported to countries which require inspection, is not only absolutely free from trichinæ, but has never been affected by these parasites. The amount of affected pork under Class B and Class C is less than 2 per cent of the whole amount examined microscopically.<sup>1</sup>

Table 12 presents the detailed combined statistics for slaughtering, wholesale, not including meat packing; and slaughtering and meat packing, wholesale, as reported at the Twelfth Census.

<sup>1</sup> Yearbook, Department of Agriculture, 1899, page 459 ff.



## MANUFACTURES.

TABLE 12.—COMBINED SLAUGHTERING AND MEAT

	United States.	California.	Colorado.	Connecticut.	Delaware.	District of Columbia.
1 Number of establishments .....	921	58	14	12	4	7
2 Character of organization:						
3 Individual .....	416	22	3	5	2	5
4 Firm and limited partnership .....	286	20	2	4	2	2
5 Incorporated company .....	219	16	9	3		
6 Capital:						
7 Total .....	\$189,198,264	\$3,913,081	\$1,380,518	\$562,564	\$234,420	\$243,200
8 Land .....	\$12,135,034	\$497,074	\$162,800	\$77,000	\$23,000	\$49,000
9 Buildings .....	\$34,504,130	\$730,960	\$509,700	\$156,385	\$85,000	\$33,000
10 Machinery, tools, and implements .....	\$20,139,843	\$501,711	\$104,000	\$65,710	\$41,760	\$67,800
11 Cash and sundries .....	\$122,419,257	\$2,133,336	\$604,018	\$263,469	\$134,660	\$93,400
12 Salaried officials, clerks, etc.:	1,062	64	7	13	7	9
13 Total number .....	10,227	180	48	87	22	32
14 Total salaries .....	\$10,123,247	\$254,567	\$60,896	\$36,662	\$18,610	\$15,784
15 Officers of corporations—						
16 Number .....	871	17	16	2		
17 Salaries .....	\$1,064,636	\$40,920	\$28,236	\$5,000		
18 General superintendents, managers, clerks, etc.—						
19 Total number .....	9,856	163	32	35	22	32
20 Total salaries .....	\$9,058,561	\$213,647	\$32,660	\$31,662	\$18,610	\$15,784
21 Men—						
22 Number .....	8,913	156	31	31	19	32
23 Salaries .....	\$8,530,484	\$209,897	\$32,540	\$29,532	\$12,420	\$15,784
24 Women—						
25 Number .....	943	7	1	4	3	
26 Salaries .....	\$523,077	\$3,750	\$120	\$2,080	\$1,190	
27 Wage-earners, including pieceworkers, and total wages:						
28 Greatest number employed at any one time during the year .....	86,215	1,058	295	400	37	127
29 Least number employed at any one time during the year .....	61,035	870	243	370	37	103
30 Average number .....	68,534	925	261	380	37	116
31 Wages—						
32 Men, 16 years and over—						
33 Average number .....	\$33,457,013	\$544,659	\$170,744	\$174,239	\$20,998	\$63,007
34 Wages .....	63,922	915	259	378	86	114
35 Women, 16 years and over—						
36 Average number .....	\$32,239,847	\$538,611	\$170,244	\$173,829	\$20,242	\$62,981
37 Wages .....	2,945	10	2	2		2
38 Children, under 16 years—						
39 Average number .....	\$853,813	\$6,048	\$500	\$410		\$676
40 Wages .....	1,667					
41 Average number of wage-earners, including pieceworkers, employed during each month:	\$363,353				\$156	
42 Men, 16 years and over—						
43 January .....	64,917	917	270	393	36	119
44 February .....	63,735	906	267	393	36	112
45 March .....	63,111	919	280	385	36	116
46 April .....	61,151	920	272	364	36	112
47 May .....	62,240	932	258	360	36	111
48 June .....	61,800	900	243	362	36	111
49 July .....	62,515	899	241	364	36	111
50 August .....	62,872	905	245	364	36	111
51 September .....	62,998	912	249	379	36	114
52 October .....	65,752	884	252	388	36	113
53 November .....	67,893	912	255	388	36	118
54 December .....	68,686	927	262	392	36	116
55 Women, 16 years and over—						
56 January .....	2,964	9	2	2		2
57 February .....	2,892	8	2	2		2
58 March .....	2,768	7	2	2		2
59 April .....	2,678	7	2	2		2
60 May .....	2,605	8	2	1		2
61 June .....	2,431	7	2	1		2
62 July .....	2,725	8	2	1		2
63 August .....	2,990	10	2	2		2
64 September .....	3,177	17	2	2		2
65 October .....	3,325	19	2	2		2
66 November .....	3,412	15	2	1		2
67 December .....	3,373	8	2	1		2
68 Children, under 16 years—						
69 January .....	1,591				1	
70 February .....	1,595				1	
71 March .....	1,520				1	
72 April .....	1,531				1	
73 May .....	1,563				1	
74 June .....	1,660				1	
75 July .....	1,739				1	
76 August .....	1,774				1	
77 September .....	1,751				1	
78 October .....	1,673				1	
79 November .....	1,814				1	
80 December .....	1,793				1	
81 Miscellaneous expenses:						
82 Total .....	\$24,060,412	\$441,210	\$56,384	\$76,721	\$9,899	\$19,985
83 Rent of works .....	\$514,430	\$32,482	\$4,115	\$1,240	\$3,120	\$5,660
84 Taxes, not including internal revenue .....	\$827,450	\$17,032	\$6,925	\$6,747	\$685	\$750
85 Rent of offices, insurance, interest, and all sundry expenses not hitherto included.	\$22,606,910	\$390,046	\$45,844	\$68,734	\$6,094	\$11,785
86 Contract work .....	\$11,622	\$1,650				\$1,800
87 Materials used:						
88 Total cost .....	\$683,533,577	\$13,555,445	\$3,721,610	\$3,143,590	\$442,389	\$2,013,827
89 Slaughtered—						
90 Beef, number .....	5,530,911	174,113	34,934	408	5,105	14,975
91 Cost .....	\$247,365,812	\$6,017,752	\$1,429,317	\$16,240	\$102,500	\$763,275
92 Sheep, number .....	9,190,490	695,058	65,088	20,707	2,050	17,860
93 Cost .....	\$37,137,542	\$2,197,262	\$287,848	\$74,885	\$4,200	\$38,675
94 Hogs, number .....	30,654,333	228,675	160,210	254,731	17,800	127,300
95 Cost .....	\$278,736,961	\$1,989,208	\$1,504,397	\$2,548,174	\$229,440	\$914,000
96 Calves, number .....	899,748	28,531	3,770	11,620	223	6,240
97 Cost .....	\$7,356,560	\$280,953	\$33,440	\$32,792	\$1,636	\$68,600
98 All other animals, cost .....	\$559,839	\$165,021	\$5,895	\$8,080		
99 Dressed meat, purchased fresh or partly cured, cost .....	\$54,715,496	\$1,897,969	\$363,370	\$132,000	\$38,300	\$145,200
100 Fuel .....	\$2,747,606	\$69,305	\$13,013	\$19,410	\$2,061	\$9,058
101 Rent of power and heat .....	\$30,946	\$3,228				
102 Mill supplies .....	\$337,456	\$3,672	\$2,180	\$1,535	\$113	\$842
103 All other materials .....	\$48,373,654	\$416,019	\$43,320	\$169,047	\$1,425	\$6,395
104 Freight .....	\$6,221,705	\$514,951	\$27,460	\$81,427	\$2,714	\$32,732

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Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachu- setts.	Michigan.	Minnesota.
7	64	86	27	14	28	11	82	22	20	20
4	9	15	10	3	21	7	64	11	16	11
2	22	12	5	2	4	2	16	4	10	7
1	33	9	12	9	3	2	2	7	8	2
\$115,827	\$71,229,262	\$8,860,284	\$6,351,358	\$16,486,177	\$1,326,976	\$132,680	\$1,548,488	\$11,314,075	\$1,438,351	\$1,355,011
\$16,700	\$3,418,355	\$476,886	\$178,050	\$793,228	\$100,460	\$8,400	\$163,815	\$1,182,332	\$154,695	\$71,150
\$29,025	\$10,560,418	\$1,767,547	\$1,232,053	\$2,668,200	\$171,850	\$34,750	\$402,500	\$2,377,015	\$207,005	\$246,940
\$24,802	\$6,945,234	\$1,451,377	\$515,075	\$1,678,762	\$216,133	\$5,530	\$218,335	\$1,323,138	\$119,396	\$132,192
\$45,800	\$50,305,255	\$5,164,474	\$4,426,175	\$11,355,987	\$388,533	\$84,000	\$763,838	\$6,481,090	\$957,195	\$904,729
8	62	40	19	9	31	12	108	21	29	27
84	4,226	308	193	1,841	62	6	68	220	71	125
\$20,235	\$4,424,285	\$314,603	\$197,376	\$1,681,866	\$51,799	\$2,840	\$48,804	\$250,296	\$66,661	\$102,709
4	79	22	14	12	5	-----	2	5	9	-----
\$4,000	\$362,440	\$80,200	\$36,720	\$53,690	\$10,500	-----	\$700	\$25,500	\$20,500	-----
80	4,147	281	179	1,829	57	6	66	215	62	125
\$16,235	\$4,061,845	\$234,403	\$160,656	\$1,578,176	\$41,299	\$2,840	\$48,104	\$224,796	\$46,161	\$102,709
80	3,825	260	167	1,523	57	4	64	198	55	109
\$16,235	\$3,855,511	\$224,444	\$156,619	\$1,402,816	\$41,299	\$2,415	\$47,184	\$214,422	\$42,601	\$95,269
-----	822	21	12	806	-----	2	2	19	7	16
-----	\$206,334	\$9,959	\$5,037	\$175,300	-----	\$425	\$920	\$10,374	\$3,560	\$7,440
143	81,946	4,004	3,470	9,505	594	95	649	8,014	530	1,060
82	24,594	3,271	2,449	7,080	494	85	549	2,507	414	578
104	27,861	3,597	2,887	8,117	511	88	597	2,748	456	608
\$32,440	\$14,044,888	\$1,665,752	\$1,208,167	\$3,575,049	\$214,271	\$17,900	\$276,413	\$1,818,077	\$230,687	\$903,977
102	25,792	3,157	2,643	7,170	507	87	584	2,724	453	650
\$32,115	\$18,462,377	\$1,455,428	\$1,163,421	\$3,380,681	\$213,711	\$17,600	\$278,819	\$1,811,595	\$230,137	\$299,105
1	1,473	387	29	661	4	1	10	13	2	9
\$75	\$427,203	\$101,499	\$9,906	\$190,802	\$560	\$300	\$2,118	\$3,582	\$450	\$3,000
1	596	53	215	286	-----	-----	3	11	1	9
\$250	\$155,258	\$3,825	\$34,840	\$53,616	-----	-----	\$476	\$3,100	\$50	\$1,872
125	26,359	3,290	2,965	6,846	575	35	605	2,910	512	717
125	26,270	3,188	2,649	6,778	523	85	605	2,793	452	647
123	25,595	2,994	2,585	6,514	494	85	584	2,742	442	609
94	24,818	2,977	2,536	6,556	479	31	577	2,677	427	587
90	25,012	2,999	2,641	6,842	480	81	571	2,571	422	604
91	24,654	3,122	2,742	7,033	479	19	576	2,554	424	611
85	24,714	3,182	2,632	7,042	492	62	554	2,555	412	6

## MANUFACTURES.

TABLE 12.—COMBINED SLAUGHTERING AND MEAT

	United States.	California.	Colorado.	Connecticut.	Delaware.	District of Columbia.
88 Products:						
89 Total value.....	\$785,562,433	\$15,717,712	\$4,343,983	\$3,663,393	\$521,076	\$2,210,860
90 Beef—						
91 Sold fresh, pounds.....	2,920,458,297	93,818,021	20,789,680	224,000	1,750,900	8,128,300
92 Value.....	\$211,068,934	\$5,972,469	\$1,501,233	\$15,825	\$129,415	\$909,800
93 Canned, pounds.....	112,449,021	868,382	16,000			
94 Value.....	\$9,167,531	\$61,450	\$1,440			
95 Salted or cured, pounds.....	137,589,303	2,612,762	66,900	450,000	37,781	400,000
96 Value.....	\$9,661,834	\$173,381	\$5,814	\$45,000	\$5,045	\$16,000
97 Mutton, sold fresh, pounds.....	404,183,601	29,005,967	3,138,745	745,252	156,750	719,180
98 Value.....	\$32,963,219	\$2,178,934	\$270,729	\$85,899	\$16,375	\$69,278
99 Veal, sold fresh, pounds.....	85,565,207	3,964,808	417,000	929,650	59,460	454,500
100 Value.....	\$7,812,714	\$326,705	\$39,940	\$103,008	\$6,901	\$45,515
101 Pork—						
102 Sold fresh, pounds.....	1,223,038,988	18,315,565	10,454,600	7,054,510	978,900	6,823,300
103 Value.....	\$84,019,837	\$1,424,794	\$663,687	\$514,237	\$99,684	\$555,965
104 Salted, pounds.....	1,375,524,758	2,558,691	9,500,000	4,800,000	522,000	1,093,357
105 Value.....	\$88,674,016	\$205,574	\$413,580	\$333,500	\$41,700	\$75,512
106 Hams, pounds.....	787,520,973	11,982,749	4,650,000	3,484,000	782,000	1,227,000
107 Value.....	\$73,793,012	\$1,804,450	\$400,460	\$815,240	\$78,760	\$125,647
108 Smoked bacon, sides, and shoulders, pounds.....	985,722,212	14,253,894	3,227,000	11,820,000	601,000	2,486,285
109 Value.....	\$74,873,847	\$1,368,837	\$230,010	\$887,800	\$42,320	\$214,179
110 Sausage, fresh or cured, pounds.....	202,164,075	1,404,497	2,535,400	2,651,700	157,000	2,141,500
111 Value.....	\$21,472,413	\$116,473	\$153,866	\$167,000	\$11,860	\$191,330
112 All other meat, sold fresh, pounds.....	80,408,211	2,295,977	200,000			200,000
113 Value.....	\$7,813,078	\$191,283	\$13,600			\$10,000
114 Refined lard, pounds.....	891,438,417	3,998,612	7,672,000	6,163,334	968,000	1,404,000
115 Value.....	\$52,620,348	\$314,137	\$417,480	\$390,400	\$70,080	\$108,760
116 Neutral lard, pounds.....	129,345,282	182,500	6,000			26,000
117 Value.....	\$3,588,350	\$16,483	\$480	\$59,000		\$1,820
118 Oleomargarine oil, gallons.....	19,111,120					
119 Value.....	\$11,482,542					
120 Other oils, gallons.....	8,245,569	5,275				
121 Value.....	\$3,440,358	\$2,699				
122 Fertilizers, tons.....	168,510	1,570	190	2,918	30	120
123 Value.....	\$3,300,132	\$37,323	\$2,030	\$80,860	\$450	\$2,160
124 Hides, number.....	6,281,952	201,444	38,284	12,078	5,333	37,015
125 Pounds.....	336,527,907	10,221,863	2,128,330	131,106	303,000	688,250
126 Value.....	\$33,925,911	\$960,324	\$162,397	\$17,015	\$17,466	\$38,977
127 Wool, pounds.....	13,182,146	117,710	18,200			
128 Value.....	\$3,335,824	\$23,742	\$1,110			
129 All other products, value.....	\$47,407,679	\$1,035,549	\$64,916	\$148,609	\$1,020	\$39,277
130 Custom work, value.....	\$141,304	\$9,100	\$1,211			\$2,620
131 Weight of animals slaughtered:						
132 Cattle—						
133 Gross weight, on hoof, pounds.....	5,913,498,606	183,495,244	36,268,850	347,200	3,072,000	16,067,500
134 Net weight, dressed, pounds.....	3,225,610,438	95,496,093	19,733,370	224,000	1,586,350	8,725,000
135 Sheep—						
136 Gross weight, on hoof, pounds.....	770,975,202	62,196,830	6,356,085	1,242,520	159,500	1,430,000
137 Net weight, dressed, pounds.....	392,496,033	30,697,568	3,237,502	745,252	80,125	718,250
138 Hogs—						
139 Gross weight, on hoof, pounds.....	6,684,658,916	41,417,984	38,534,200	54,947,643	4,697,000	17,417,500
140 Net weight, dressed, pounds.....	5,209,430,364	32,673,745	31,024,500	45,379,142	3,774,400	14,050,200
141 Calves—						
142 Gross weight, on hoof, pounds.....	126,052,830	7,684,361	662,700	1,888,750	26,932	835,900
143 Net weight, dressed, pounds.....	80,515,202	3,964,767	417,000	948,650	20,732	454,500
144 Comparison of products:						
145 Number of establishments reporting for both years.....	727	40	8	11	3	7
146 Value for census year.....	\$737,183,413	\$12,500,319	\$3,354,897	\$3,649,643	\$383,966	\$2,210,860
147 Value for preceding business year.....	\$683,263,317	\$12,336,329	\$2,839,500	\$3,257,439	\$365,493	\$2,171,844
148 Power:						
149 Number of establishments reporting.....	610	24	14	6	3	7
150 Total horsepower.....	95,169	1,212	854	360	121	487
151 Owned—						
152 Engines—						
153 Steam, number.....	1,204	27	24	7	4	13
154 Horsepower.....	88,545	1,098	834	360	121	472
155 Gas or gasoline, number.....	25	2				
156 Horsepower.....	435	16				
157 Water wheels, number.....	1		1			
158 Horsepower.....	5		5			
159 Electric motors, number.....	571					1
160 Horsepower.....	10,161					15
161 Other power, number.....	4					
162 Horsepower.....	95					
163 Rented—						
164 Electric, horsepower.....	575	90	15			
165 Other kind, horsepower.....	353	8				
166 Furnished to other establishments, horsepower.....	211					
167 Establishments classified by number of persons employed, not including proprietors and firm members:						
168 Total number of establishments.....	921	58	14	12	4	7
169 No employees.....	8			2		
170 Under 5.....	266	14	2	4	1	2
171 5 to 20.....	340	31	7	3		
172 21 to 50.....	167	8	3	1		5
173 51 to 100.....	60	3	1			
174 101 to 250.....	31	1	1	2		
175 251 to 500.....	14					
176 501 to 1,000.....	16					
177 Over 1,000.....	19					

# SLAUGHTERING AND MEAT PACKING.

425

PACKING, BY STATES AND TERRITORIES: 1900—Continued.

Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachu- setts.	Michigan.	Minnesota.	
\$591,227	\$287,922,277	\$48,862,273	\$25,095,044	\$77,411,883	\$5,177,167	\$553,742	\$8,046,859	\$31,688,483	\$5,337,417	\$7,810,555	88
8,726,000	1,042,234,306	219,166,574	30,578,342	451,975,433	8,429,607	1,658,500	8,955,180	17,960,150	16,467,625	26,659,666	89
\$233,380	\$74,821,711	\$16,476,761	\$2,125,028	\$31,030,096	\$614,540	\$112,370	\$724,664	\$1,365,198	\$1,184,398	\$1,682,902	90
5,200	76,296,560	5,343,207	1,627,920	14,034,995		1,800	6,000				91
\$312	\$6,446,288	\$395,116	\$85,466	\$1,341,215		\$180	\$600				92
56,000	67,917,748	1,588,988	1,305,205	8,967,600	601,334		308,620	1,116,500	17,285	807,115	93
\$4,800	\$5,066,362	\$172,930	\$84,888	\$540,960	\$40,086		\$25,039	\$62,000	\$1,185	\$56,449	94
122,000	148,003,635	15,911,670	1,159,736	24,309,545	440,016	2,543,664	7,026,200	16,207,400	1,925,618	4,686,842	95
\$8,990	\$11,842,741	\$1,413,522	\$98,094	\$1,894,220	\$36,164	\$219,789	\$774,885	\$1,311,978	\$159,952	\$359,455	96
115,000	17,673,896	1,155,508	457,581	3,869,293	388,102	279,660	2,521,000	5,178,540	674,400	640,910	97
\$9,330	\$1,489,318	\$107,383	\$89,972	\$282,081	\$36,009	\$28,168	\$261,945	\$408,984	\$60,815	\$55,489	98
1,414,000	411,376,731	29,262,285	31,774,211	86,242,488	6,822,730	493,333	12,019,718	44,507,608	12,086,427	17,354,988	99
\$107,800	\$28,774,485	\$1,985,006	\$2,337,221	\$5,069,007	\$523,398	\$38,900	\$923,647	\$3,526,589	\$821,545	\$1,047,107	100
782,000	522,095,362	30,704,461	135,513,117	78,884,690	21,371,238	202,500	8,799,909	57,884,374	12,496,900	23,319,550	101
\$53,740	\$36,179,893	\$1,819,740	\$9,403,836	\$4,814,529	\$1,091,135	\$12,600	\$628,388	\$3,785,017	\$780,984	\$1,362,540	102
230,000	228,284,156	42,658,688	39,741,810	57,996,957	10,662,435	220,000	12,830,500	57,134,584	8,388,230	5,920,898	103
\$23,900	\$22,746,703	\$3,552,687	\$3,565,663	\$4,940,298	\$974,201	\$23,200	\$1,316,703	\$4,719,658	\$682,400	\$667,570	104
220,000	185,240,920	117,787,185	30,781,171	138,485,250	10,680,870	140,000	20,184,859	92,227,868	15,069,779	7,718,147	105
\$17,800	\$14,434,750	\$8,222,656	\$2,399,670	\$9,657,119	\$791,864	\$10,400	\$1,527,278	\$8,108,673	\$1,056,797	\$571,386	106
647,000	\$6,536,421	8,532,981	8,917,759	24,936,703	4,316,681	65,000	10,310,052	22,800,305	3,670,787	2,579,898	107
\$42,187	\$7,881,854	\$579,760	\$562,596	\$1,469,400	\$399,149	\$4,450	\$709,038	\$1,674,512	\$212,985	\$275,740	108
532,000	\$7,936,886	5,732,510	6,800	6,489,044	42,684		52,000	21,086	160,000	2,456,686	109
\$45,840	\$6,159,827	\$873,351	\$390	\$112,267	\$1,779		\$5,021	\$1,265	\$10,000	\$271,694	110
92,000	\$26,707,241	45,091,290	63,086,918	91,966,141	7,276,846	173,000	6,965,261	68,843,633	2,146,566	8,248,174	111
\$5,840	\$18,699,882	\$2,777,373	\$3,590,506	\$4,970,291	\$401,670	\$11,300	\$456,922	\$4,220,098	\$152,203	\$507,922	112
25,400	45,455,628	3,583,150	7,364,874	24,037,743	1,381,570		5,396,552	1,000,000	138,317		113
\$1,512	\$3,596,474	\$260,829	\$491,049	\$1,255,208	\$90,050		\$881,666	\$60,000	\$9,682		114
	9,760,701	1,146,483	175,708	1,928,813				\$2,021			115
	\$5,907,572	\$750,628	\$87,854	\$1,204,905				\$31,250			116
	4,385,191	176,583	273,709	1,268,691							117
	\$2,010,394	\$84,906	\$98,517	\$566,487							118
	53,614	8,909	6,926	26,118	1,687						119
\$2,840	\$1,212,519	\$143,011	\$81,279	\$504,080	\$23,376		\$8,690	\$88,310	\$6,245	\$21,305	120
11,081	2,206,337	371,538	\$1,820	900,732	25,905	5,925	61,169	106,492	40,243	59,269	121
438,840	128,702,573	23,550,614	4,278,686	50,421,935	1,233,773	182,900	1,414,620	2,609,300	1,897,918	3,051,526	122
\$28,189	\$13,092,560	\$2,645,605	\$420,183	\$5,550,195	\$114,571	\$15,058	\$118,220	\$287,662	\$165,357	\$294,762	123
8,600	8,389,307			2,000	1,000	121,240	5,460	1,450,000			124
\$1,200	\$1,935,373			\$875	\$200	\$27,810	\$1,385	\$442,250			125
\$2,817	\$26,116,008	\$2,100,759	\$218,557	\$1,868,672	\$129,025	\$49,519	\$189,823	\$1,676,606	\$81,239	\$568,068	126
\$750	\$7,559	\$250	\$1,325	\$13,578			\$45,450	\$18,988	\$1,000	\$1,515	127
8,788,000	2,179,139,406	409,620,551	31,065,710	974,523,827	18,909,167	2,760,100	18,995,400	32,181,970	41,468,810	54,989,920	128
4,275,760	1,176,649,166	229,999,021	44,422,716	529,986,771	10,137,047	1,658,500	10,351,730	17,778,762	16,623,895	28,207,859	129
210,500	265,267,321	31,625,196	1,242,240	51,608,236	752,827	5,380,200	14,085,600	32,519,320	3,892,700	7,180,082	130
99,700	135,918,174	16,166,213	610,803	25,937,180	386,310	2,581,470	7,024,000	16,286,680	1,923,793	4,576,464	131
4,027,500	1,980,965,755	341,722,941	453,457,689	653,215,874	88,560,586	639,375	85,858,321	431,041,694	70,282,690	91,098,995	132
2,882,780	1,644,636,373	274,352,715	324,005,185	505,648,235	69,597,001	502,500	68,762,723	349,694,967	55,816,600	70,732,130	133
137,000	23,488,788	2,012,100	596,402	6,005,180	669,428	468,460	4,216,840	7,716,310	953,100	908,870	134
103,950	14,968,146	1,227,473	393,354	3,731,492	383,368	279,665	2,520,640	5,187,290	674,600	638,988	135
4	54	85	19	10	22	6	72	19	22	12	136
\$204,449	\$285,427,878	\$43,813,289	\$24,077,217	\$76,372,001	\$5,009,849	\$366,066	\$4,984,298	\$31,163,279	\$4,638,770	\$6,663,616	137
\$205,700	\$261,606,616	\$41,570,488	\$24,902,285	\$72,811,901	\$4,419,179	\$348,187	\$4,855,508	\$34,466,081	\$4,019,306	\$5,848,511	138
4	58	29	19	12	19	8	43	12	12	15	139
127	28,293	4,949	4,219	12,927	526	52	1,663	3,022	688	965	140
6	195	64	47	69	30	3	49	29	18	21	141
119	24,405	4,540	3,198	10,903	506	52	1,662	2,874	648	945	142
			1	10	1						143
			16	209	10						144
											145
											146
1	167	36	40	83	1		1	16		1	147
8	8,618	404	1,005	1,715	10		1	105		5	148
				3						1	149
				90						5	150
											151
	260			10				18		10	152
	15	5						25			153
	146	1	10					30			154
7	64	36	27	14	28	11	82	22	29	20	155
3	4	18	9	1	15	2	2	7	12	6	156
	24	11	6	4	7	5	60	4	7	12	157
2	15	7	5	3	4	2	21	4	6	1	158
2	6		2		1		7	1		1	159
	1	3	2	2			2	2	2		160
	2		1	1	1			2			161
	4		2					1		1	162
	8	2	1	3				1			163

## MANUFACTURES.

TABLE 12.—COMBINED SLAUGHTERING AND MEAT

	Missouri.	Montana.	Nebraska.	New Jersey.	New York.	North Dakota.
1 Number of establishments.....	37	5	12	41	110	3
2 Character of organization:						
3 Individual.....	18	3	3	21	59	1
4 Firm and limited partnership.....	7	2	2	17	34	1
5 Incorporated company.....	12	2	7	3	17	1
6 Capital:						
7 Total.....	\$7,944,033	\$241,826	\$16,524,895	\$1,588,389	\$15,357,075	\$104,871
8 Land.....	\$395,656	\$7,600	\$827,759	\$185,538	\$1,600,345	\$10,500
9 Buildings.....	\$1,663,341	\$22,700	\$4,064,454	\$297,200	\$3,623,981	\$80,750
10 Machinery, tools, and implements.....	\$1,091,504	\$10,959	\$1,330,495	\$203,021	\$1,658,568	\$11,900
11 Cash and sundries.....	\$4,793,532	\$200,567	\$10,302,187	\$952,635	\$8,474,181	\$51,221
12 Proprietors and firm members.....	33	3	7	60	140	3
13 Salaried officials, clerks, etc.:						
14 Total number.....	242	9	721	100	602	8
15 To all salaries.....	\$253,775	\$12,600	\$684,240	\$94,080	\$584,386	\$3,750
16 Officers of corporations—						
17 Number.....	25	2	8	8	31	1
18 Salaries.....	\$56,880	\$5,000	\$27,816	\$9,500	\$89,298	\$2,400
19 General superintendents, managers, clerks, etc.—						
20 Total number.....	217	7	713	97	571	7
21 Total salaries.....	\$196,895	\$7,600	\$656,424	\$84,580	\$495,088	\$6,300
22 Men—						
23 Number.....	200	7	677	92	461	6
24 Salaries.....	\$189,324	\$7,600	\$632,867	\$82,476	\$449,326	\$5,800
25 Women—						
26 Number.....	17	—	36	5	110	1
27 Salaries.....	\$7,571	—	\$23,557	\$2,104	\$45,762	\$500
28 Wage-earners, including pieceworkers, and total wages:						
29 Greatest number employed at any one time during the year.....	4,103	47	7,006	616	3,967	35
30 Least number employed at any one time during the year.....	2,509	32	5,350	525	3,852	33
31 Average number.....	3,102	37	6,090	558	3,099	34
32 Wages.....	\$1,440,742	\$33,693	\$2,990,363	\$331,825	\$1,846,434	\$15,977
33 Men, 16 years and over—						
34 Average number.....	2,977	35	5,602	556	3,009	33
35 Wages.....	\$1,416,457	\$32,493	\$2,862,441	\$331,565	\$1,820,954	\$15,677
36 Women, 16 years and over—						
37 Average number.....	8	2	173	—	79	1
38 Wages.....	\$2,160	\$1,200	\$57,425	—	\$23,636	\$300
39 Children, under 16 years—						
40 Average number.....	117	—	315	2	11	—
41 Wages.....	\$22,125	—	\$70,997	\$260	\$1,844	—
42 Average number of wage-earners, including pieceworkers, employed during each month:						
43 Men, 16 years and over—						
44 January.....	2,738	31	5,119	584	3,048	34
45 February.....	2,753	36	5,107	579	2,993	34
46 March.....	3,585	33	5,242	577	2,964	34
47 April.....	2,755	37	5,305	556	2,943	32
48 May.....	2,612	36	5,618	531	3,463	32
49 June.....	2,681	33	5,858	515	2,849	32
50 August.....	3,173	37	5,889	513	2,867	32
51 September.....	3,301	35	5,782	517	2,857	32
52 October.....	3,090	36	5,740	554	2,913	32
53 November.....	2,944	38	5,987	571	3,024	34
54 December.....	2,922	32	5,883	585	3,091	34
55 Women, 16 years and over—	3,169	34	5,695	588	3,107	34
56 January.....	7	—	138	—	67	1
57 February.....	7	3	139	—	68	1
58 March.....	7	3	165	—	69	1
59 April.....	14	3	170	—	69	1
60 May.....	8	3	146	—	83	1
61 June.....	10	2	152	—	92	1
62 July.....	10	2	171	—	88	1
63 August.....	17	2	156	—	89	1
64 September.....	16	2	187	—	90	1
65 October.....	8	2	245	—	82	1
66 November.....	—	2	193	—	83	1
67 December.....	—	2	215	—	67	1
68 Children, under 16 years—						
69 January.....	111	—	279	3	11	—
70 February.....	117	—	283	3	11	—
71 March.....	132	—	287	3	11	—
72 April.....	121	—	316	3	11	—
73 May.....	109	—	317	2	11	—
74 June.....	118	—	370	2	11	—
75 July.....	124	—	322	2	11	—
76 August.....	125	—	364	2	11	—
77 September.....	113	—	337	2	11	—
78 October.....	106	—	305	2	11	—
79 November.....	116	—	305	2	11	—
80 December.....	109	—	301	3	11	—
81 Miscellaneous expenses:						
82 Total.....	\$364,267	\$7,798	\$1,591,516	\$164,281	\$1,274,584	\$3,975
83 Rent of works.....	\$12,305	\$5,800	\$18,708	\$41,529	\$114,215	\$720
84 Taxes, not including internal revenue.....	\$15,317	\$888	\$43,985	\$7,055	\$71,444	\$430
85 Rent of offices, insurance, interest, and all sundry expenses not hitherto included.....	\$336,145	\$1,610	\$1,528,873	\$115,697	\$1,086,496	\$7,025
86 Contract work.....	\$500	—	—	—	\$2,379	\$300
87 Materials used:						
88 Total cost.....	\$39,108,137	\$321,070	\$63,048,186	\$12,849,902	\$50,523,186	\$193,175
89 Slaughtered—						
90 Cattle, number.....	846,827	12,395	531,032	29,080	378,833	1,700
91 Cost.....	\$14,963,243	\$572,580	\$24,533,837	\$1,552,980	\$21,492,495	\$65,000
92 Sheep, number.....	252,015	—	723,520	380,406	1,487,157	900
93 Cost.....	\$1,031,846	\$91,063	\$3,076,671	\$1,585,683	\$5,975,165	\$3,400
94 Hogs, number.....	1,887,953	8,401	2,733,304	931,694	1,701,096	12,500
95 Cost.....	\$19,075,986	\$34,943	\$27,846,114	\$6,408,984	\$12,566,633	\$121,400
96 Calves, number.....	22,825	3,396	8,454	63,037	277,016	400
97 Cost.....	\$103,981	\$50,490	\$121,878	\$570,599	\$2,203,940	\$4,000
98 All other animals, cost.....	\$11,725	\$4,525	\$56,674	\$12,173	\$3,600	—
99 Dressed meat, purchased fresh or partly cured, cost.....	\$1,848,384	\$25,000	\$4,426,618	\$2,266,059	\$5,335,265	—
100 Fuel.....	\$159,299	\$2,460	\$355,209	\$24,587	\$154,168	\$875
101 Rent of power and heat.....	\$60	—	—	\$3,895	\$2,002	—
102 Mill supplies.....	\$20,507	\$100	\$18,222	\$3,432	\$32,374	\$200
103 All other materials.....	\$1,723,859	\$6,820	\$2,423,477	\$136,854	\$1,861,426	\$3,000
104 Freight.....	\$98,797	\$33,149	\$184,486	\$284,656	\$336,118	\$300

## SLAUGHTERING AND MEAT PACKING.

427

PACKING, BY STATES AND TERRITORIES: 1900—Continued.

Ohio.	Oregon.	Pennsyl- vania.	Rhode Island.	Tennessee.	Texas.	Utah.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states and territories. <sup>1</sup>	
71	9	111	7	8	12	8	4	18	3	13	14	1
26	2	56	1	2	1	3	1	8	1	8	3	2
28	3	44	4	2	3	5	2	7	1	6	5	3
17	4	11	2	4	8		1	8	1	4	6	4
\$5,355,626	\$760,448	\$6,548,577	\$759,850	\$651,740	\$1,232,267	\$117,027	\$159,500	\$1,014,086	\$318,000	\$6,811,616	\$216,071	5
\$296,840	\$189,021	\$764,863	\$16,800	\$45,800	\$63,871	\$26,969	\$34,000	\$50,200	\$22,000	\$269,082	\$15,750	6
\$720,621	\$238,500	\$1,441,202	\$22,400	\$119,589	\$244,329	\$16,000	\$23,000	\$141,400	\$55,000	\$581,662	\$40,603	7
\$504,781	\$115,356	\$728,684	\$35,700	\$129,227	\$222,952	\$15,297	\$22,000	\$131,242	\$33,000	\$426,480	\$57,272	8
\$3,833,384	\$217,571	\$3,613,828	\$684,950	\$857,624	\$711,115	\$58,761	\$80,500	\$691,244	\$208,000	\$2,584,452	\$103,046	9
90	9	158	10	5	6	14	6	18	3	19	12	10
313	41	376	16	15	49	6	19	88	16	123	15	11
\$266,001	\$47,130	\$317,153	\$17,636	\$17,365	\$61,797	\$2,472	\$14,340	\$81,116	\$11,800	\$145,383	\$10,270	12
47	9	9	5	9	10		3	3	5	10	4	13
\$71,926	\$16,400	\$19,200	\$8,000	\$12,500	\$20,800		\$4,940	\$6,120	\$6,000	\$85,000	\$4,500	14
266	32	367	11	6	39	6	16	85	11	113	11	15
\$194,075	\$30,730	\$297,953	\$9,636	\$4,865	\$40,997	\$2,472	\$9,400	\$74,996	\$5,800	\$110,383	\$5,770	16
249	30	348	11	6	38	5	16	80	11	106	11	17
\$187,189	\$29,930	\$290,973	\$9,636	\$4,865	\$40,457	\$2,172	\$9,400	\$72,566	\$5,800	\$106,255	\$5,770	18
17	2	19			1	1		5		7		19
\$6,886	\$800	\$6,980			\$540	\$300		\$2,430		\$4,098		20
2,029	219	7,754	221	349	535	52	80	281	92	1,678	224	21
1,613	145	1,530	191	109	345	42	53	214	75	1,125	165	22
1,765	172	1,669	209	156	414	42	65	231	84	1,367	137	23
\$811,398	\$87,821	\$920,190	\$107,104	\$60,945	\$179,505	\$18,653	\$28,884	\$156,531	\$42,646	\$568,208	\$59,426	24
1,717	166	1,646	206	152	394	42	65	229	76	1,865	131	25
\$798,514	\$80,441	\$914,467	\$106,258	\$60,775	\$173,438	\$18,653	\$28,884	\$156,631	\$40,642	\$562,333	\$58,118	26
29	1	13		4	19			2	6	2		27
\$8,656	\$480	\$8,895		\$170	\$5,867			\$900	\$1,620	\$875		28
19	5	10	3		1				2		6	29
\$4,228	\$900	\$1,828	\$836		\$200				\$384		\$1,808	30
1,861	166	1,681	196	197	457	40	80	238	83	1,558	132	31
1,799	166	1,669	198	180	493	39	75	236	73	1,413	123	32
1,717	160	1,657	201	139	473	39	65	241	73	1,845	124	33
1,654	136	1,600	204	118	447	46	65	233	69	1,274	114	34
1,694	136	1,604	206	122	408	46	57	253	77	1,277	108	35
1,649	158	1,578	203	122	349	42	57	229	77	1,311	102	36
1,618	185	1,580	205	137	341	41	53	216	77	1,293	178	37
1,579	185	1,618	209	78	326	42	55	218	77	1,178	176	38
1,647	162	1,653	209	90	352	40	55	220	69	1,182	129	39
1,669	172	1,672	214	115	357	40	60	219	74	1,345	124	40
1,811	191	1,691	210	247	370	38	74	225	84	1,551	120	41
1,901	187	1,755	209	278	366	45	85	223	84	1,660	134	42
29	1	12			22			2	6	1		43
29	1	11			21			2	6	1		44
29	1	12			23			2	6	1		45
29	1	12			19			2	6	2		46
29	1	16			18			2	6	2		47
29	1	17			17			2	6	2		48
29	1	15			17			2	6	2		49
29	1	15			17			2	6	2		50
29	1	17			18			2	6	2		51
29	1	11		8	14			2	6	1		52
24	1	12		28	19			2	6	1		53
29	1	12		26	24			2	6	1		54
24	6	10	3		1				2		7	55
24	5	10	3						2		7	56
20	5	9	3						2		7	57
16	5	10	3		2				2		4	58
16	5	10	3		1				2		4	59
19	5	9	3		1				2		4	60
19	5	10	3		1				2		7	61
16	5	10	3		2				2		5	62
18	5	9	4		2				2		7	63
16	5	9	4		1				2		7	64
24	5	10	4						2		7	65
24	6	10	4						2		7	66
\$639,008	\$85,768	\$526,972	\$44,736	\$25,268	\$66,749	\$5,940	\$3,988	\$80,008	\$4,623	\$408,991	\$12,779	67
\$26,900	\$5,026	\$131,365	\$10,373	\$347	\$5,120	\$1,950	\$800	\$10,423		\$21,902	\$1,711	68
\$25,192	\$4,754	\$29,401	\$1,014	\$1,513	\$5,070	\$811	\$1,088	\$4,284	\$1,575	\$10,197	\$1,378	69
\$586,916	\$27,988	\$368,921	\$33,349	\$28,258	\$56,559	\$3,179	\$2,100	\$65,301	\$3,048	\$376,892	\$9,690	70
		\$2,285		\$150								71
\$17,927,953	\$1,859,801	\$21,601,810	\$2,246,780	\$1,453,128	\$3,170,536	\$385,353	\$637,730	\$4,252,435	\$1,133,954	\$11,889,524	\$1,188,852	72
98,636	14,451	180,073	1,000	8,988	24,375	6,920	4,800	39,869	4,670	46,499	27,225	73
\$3,629,833	\$549,650	\$6,497,257	\$35,000	\$243,015	\$599,514	\$230,040	\$111,000	\$1,713,155	\$200,200	\$1,751,821	\$701,814	74
70,739	47,819	231,556		4,200	6,649	12,809	6,050	132,756	2,560	36,787	14,912	75
\$224,559	\$158,520	\$971,588		\$12,700	\$18,311	\$43,134	\$21,150	\$459,307	\$3,460	\$140,925	\$44,455	76
1,283,597	21,862	861,821	133,200	115,572	208,270	2,370	37,000	72,149	79,120	947,614	35,728	77
\$11,189,787	\$218,040	\$6,977,465	\$1,459,300	\$1,060,324	\$1,886,067	\$21,673	\$298,200	\$782,828	\$785,010	\$3,630,609	\$386,332	78
31,971	1,661	51,510	400	1,900	7,544	1,166	6,300	7,271	7,010	21,973	2,047	79
\$247,280	\$12,470	\$445,811	\$2,800	\$10,900	\$60,205	\$10,194	\$36,500	\$75,669	\$4,404	\$140,548	\$16,235	80
\$900	\$10,364	\$37,663		\$50	\$21			\$7,283		\$14,467	\$1,300	81
\$1,143,022	\$294,621	\$5,518,048	\$569,800	\$73,757	\$178,738	\$59,099	\$130,000	\$861,168	\$117,950	\$161,402	\$29,500	82
\$87,709	\$12,639	\$36,801	\$9,825	\$14,145	\$53,858	\$1,090	\$2,210	\$12,625	\$4,225	\$54,225	\$15,290	83
\$621	\$409	\$5,550			\$100	\$720		\$276		\$54		84
\$15,135	\$1,259	\$13,225	\$1,420	\$925	\$3,380	\$113	\$220	\$2,295	\$530	\$3,645	\$2,151	85
\$1,132,956	\$9,691	\$504,794	\$90,635	\$32,865	\$355,944	\$14,040	\$25,050	\$39,295	\$18,200	\$607,458	\$18,276	86
\$256,151	\$96,698	\$493,613	\$38,500	\$4,447	\$14,448	\$250	\$15,400	\$298,634		\$354,870	\$18,500	87

<sup>1</sup> Includes establishments distributed as follows: Alabama, 2; Arkansas, 2; New Hampshire, 1; North Carolina, 1; New Mexico, 2; Oklahoma, 2; South Dakota, 1; South Carolina, 1; Wyoming, 2.

TABLE 12.—COMBINED SLAUGHTERING AND MEAT

		Missouri.	Montana.	Nebraska.	New Jersey.	New York.	North Dakota.
88	Products:						
	Total value .....	\$48,040,885	\$984,640	\$71,280,806	\$14,046,217	\$57,431,298	\$250,160
	Beef—						
89	Sold fresh, pounds.....	165,944,314	7,406,667	307,786,549	18,794,370	252,508,996	1,056,000
90	Value .....	\$11,993,514	\$657,785	\$22,627,020	\$1,510,941	\$20,045,478	\$62,625
91	Canned, pounds.....	2,220,000		10,156,391		577,980	
92	Value .....	\$140,000		\$564,854		\$42,430	
93	Salted or cured, pounds.....	17,978,683		11,945,633	245,600	10,659,190	
94	Value .....	\$1,076,481		\$773,966	\$32,640	\$796,594	
95	Mutton, sold fresh, pounds.....	10,238,198	1,142,048	32,991,157	17,021,273	61,858,172	43,500
96	Value .....	\$2,605,605	\$100,895	\$2,698,184	\$1,843,451	\$5,163,001	\$3,015
97	Veal, sold fresh, pounds.....	1,728,989	669,954	1,832,589	5,387,285	25,179,367	51,000
98	Value .....	\$178,041	\$60,302	\$146,800	\$593,610	\$2,404,942	\$4,590
	Pork—						
99	Sold fresh, pounds.....	106,701,224	1,128,716	84,632,189	76,518,271	107,996,721	880,000
100	Value .....	\$6,848,627	\$80,891	\$5,618,922	\$5,068,390	\$7,340,461	\$24,400
101	Salted, pounds.....	93,266,664	50,000	201,807,678	7,776,468	25,933,082	100,000
102	Value .....	\$4,860,923	\$3,500	\$11,958,021	\$522,538	\$1,680,003	\$9,000
103	Hams, pounds.....	33,844,254	100,000	66,273,113	15,008,818	44,534,108	400,000
104	Value .....	\$2,986,008	\$10,000	\$6,321,300	\$1,463,123	\$4,354,499	\$42,240
105	Smoked bacon, sides, and shoulders, pounds.....	52,892,149	150,000	78,409,619	18,868,525	51,749,929	400,000
106	Value .....	\$3,810,491	\$13,500	\$5,894,728	\$1,557,289	\$3,830,833	\$39,654
107	Sausage, fresh or cured, pounds.....	10,525,213	53,000	21,323,639	6,282,944	16,906,163	160,000
108	Value .....	\$608,389	\$3,000	\$1,483,558	\$462,733	\$1,223,422	\$11,500
109	All other meat, sold fresh, pounds.....		59,030			615,500	
110	Value .....		\$5,903			\$61,480	
111	Refined lard, pounds.....	40,879,889	50,000	79,188,586	10,217,992	28,424,802	135,000
112	Value .....	\$2,337,329	\$3,000	\$4,889,182	\$624,929	\$1,860,723	\$8,250
113	Neutral lard, pounds.....	11,425,517		15,612,418	1,450,833	3,097,900	
114	Value .....	\$610,124		\$986,868	\$37,050	\$183,346	
115	Oleomargarine oil, gallons.....	1,434,787		2,302,914		1,660,999	
116	Value .....	\$857,419		\$1,382,115		\$954,004	
117	Other oils, gallons.....	857,529		419,004		169,215	
118	Value .....	\$158,736		\$128,998		\$75,875	
119	Fertilizers, tons.....	18,695		15,414	2,599	5,605	
120	Value .....	\$347,309		\$251,258	\$61,207	\$104,532	
121	Hides, number.....	369,652	15,675	528,256	590,824	590,824	2,100
122	Pounds.....	19,907,122	734,350	31,446,074	2,395,855	26,522,241	127,800
123	Value .....	\$2,166,640	\$65,216	\$2,927,334	\$205,278	\$2,475,993	\$11,770
124	Wool, pounds.....				209,000	2,625,676	
125	Value .....				\$66,700	\$787,269	
126	All other products, value.....				\$443,680	\$4,017,429	\$37,210
127	Custom work, value.....	\$3,268,699	\$31,148	\$2,628,449	\$2,708	\$19,969	\$1,000
	Weight of animals slaughtered:						
	Beef—						
128	Gross weight, on hoof, pounds.....	344,967,609	13,491,800	595,799,734	32,958,500	454,610,406	1,965,000
129	Net weight, dressed, pounds.....	187,003,877	7,424,061	335,239,742	18,794,370	256,806,338	1,055,000
	Sheep—						
130	Gross weight, on hoof, pounds.....	20,128,958	2,111,660	65,439,617	31,530,539	118,315,491	81,000
131	Net weight, dressed, pounds.....	10,238,772	1,146,361	31,589,511	16,023,060	62,420,947	43,500
	Hogs—						
132	Gross weight, on hoof, pounds.....	424,200,473	1,438,345	688,752,252	187,389,968	293,470,401	3,100,000
133	Net weight, dressed, pounds.....	341,621,166	1,081,281	521,808,890	105,693,132	232,765,404	2,395,000
	Calves—						
134	Gross weight, on hoof, pounds.....	2,754,732	958,750	2,320,237	6,889,130	36,359,275	63,000
135	Net weight, dressed, pounds.....	1,635,618	658,981	1,701,349	4,487,817	25,286,369	51,000
	Comparison of products:						
136	Number of establishments reporting for both years.....	28		8	33	94	3
137	Value for census year.....	\$39,340,555		\$60,590,054	\$12,972,596	\$49,417,761	\$250,160
138	Value for preceding business year.....	\$39,427,844		\$50,684,334	\$12,917,463	\$45,157,816	\$233,612
	Power:						
139	Number of establishments reporting .....	81	2	9	26	61	2
140	Total horsepower.....	6,386	55	8,411	940	4,147	26
	Owned—						
	Engines—						
141	Steam, number.....	55	2	41	29	107	2
142	Horsepower.....	5,136	55	7,192	733	3,827	26
143	Gas or gasoline, number.....					2	
144	Horsepower.....					89	
145	Water wheels, number.....						
146	Horsepower.....						
147	Electric motors, number.....	131		49		11	
148	Horsepower.....	1,245		1,219		250	
149	Other power, number.....						
150	Horsepower.....						
	Rented—						
151	Electric, horsepower.....	5				80	
152	Other kind, horsepower.....				28		
153	Furnished to other establishments, horsepower.....				129	1	
	Establishments classified by number of persons employed, not including proprietors and firm members:					25	
154	Total number of establishments.....	87	5	12	41	110	3
155	No employees.....						
156	Under 5.....	6	1	5	9	24	1
157	5 to 20.....	17	3		19	49	1
158	21 to 50.....	6	1	1	10	17	1
159	51 to 100.....	2			3	18	
160	101 to 250.....	2		1		1	
161	251 to 500.....	1				3	
162	501 to 1,000.....	1		2		3	
163	Over 1,000.....	1		3			



## SLAUGHTERING AND MEAT PACKING.

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PACKING, BY STATES AND TERRITORIES: 1900—Continued.

Ohio.	Oregon.	Pennsyl- vania.	Rhode Island.	Tennessee.	Texas.	Utah.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states and territories. <sup>1</sup>	
\$20,600,780	\$1,638,480	\$25,238,772	\$2,508,466	\$1,671,218	\$3,904,491	\$453,456	\$718,620	\$4,892,857	\$1,337,578	\$13,649,750	\$1,374,953	88
43,652,450	7,583,840	84,181,747	500,000	3,681,960	10,795,352	3,670,450	1,785,500	21,413,889	2,540,000	24,282,329	10,348,100	89
\$3,116,193	\$652,507	\$7,069,719	\$33,600	\$255,587	\$588,996	\$244,269	\$106,800	\$1,611,064	\$186,700	\$1,622,676	\$734,170	90
1,200,000		42,409								52,186		91
\$78,500		\$4,240								\$5,445		92
4,602,000	602,500	2,515,208		14,400	2,000	144,210	5,000	1,921,250		851,296	8,500	93
\$240,740	\$38,175	\$101,168		\$720	\$300	\$11,409	\$250	\$139,825		\$59,317	\$560	94
2,277,155	2,300,600	9,604,293		217,000	266,414	666,830	303,000	6,298,881	88,500	1,564,703	670,657	95
\$212,592	\$164,780	\$979,064		\$14,000	\$22,040	\$48,594	\$27,210	\$479,529	\$7,965	\$123,923	\$49,966	96
2,464,318	198,410	4,371,144	24,000	217,500	973,612	259,040	418,000	936,150	48,100	1,806,512	234,939	97
\$284,817	\$18,210	\$405,386	\$1,680	\$11,850	\$67,542	\$26,917	\$36,720	\$82,980	\$4,173	\$157,079	\$16,753	98
46,226,099	781,520	45,896,941	10,352,400	2,535,511	5,133,863	499,084	918,000	6,887,071	2,368,500	24,797,944	2,358,600	99
\$3,354,714	\$62,807	\$3,488,370	\$699,970	\$158,931	\$333,958	\$33,835	\$69,520	\$612,120	\$168,195	\$1,463,007	\$181,107	100
23,135,649	1,467,400	12,184,548	7,434,000	7,531,817	5,806,344	34,800	2,783,000	646,400	580,000	78,557,159	460,500	101
\$1,589,237	\$102,322	\$898,910	\$439,660	\$525,719	\$396,894	\$2,821	\$195,810	\$55,440	\$37,100	\$4,837,065	\$37,810	102
38,046,139	1,501,564	44,029,801	4,028,850	2,981,400	5,289,601	35,280	1,044,560	6,412,300	5,122,400	25,775,477	758,901	103
\$3,588,830	\$162,564	\$4,207,412	\$419,027	\$280,816	\$481,106	\$4,385	\$101,460	\$714,888	\$511,616	\$2,228,503	\$77,000	104
\$3,168,262	2,004,147	36,610,835	5,637,075	2,813,853	11,849,398	176,500	1,150,000	5,229,400	3,651,600	9,448,687	1,003,055	105
\$4,173,926	\$190,720	\$2,800,348	\$380,105	\$198,096	\$883,340	\$15,259	\$97,000	\$497,665	\$256,812	\$676,487	\$37,100	106
14,307,065	404,891	15,412,150	2,185,700	281,500	2,085,953	154,709	330,000	973,005	427,000	7,680,689	424,450	107
\$1,026,540	\$36,285	\$1,233,816	\$158,048	\$16,243	\$123,939	\$12,805	\$25,000	\$76,451	\$24,870	\$554,324	\$33,260	108
242,080	46,000	1,634,720	874,500	17,000	533,400	32,375		30,000	100,000	200,983	91,000	109
\$21,408	\$5,400	\$128,608	\$26,215	\$300	\$30,550	\$4,775		\$2,552	\$5,000	\$18,467	\$5,688	110
29,585,529	1,018,732	26,805,932	3,936,200	1,804,200	4,334,111	60,504	910,000	1,657,000	1,846,000	19,250,924	570,000	111
\$1,894,541	\$95,752	\$1,733,624	\$245,625	\$103,801	\$282,661	\$5,290	\$59,100	\$155,355	\$110,900	\$1,073,302	\$42,100	112
2,868,300	2,500	5,340		636,900	2,141,216	\$32,790	43,340	25,000		2,690,051	18,333	113
\$210,850	\$150	\$200		\$44,672	\$133,993		\$2,600	\$1,500		\$162,544	\$800	114
76,000		494,372								48,322		115
\$38,000		\$244,687								\$24,048		116
	3,085	16,933			976,840			4,200		3,981	22,760	117
	\$1,446	\$9,500			\$195,548			\$2,480		\$1,651	\$7,300	118
4,006	327	3,108	300	380	553		300	3,780	200	3,237	160	119
\$58,646	\$5,615	\$38,099	\$4,500	\$5,785	\$6,424		\$3,000	\$92,400	\$3,000	\$48,324	\$2,050	120
130,595	19,983	181,533	1,400	12,618	31,908	8,066	11,100	47,140	5,480	68,472	19,892	121
5,728,737	861,140	8,203,766	65,000	467,400	1,379,101	355,400	284,000	2,510,962	248,400	2,892,705	838,220	122
\$514,759	\$79,801	\$725,637	\$4,550	\$36,803	\$118,067		\$18,412	\$232,968	\$22,032	\$299,995	\$63,427	123
	200,000	33,400						5,000		558		124
	\$10,000	\$7,600						\$700		\$110		125
\$394,987	\$55,376	\$964,814	\$110,486	\$15,495	\$289,108	\$11,307	\$6,238	\$132,955	\$1,215	\$798,423	\$31,101	126
\$1,500		\$10,575						\$2,000		\$5,150	\$4,761	127
91,545,994	15,089,880	145,774,881	1,000,000	7,808,000	21,258,700	7,081,450	3,760,000	45,111,700	4,670,000	45,006,397	20,415,000	128
49,942,925	8,002,690	82,406,657	500,000	3,696,360	10,670,800	3,798,225	1,790,000	24,240,640	2,540,000	25,180,728	10,867,000	129
4,564,862	4,673,340	18,392,144		420,000	555,995	1,273,290	605,000	13,130,595	164,000	3,141,084	1,848,520	130
2,372,155	2,327,550	9,188,207		217,000	288,554	680,766	303,000	6,374,671	88,500	1,586,895	672,020	131
259,277,309	4,823,560	152,253,593	33,300,000	22,599,650	41,569,304	543,160	6,440,000	14,757,380	17,339,000	218,728,230	6,790,544	132
204,072,350	3,830,992	120,725,044	27,212,000	17,419,640	32,959,805	423,750	5,188,000	12,003,909	18,834,000	175,778,422	5,204,533	133
4,310,650	297,854	6,987,046	48,000	360,000	1,697,621	164,724	830,000	1,303,820	77,300	2,478,520	878,050	134
1,572,916	198,410	4,197,992	24,000	217,500	987,234	116,350	418,000	914,822	48,100	1,844,004	240,125	135
58	7	93	7	5	5	6	3	12	2	10		136
\$19,200,447	\$852,453	\$23,168,503	\$2,503,466	\$1,423,838	\$2,163,097	\$377,133	\$436,620	\$4,049,557	\$1,294,263	\$13,563,520	\$697,998	137
\$17,610,819	\$749,963	\$21,024,890	\$2,813,878	\$1,130,553	\$1,840,478	\$346,712	\$395,580	\$3,321,256	\$1,246,905	\$14,792,474	\$584,293	138
61	7	67	6	4	12	7	2	10	3	11	9	139
3,418	299	4,605	273	560	1,795	69	185	474	376	2,071	619	140
96	9	106	10	5	22	6	5	52	9	27	15	141
3,262	267	4,188	273	550	1,589	54	185	432	329	2,041	619	142
		8			8				2			143
		84			49				27			144
9	2	11		1	7				2			145
128	30	198		10	155				20			146
												147
												148
												149
												150
28	2	25			2	15		42		5		151
		160										152
												153
71	9	111	7	8	12	8	4	18	3	13	14	154
20		40	1		2	3		2		2	5	155
27	5	89	3	4	4	4	1	9	1	3	7	156
14	3	22	1	2	2	1	3	6		2	1	157
6		8	2	1	1			1		2		158
8	1			1	3					2		159
		1								1		160
1										1		161
												162
												163

<sup>1</sup> Includes establishments distributed as follows: Alabama, 2; Arkansas, 2; New Hampshire, 1; North Carolina, 1; New Mexico, 2; Oklahoma, 2; South Dakota, 1; South Carolina, 1; Wyoming, 2.

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CHEESE, BUTTER, AND CONDENSED MILK,  
FACTORY PRODUCT.

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# CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT.

By HENRY E. ALVORD, *Expert Special Agent.*

One of the most striking features in the history of dairy farming in the United States is the transfer of this productive industry, in large part, from the farm to the factory. The cows and milk continue to be farm property and products, but a constantly increasing share of the labor of converting milk into marketable form is done at creameries, cheese factories, and condenseries. The products of these establishments come into the realm of manufactures.

This change has taken place during the last half century, which covers the period of development of associated and cooperative dairying in America. When the milk produced on two or more farms, or the cream from such milk, is brought together at one place to be condensed, or made into butter or cheese, domestic industry ceases, the place becomes a factory, and its output a manufactured product. The United States census of 1850 noted the existence of 8 cheese factories. The number increased very little until after 1860, but in 1870 there were 1,313 reported, including both cheese factories and butter factories, generally called creameries. The census for 1880 reported 3,932, and that for 1890 gave the number as 4,712. The latter number of establishments represented those only from which reports were received. It is known, however, that a considerable number of such factories, probably 2,500, were then actually in operation from which no returns were obtained for the Eleventh Census. This fact should be borne in mind when comparisons are made between the statistics of 1890 and those of 1900. The returns for 1900 include the statistics of 9,242 butter, cheese, and condensed-milk factories. These central plants have under their control 2,050 skimming or separating stations and 747 other branches.

The statistics presented in the following tables embrace the operations of establishments engaged in the manufacture of cheese, butter, and condensed milk. Table 1 presents a general view of the growth of this form of dairying in the United States as returned at the censuses of 1880 to 1900, inclusive, with the percentages of increase for each decade.

PART III—MANF—28

TABLE 1.—COMPARATIVE SUMMARY, CHEESE, BUTTER, AND CONDENSED MILK, INCLUDING URBAN DAIRY AND FACTORY PRODUCTS, 1880 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.			PER CENT OF INCREASE.	
	1900	1890	1880	1890 to 1900	1880 to 1890
Number of establishments .....	9,355	4,712	3,932	98.5	19.8
Capital .....	\$36,508,015	\$16,624,163	\$9,604,803	119.6	73.1
Salaried officials, clerks, etc., number .....	2,828	12,320	( <sup>2</sup> )	21.9	.....
Salaries .....	\$915,442	\$968,604	( <sup>2</sup> )	35.5	.....
Wage-earners, average number .....	12,865	12,601	7,903	2.1	59.4
Total wages .....	\$6,170,670	\$4,422,101	\$1,546,495	39.5	185.9
Men, 16 years and over .....	11,694	11,775	6,419	30.7	83.4
Wages .....	\$5,862,256	\$4,267,169	( <sup>2</sup> )	37.4	.....
Women, 16 years and over .....	1,049	725	1,330	44.7	345.5
Wages .....	\$290,882	\$143,758	( <sup>2</sup> )	102.3	.....
Children, under 16 years .....	122	101	154	20.8	334.4
Wages .....	\$17,532	\$11,174	( <sup>2</sup> )	56.9	.....
Miscellaneous expenses .....	\$1,590,766	\$875,182	( <sup>4</sup> )	81.8	.....
Cost of materials used .....	\$109,151,205	\$51,864,574	\$18,363,579	112.5	179.7
Value of products .....	\$131,199,277	\$62,686,043	\$25,742,510	109.3	143.5

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this summary.

<sup>2</sup> Not reported separately.

<sup>3</sup> Decrease.

<sup>4</sup> Not reported.

Table 1 shows that the production of butter, cheese, and condensed milk greatly increased during the last twenty years, the capital having increased from \$9,604,803 in 1880 to \$36,508,015 in 1900, a gain of \$26,903,212, or 280.1 per cent. The products in the same period increased from \$25,742,510 to \$131,199,277, a gain of \$105,456,767, or 409.7 per cent, and the number of establishments increased from 3,932 to 9,355, or 137.9 per cent. (The total of 9,355 is made up of 9,242 regular butter, cheese, and condensed milk factories, and 113 urban establishments reporting the manufacture of butter or cheese or both.)

Tables 2 and 3 show separately the operations of the factories, and of the urban dairy establishments engaged in the manufacture of butter, cheese, and condensed milk.

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## MANUFACTURES.

TABLE 2.—COMPARATIVE SUMMARY, CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, 1880 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.			PER CENT OF INCREASE.	
	1900	1890	1880	1890 to 1900	1880 to 1890
Number of establishments.....	9,242	4,552	3,932	103.0	15.8
Capital.....	\$36,303,164	\$16,016,573	\$9,604,803	120.7	66.8
Salaries, officials, clerks, etc., number.....	2,818	12,150	(2)	31.1	.....
Salaries.....	\$911,712	\$867,151	(2)	5.1	.....
Wage-earners, average number.....	12,799	12,219	7,903	4.7	54.6
Total wages.....	\$6,145,561	\$4,248,854	\$1,543,495	44.6	174.7
Men, 16 years and over.....	11,637	11,429	6,419	1.8	78.0
Wages.....	\$5,838,989	\$4,102,462	(2)	42.3	.....
Women, 16 years and over.....	1,041	690	1,380	50.9	34.1
Wages.....	\$289,190	\$135,426	(2)	113.6	.....
Children, under 16 years.....	121	100	154	21.0	35.1
Wages.....	\$17,382	\$10,986	(2)	58.5	.....
Miscellaneous expenses.....	\$1,574,790	\$813,954	(4)	93.5	.....
Cost of materials used.....	\$108,841,200	\$49,819,801	\$18,363,579	118.5	171.3
Value of products.....	\$130,783,349	\$60,685,705	\$25,742,510	115.7	135.5

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 11.)

<sup>2</sup> Not reported separately.

<sup>3</sup> Decrease.

<sup>4</sup> Not reported.

TABLE 3.—COMPARATIVE SUMMARY, CHEESE AND BUTTER, URBAN DAIRY PRODUCTS, 1890 and 1900, WITH PER CENT OF DECREASE.

	DATE OF CENSUS.		PER CENT OF DECREASE.
	1900	1890	
Number of establishments.....	113	160	29.4
Capital.....	\$204,851	\$607,590	66.8
Salaries, officials, clerks, etc., number.....	10	1170	94.1
Salaries.....	\$3,730	\$101,453	96.3
Wage-earners, average number.....	66	382	82.7
Total wages.....	\$25,109	\$173,247	85.5
Men, 16 years and over.....	57	846	83.5
Wages.....	\$23,267	\$164,707	85.9
Women, 16 years and over.....	8	35	77.1
Wages.....	\$1,692	\$3,382	79.7
Children, under 16 years.....	1	1	.....
Wages.....	\$150	\$208	27.9
Miscellaneous expenses.....	\$15,976	\$61,228	73.9
Cost of materials used.....	\$310,005	\$1,545,273	79.9
Value of products.....	\$415,928	\$2,050,338	79.7

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 12.)

Table 2 shows that from 1890 to 1900 the number of establishments making factory products increased from 4,552 to 9,242, or 103 per cent, with a corresponding increase in capital, wages, and products; but for reasons already stated it would be misleading to accept as correct the actual increase in the industry based upon the returns for 1890.

Table 3 shows that in 1900 there were 113 urban establishments. These were located in 15 different states, as follows: Missouri, 36; New York, 20; Kentucky, 18; California, 8; Illinois, 7; Ohio and Pennsylvania, 5 each; Maryland and Michigan, 4 each; and Connecticut,

Indiana, Massachusetts, Tennessee, West Virginia, and Wisconsin, 1 each. In most cases these are milk-supply companies, the manufacture of butter and cheese being a secondary consideration in order to make use of the variable surplus of unsold milk and cream. In some instances, however, the establishments are evidently creameries or cheese factories which escaped the regular enumerators, and the returns from these are so incomplete as to exclude them from the factory tables. The total products reported by these urban establishments for 1900 were 827,470 pounds of butter and 662,164 pounds of cheese. While these quantities do not appear in Tables 6 and 7, showing the materials and products of factories, they are necessarily included later in giving the total production of different states.

Table 4 shows the distribution of cheese, butter, and condensed-milk factories, classified according to products, by states and territories.

During the earlier years of their operation it was not uncommon for both butter and cheese to be made in these factories at different seasons, or butter and skim cheese at the same time. A more distinct separation has resulted from a healthy sentiment (aided by state laws) to make full-cream cheese, and from a preference on the part of creameries to have no cheese making about the premises. The totals from Table 4, according to their products, are as follows:

Number making butter only.....	5,275
Number making cheese only.....	3,299
Number making condensed milk only.....	38
Number selling cream only.....	47
Number reporting two or more products.....	583

Of the last group there are 571 which make both butter and cheese, 11 which make butter and condensed milk, and 1 which makes cheese and condensed milk. Recognizing the dual character of some establishments, it is found that there are altogether 5,857 where butter is made and 3,871 where cheese is made.

Under this classification Iowa has the greatest number of creameries, 824, and Wisconsin the next, 788; then New York, 740; Pennsylvania, 619; Minnesota, 546; and Illinois, 465. No other state has as many as 200. As to cheese factories, the states having the greatest number are these: New York, 1,314; Wisconsin, 1,286; Ohio, 320; Pennsylvania, 140; and Michigan, 136. No other state has more than 90.

As reported at the census of 1890, the 3 states having the greatest number of creameries and cheese factories together were New York (1,337), Wisconsin (966), and Iowa (500). The same states were in the lead in 1900, but Wisconsin and New York changed places; these 2 states divide their establishments similarly, there being in each somewhat more than half as many creameries as cheese factories. Iowa, holding third place, is preeminent in butter-making, with more creameries than any other, and only 85 cheese factories.

TABLE 4.—CHEESE, BUTTER, AND CONDENSED-MILK FACTORIES: NUMBER OF ESTABLISHMENTS IN EACH CLASS, CLASSIFIED ACCORDING TO PRODUCTS, BY STATES AND TERRITORIES, 1900.

STATES AND TERRITORIES.	Total number of establishments.	Butter only produced.	Cheese only produced.	Condensed milk only produced.	Cream for sale the only product.	Two or more products reported.
United States ..	9,242	5,275	3,299	88	47	583
Alabama.....	4	3	1			
Arizona.....	7	1	1			5
Arkansas.....	8	7				1
California.....	178	143	17	2	1	15
Colorado.....	38	20	9		1	8
Connecticut.....	71	62	2			7
Delaware.....	22	21	1			
Georgia.....	4	4				
Idaho.....	19	11	4			4
Illinois.....	527	393	51	6	5	72
Indiana.....	112	75	26			11
Iowa.....	907	816	81		2	8
Kansas.....	171	133	30	1		7
Kentucky.....	9	7	1			1
Maine.....	61	44	16	1		
Maryland.....	84	78			6	
Massachusetts.....	50	46	1		1	2
Michigan.....	286	146	130	3	1	6
Minnesota.....	596	538	47		3	8
Mississippi.....	2	2				
Missouri.....	79	48	24	1		6
Montana.....	3	3				
Nebraska.....	98	82	5			1
Nevada.....	4	2				2
New Hampshire.....	53	47	4		1	1
New Jersey.....	53	47	1		1	4
New York.....	1,908	576	1,151	12		166
North Dakota.....	21	13	8			
Ohio.....	479	147	221	1	11	99
Oklahoma.....	5	2	3			
Oregon.....	68	39	16		1	12
Pennsylvania.....	749	603	124	3	8	16
Rhode Island.....	3	3				
South Dakota.....	138	122	14			2
Tennessee.....	12	11	1			
Texas.....	12	9	2			1
Utah.....	57	21	7			29
Vermont.....	255	180	61	2	2	10
Virginia.....	10	8	2			
Washington.....	60	38	8	1		13
West Virginia.....	4	1	2			1
Wisconsin.....	2,018	728	1,227	8		60
Wyoming.....	2	1				1

During the last twenty years creameries have increased in number much faster than cheese factories, and the system has extended into new territory, especially in the Central and Western states. Table 5 shows the growth of the factory industry, as a whole, in states and territories where the number of establishments has doubled during the last decade, thus indicating also something of its geographical extension.

TABLE 5.—NUMBER OF CHEESE, BUTTER, AND CONDENSED-MILK FACTORIES IN STATES AND TERRITORIES, 1890 AND 1900, IN WHICH THE NUMBER DOUBLED DURING THE DECADE.

STATES AND TERRITORIES.	1900	1890	STATES AND TERRITORIES.	1900	1890
Alabama.....	4		Nevada.....	4	
Arizona.....	7		New Hampshire.....	53	28
Arkansas.....	8		New Jersey.....	53	16
California.....	178	19	North Dakota.....	21	10
Colorado.....	38	6	Oklahoma.....	5	
Delaware.....	22	5	Oregon.....	68	12
Georgia.....	4		Pennsylvania.....	749	300
Idaho.....	19	4	South Dakota.....	138	16
Illinois.....	527	262	Tennessee.....	12	4
Indiana.....	112	52	Texas.....	12	3
Kentucky.....	9	1	Utah.....	57	8
Maryland.....	84	24	Vermont.....	255	123
Michigan.....	286	100	Washington.....	60	3
Minnesota.....	596	106	Wisconsin.....	2,018	966
Montana.....	3	1	Wyoming.....	2	1

Of the 28 states and 2 territories named in this table, every one appears to have at least doubled the number of its dairy manufacturing establishments during the decade, and the 4 states and 2 territories in which ten years ago none were reported now have a total of 32. The 3 Pacific states have increased from 34 to 306. The most remarkable growth is in the group of 8 Central and 4 Western states (not all named in the table), which collectively increased from 2,559 to 5,427, a majority of

the total number in the country. And a very notable advance is that from 7 to 49 in 6 Southern states.

Kansas and Nebraska do not appear in Table 5, because the number of their dairy establishments had not doubled in the stated time. This would be misleading but for special explanation, as few states have actually advanced faster in general dairy development during the decade. Kansas increased the value of its creamery products fourfold, and among the large-producing states, this growth was exceeded only by California. Kansas and Nebraska had 101 and 58 establishments, respectively, in 1890, and 171 and 93, respectively, in 1900; but the detailed returns show, in addition, 307 and 284 branch factories and skimming stations in the two states. Also that 474 centrifugal cream separators were in operation in Kansas and 325 in Nebraska. Ten years before these numbers could not have exceeded 110 and 60, respectively. These facts are accounted for by the organization in each of these states, within recent years, of very large creamery companies, which have consolidated or absorbed many creameries which previously had an independent existence. Hence the large number of branches or skimming stations, which in few other states appear so numerous. Vermont is another example of an increase in production apparently out of proportion to new establishments. The latter, as reported, only doubled in the last decade, while their products nearly quadrupled. Consolidation and large companies with branch factories explain this fact also. Vermont reported 184 skimming stations and 382 separators in use in the creameries of that state and their branches.

Table 6 is a comparative summary of capital by geographical groups, 1890 and 1900.

TABLE 6.—COMPARATIVE SUMMARY OF CAPITAL, BY GEOGRAPHICAL GROUPS, 1890 AND 1900.

STATES.	Year.	Total.	Land.	Buildings.	Machinery, tools, and implements.	Cash and sundries
United States...	1900	\$36,303,164	\$1,512,519	\$11,514,198	\$13,827,067	\$9,142,780
	1890	16,016,573	968,333	5,638,257	5,033,102	4,376,881
Per cent of total.....	1900	100.0	5.0	31.7	38.1	25.2
Per cent of total.....	1890	100.0	6.1	34.9	31.7	27.3
Per cent of increase.....		126.7	87.8	106.0	172.0	108.9
New England states	1900	2,570,625	125,021	725,683	819,768	886,153
	1890	882,094	38,882	296,641	302,808	243,703
Middle states.....	1900	10,678,755	528,809	3,607,158	3,864,052	2,678,786
	1890	5,508,329	286,139	2,030,805	1,691,672	1,499,713
Southern states.....	1900	183,897	12,105	46,229	88,716	36,847
	1890	93,057	9,400	31,495	41,525	10,637
Central states.....	1900	17,886,811	797,878	5,708,122	7,051,831	4,328,980
	1890	8,377,962	465,430	2,843,565	2,722,188	2,346,829
Western states.....	1900	3,282,183	116,996	1,062,562	1,332,227	770,398
	1890	922,980	62,912	341,751	284,869	238,468
Pacific states.....	1900	1,684,677	236,850	843,844	663,473	440,510
	1890	221,790	101,365	40,000	38,700	41,725
All other states.....	1900	16,216	860	6,600	7,600	1,156
	1890	10,361	4,205	4,000	1,400	756

<sup>1</sup> Includes establishments distributed as follows: 1900—Mississippi, 2; Wyoming, 2. 1890—Kentucky, 1; Montana, 1; Wyoming, 1.

Table 6 shows that the capital invested in cheese, butter, and condensed-milk factories increased from \$16,016,573 in 1890 to \$36,303,164 in 1900, a gain of \$20,286,591, or 126.7 per cent. Of the several items representing the capital invested in plants, land increased 87.8 per cent; buildings, 106 per cent; while the value of machinery, tools, and implements, the item which perhaps of all others best illustrates the real development of an industry, increased 172 per cent. Capital in the geographical divisions increased during the decade as follows: New England states from \$882,094 to \$2,570,625, an increase of \$1,688,531, or 191.4 per cent; Middle states from \$5,508,329 to \$10,678,755, an increase of \$5,170,426, or 93.9 per cent; Southern states from \$93,057 to \$183,897, an increase of \$90,840, or 97.6 per cent; Central states from \$8,377,962 to \$17,886,811, an increase of \$9,508,849, or 113.5 per cent; Western states from \$922,980 to \$3,282,183, an increase of \$2,359,203, or 255.6 per cent; and the Pacific states from \$221,790 to \$1,684,677, an increase of \$1,462,887, or 659.6 per cent.

Table 7 is a comparative summary of the kinds, quantity, and cost of materials used for 1890 and 1900, with per cent of increase for the decade, and Table 8 presents the quantity and value of the products for 1890 and 1900, with per cent of increase.

TABLE 7.—QUANTITY AND COST OF MATERIALS USED, 1890 AND 1900, WITH PER CENT OF INCREASE.

	1900	1890	Per cent of increase.
Aggregate cost.....	\$108,841,200	\$49,819,301	118.5
Butter:			
Total cost.....	\$73,489,855	\$28,306,954	158.8
Milk—			
Pounds.....	8,514,806,674	1,893,819,242	349.7
Cost.....	\$65,335,237	\$12,355,343	389.2
Cream—			
Pounds.....	203,673,958	483,630,741	157.0
Cost.....	\$8,154,068	\$15,041,611	145.8
Cheese:			
Milk—			
Pounds.....	2,741,898,114	2,684,550,511	2.1
Cost.....	\$21,258,712	\$16,320,590	30.3
Condensed milk:			
Total cost.....	\$7,252,124	\$2,159,856	235.8
Milk—			
Pounds.....	421,372,073	83,617,655	403.9
Cost.....	\$4,602,437	\$1,264,103	268.3
Sugar—			
Pounds.....	50,873,859	13,372,305	280.4
Cost.....	\$2,589,687	\$895,753	189.1
Fuel.....	\$1,708,634	\$526,844	224.3
Rent of power and heat.....	\$17,285	\$7,552	128.9
All other materials.....	\$5,115,090	\$2,407,505	112.6

<sup>1</sup> Decrease.

TABLE 8.—QUANTITY AND VALUE OF PRODUCTS, 1890 AND 1900, WITH PER CENT OF INCREASE.

	1900	1890	Per cent of increase.
Total value.....	\$130,783,349	\$60,635,705	115.7
Butter:			
Pounds.....	420,126,546	181,284,916	131.7
Value.....	\$84,079,754	\$36,675,411	129.3
Cheese:			
Pounds.....	281,972,324	238,035,065	18.5
Value.....	\$26,519,829	\$19,802,951	33.9
Condensed milk:			
Pounds.....	186,921,787	37,926,821	392.8
Value.....	\$11,888,792	\$3,586,927	231.4
All other products:			
Value.....	\$8,204,974	\$570,416	1,351.2

## AVERAGE PRODUCT OF FACTORIES.

There is much difference in the size of the creameries in the several states. In New York and Pennsylvania they are small, the average annual product being, respectively, 54,991 and 59,995 pounds of butter. In Illinois and Minnesota the average is 73,237 and 75,411 pounds, and in Wisconsin 78,444 pounds. In Iowa the creameries are larger, with an average annual output of 93,730 pounds. Vermont and Kansas show the influence of a few large establishments in raising the average to 118,176 and 129,975 pounds, respectively. For the entire country the average product of a creamery for a year is 71,731 pounds of butter. Similar differences exist among the cheese factories. The largest are in New York, where the average product is 96,945

pounds a year. In Wisconsin, where there are many small establishments, the average is brought down to 60,458 pounds. In Michigan and Pennsylvania the average is 76,637 and 73,339 pounds, respectively. The annual product of the average cheese factory for the whole country is a little larger than for the average creamery, namely, 72,842 pounds. It must be remembered, however, that this represents only 730,000 pounds of milk used by the average cheese factory in a year, while the average creamery requires over 1,500,000 pounds of milk for its annual product of butter. This does not indicate that twice as many cows are necessary to support a creamery as for a cheese factory, because as a rule the latter is in operation only during the pasturage season, or about half the year, while in most cases the creamery makes butter the entire year. In fact, the average creamery represents, while in operation, the milk from 450 cows, and the average cheese factory 290 cows. In the aggregate, the creameries of the United States appear to use all the milk from about two and a half million cows throughout the year, or an average of 160 pounds of butter per cow; and the cheese factories use the milk from 1,130,000 cows for half the year, representing an average product of 250 pounds of cheese per cow in six months.

#### ENTIRE DAIRY INDUSTRY OF THE UNITED STATES.

In order to present the dairy industry of the United States as a whole, there are here brought together certain statistics of agriculture and of manufactures. The totals for the census year 1900, thus combined, are as follows:

Cows kept for milk, on farms, number .....	17, 139, 674
Cows kept for milk, not on farms, number .....	973, 033
Total number of cows kept for milk .....	18, 112, 707
Milk produced, on farms, gallons .....	7, 266, 392, 674
Milk produced, not on farms, gallons <sup>1</sup> .....	462, 190, 676
Total gallons of milk produced .....	7, 728, 583, 350
Butter, made on farms, pounds .....	1, 071, 745, 127
Butter, made in factory creameries, pounds .....	420, 126, 546
Butter, made in urban dairy establishments, pounds .....	827, 470
Total pounds of butter made .....	1, 492, 699, 143
Cheese, made on farms, pounds .....	16, 372, 330
Cheese, made in factories, pounds .....	281, 972, 324
Cheese, made in urban dairy establishments, pounds .....	662, 164
Total pounds of cheese made .....	299, 006, 818
Condensed milk produced, pounds .....	186, 921, 787
Value of total butter made, at 18 cents .....	\$268, 685, 845
Value of total cheese, at 9 cents .....	26, 910, 614
Value of total condensed milk .....	11, 888, 792
Value of total cream sold .....	4, 435, 444
Value of total sundry factory products .....	1, 261, 359
Value of total milk consumed <sup>1</sup> .....	277, 645, 100
Aggregate value dairy products of United States .....	\$590, 827, 154

<sup>1</sup> Estimated.

#### TOTAL BUTTER AND CHEESE PRODUCTION.

It is interesting to note that while the extension of the creamery system has been such as to raise the product of these establishments during the decade from 15.2 to 28.2 per cent of the total butter product of the United States, with a net increase, as reported, of 131.7 per cent, the quantity of butter made on farms has, nevertheless, increased nearly 50,000,000 pounds, in spite of the fact that it decreased relatively from 81.8 per cent of the total product to 71.9 per cent.

As a rule, the states producing the greatest quantities of butter in factories are also those in which the quantities made on farms are greatest. Ohio is a notable exception. It produced 79,551,299 pounds of butter on farms, which is more than any other state, while its creamery product was comparatively small, being only 8,117,321 pounds. By combining the products of farm and factory, it is found that the 5 states named in Table 8 lead all the others in total butter produced, although in a different order. Iowa stands first, with 139,022,552 pounds; and then follow New York, 115,408,222 pounds; Pennsylvania, 111,358,246 pounds; Wisconsin, 106,552,649 pounds, and Illinois, 86,548,762 pounds. In Iowa and Wisconsin creameries produced more than the farms, but in Pennsylvania, New York, and Illinois the reverse was true. According to the Eleventh Census the 5 states showing the greatest production of butter were Iowa, New York, Pennsylvania, Illinois, and Ohio. Wisconsin held the sixth place. The aggregate production of butter for the whole country reported in the census for 1890 was 1,205,508,384 pounds. For 1900 it was 1,492,699,143 pounds.

Compared with the reports of the census of 1890, the returns for 1900 for cheese show a continued transfer of production from the farm to the factory. The total made on the farm has decreased and the total factory product has increased. The production seems to be concentrating also. The 10 states reported in 1890 as leading in total cheese production were New York, Wisconsin, Ohio, Illinois, Vermont, Iowa, Pennsylvania, Michigan, California, and Minnesota. Of these the first 3 named still stand at the head and in the same order; all show a somewhat increased product during the decade. Pennsylvania and Michigan now come next, both with product more than doubled. These 5 are the only states credited with more than 10,000,000 pounds of cheese each in 1900. California comes next, with a product of 6,926,131 pounds, being an increase; while the remaining 4, although following in the order above named, all show decreases. The cheese factories in these same states in 1900 (including establishments making butter in connection with the manufacture of cheese) numbered as follows: New York, 1,314; Wisconsin, 1,286; Ohio, 320; Pennsylvania, 140; Michigan, 136; California, 32; Illinois, 123; Vermont, 71; Iowa, 89; and Minnesota, 55. No other state had as many as 40. It is further interesting to



note that Wisconsin, Pennsylvania, and California each reports increased quantities of cheese made on the farm, while in all the other states named there has been a falling off in this item. California produced 4,249,588 pounds of farm-made cheese in 1900, and 2,676,543 pounds made in factories; this is the only instance of the kind and the only state reporting as much as 3,000,000 pounds made on farms.

Maine furnishes a good example of the changes in cheese making which have taken place in some sections during the last quarter century. Twenty-five years ago Maine had 60 cheese factories and now has 16. The condition of the latter is a fair average of those of the older cheese-making states. The factories average 243 cows, or not quite 5 cows to each patron; the average of cheese made per cow is 144.8 pounds, the range being from 89 pounds to 180 pounds. Six factories, with 1,600 cows, report an average of 167

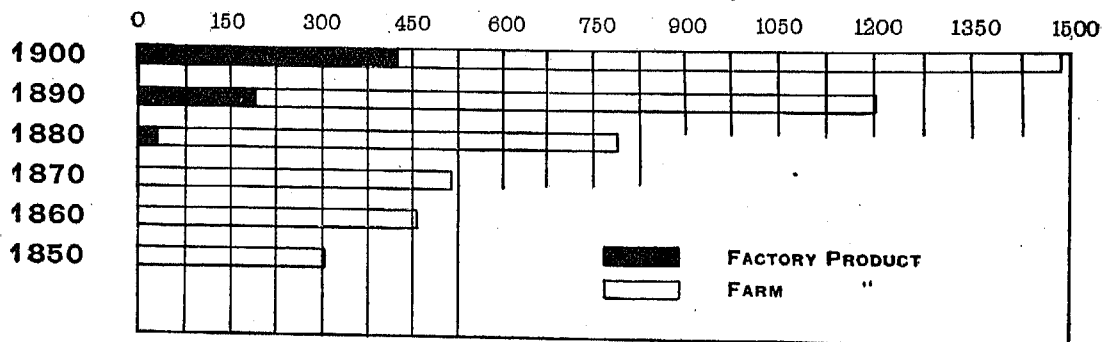
pounds per cow. Of course this difference in product depends largely upon the length of the season during which the factories are in operation.

New York and Wisconsin continue to be the great cheese-producing states of the Union. They are credited for 1900 with totals of 127,795,195 pounds and 77,748,680 pounds, respectively, and together they produced 205,543,875 pounds, or more than two-thirds of all the cheese made in the United States. The aggregate production of cheese in the United States, reported at the census of 1890, was 256,761,883 pounds; of this 18,726,818 pounds, or 7.3 per cent, was made on farms. For 1900 the aggregate was 299,006,818 pounds, of which 16,372,330 pounds, or 5.5 per cent, was made on farms.

A clear idea of the growth of the production of butter and cheese in the United States, decade by decade, together with the relative products of farm and factory, may be obtained from the diagram which follows.

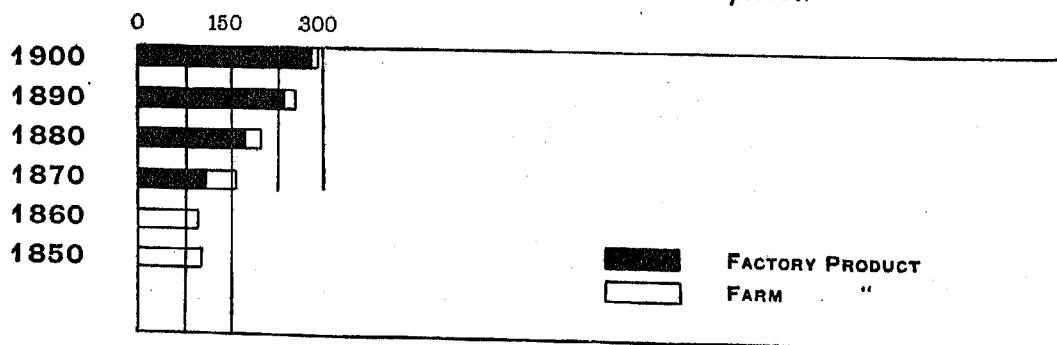
### PRODUCTION OF BUTTER

*in hundreds of millions of pounds.*



### PRODUCTION OF CHEESE

*in hundreds of millions of pounds.*



#### THE FACTORY OR ASSOCIATED SYSTEM OF DAIRYING.

The statement has been frequently made that the associated system of dairying originated in the United States, and it has been called the "American system." Those who first associated themselves and brought milk together from different farms for making butter and cheese probably never heard of such methods elsewhere, and were originators for their own time and neighborhoods. But in the Jura mountain region of France and Switzerland, cooperative cheese making has been systematically practiced for at least four centuries, and

probably much longer. In the United States, cooperation among dairymen was first applied in making cheese. This plan attracted attention and was recognized as successful in Oneida county, N. Y., about 1852. Very slowly the cheese factory became an established institution; but once fairly started in the heart of the cheese-making district of New York, the system spread rapidly. The "war period," during which the price of cheese more than doubled, lent additional impetus to the movement. A like effect was produced by the increase in cheese exports which occurred about the same time. These exports rose from 13,020,817 pounds in 1850 to

15,515,799 in 1860, and to 53,089,468 in 1865. Ten years later 101,010,853 pounds of cheese were exported. The early growth of the factory system is shown in the following tabular statement:

NUMBER OF CHEESE FACTORIES ESTABLISHED IN THE STATE OF NEW YORK ANNUALLY: 1854-1866.

YEAR.	Facto- ries.	YEAR.	Facto- ries.	YEAR.	Facto- ries.
1854 .....	4	1859 .....	4	1864 .....	210
1855 .....	2	1860 .....	17	1865 .....	52
1856 .....	8	1861 .....	18	1866 .....	46
1857 .....	3	1862 .....	25		
1858 .....	4	1863 .....	111		

Cheese factories were started in Pennsylvania and Ohio soon after they became popular in New York, and later they appeared in other states, East and West.

The system of making butter in quantity from milk or cream collected from numerous farms soon followed the introduction of cheese factories. Such establishments are properly butter factories, but the name of "creamery" has been generally adopted and is not likely to be changed. So far as known, the creamery system of butter making originated in the United States. The first creamery was built in Orange county, N. Y., in the year 1864, and received daily the milk from 375 cows. In Illinois the first cheese factory was started in 1863, and the first creamery in 1867. In Iowa these events took place in 1866 and 1871, respectively.

The early cheese factories and creameries were purely cooperative concerns, and it is in this form that the system has usually extended into new territory, whether for the production of butter or cheese. The cow owners and producers of milk join upon any agreed basis in organizing, building (or renting and refitting), equipping, and managing the factory, and disposing of its products. The farmers interested as joint owners, and all who furnish milk or cream, are called "patrons." The operations are managed by a committee or board of directors chosen by and from the patrons. If the business is large enough to warrant the expense, the immediate supervision is intrusted to a single manager, employed by the board. In a factory of this kind all expenses are deducted from the gross receipts and the remainder divided pro rata among the patrons upon the basis of the raw material contributed. Another plan is for the plant to be owned by a joint-stock company composed largely, if not wholly, of farmers, material being received from any satisfactory producer. In this case interest on the property or capital is usually included in the current expenses; the management is otherwise the same. The proprietary plan is also common, being conducted much like any other factory. The proprietor, firm, or incorporated company buys the milk or cream of producers at prices mutually agreed upon from time to time, and assumes all the expenses, risks, and profits of the business. Another way is for the

factory, however owned, to bear all expenses and charge a fixed price per pound for making and selling the product. The proceeds of sales, less this fixed price, are then divided as on the purely cooperative plan. All of these methods are varied and modified in practice. Settlements are made monthly in almost all cases, and these cash payments to the patrons have a marked effect upon the tone of business in any community where successful factories are operated.

It was impossible to separate these establishments in classes according to all the modifications of ownership and management, but 4 groups were made: Individual, 4,509; firm, 1,340; corporation, 1,628; cooperative, 1,813; total, 9,242. It thus appears that the proprietary plan or private ownership is now greatly in excess of the cooperative system. The tendency has been in this direction for a number of years. In New England, less than twenty years ago, all the creameries were cooperative; now a bare majority remain so in Massachusetts only. In Iowa, where the cooperative plan formerly prevailed, less than one-third still remain of that form. Minnesota creameries were for years nearly all cooperative; about 60 per cent continue to be so. As examples of the other extreme, only 7 factories are cooperative out of 178 in California, only 12 out of 171 in Kansas, and but 377 out of 2,018 in Wisconsin.

Although establishments of this kind are usually successful, there is mismanagement and failure, as in other lines of industry. Many have been started by "promoters," injudiciously located or overcapitalized, and closed after brief careers. Fires, consolidations, and other changes of ownership add to the causes for frequent changes. Of the 9,242 establishments enumerated in 1900, over one-half, or 5,389 were reported as established within the preceding decade, and 828 as started during the census year.

**CREAMERIES AND THEIR PRODUCTS.**—The creamery system was introduced east of the Hudson River about twenty years ago, upon what was known as the "cream-gathering" plan. This was a popular form of creamery management in some Western states and in parts of the Middle states, from 1876 or 1878 until after 1890. Under this plan the milk was separated by gravity (or "setting") on the producing farms, skimmed there and the cream only went to the creamery, being usually collected daily by agents or gatherers from the factory, hence the name "cream gathering." The dairy centrifuge, or cream separator, made its appearance in America in the year 1879 and has revolutionized dairy and creamery management. The popularity of this machine for mechanical skimming or separation of cream dates from about 1885, and since that time "the separator plan" has been adopted by practically all new factories, and has rapidly replaced the cream-gathering plan in established creameries. The separator, operated by power, has been placed at the creamery, and at its branches or separating stations; and the milk for but-

ter has been hauled daily to these places to be there creamed or separated. This radical change of management accounts for the decrease in cream as a "material" received by the creameries, and partly for the increased quantity of milk so received.

That cream-gathering creameries have not ceased to exist, however, is evident from the quantity of cream still included in the creamery receipts of "materials." There were 203,673,958 pounds reported for 1900; of this 63,308,657 pounds (7,720,568 gallons) were sold by the creameries, leaving 140,365,301 pounds, or enough to make 40,000,000 pounds of butter, being almost 10 per cent of the entire creamery output. Iowa is a good example, although not a strong cream-gathering state. It is known that 10 per cent of all creameries in Iowa are conducted on the cream gathering plan, and 7 per cent in addition combine this plan with that of receiving whole milk to be separated at the creamery.

**CREAMERY MATERIALS AND EQUIPMENT.**—The large quantity of cream still appearing as raw material at the creameries is indicative of the change in the system. The centrifugal cream separator was introduced and generally adopted in large sizes requiring steam power, and of such capacity that one machine, operated a few hours every morning, could cream the milk from several hundred cows. One powerful separator is therefore the usual equipment of a creamery, and does the work for a whole neighborhood. It has been found, however, that the labor and expense of daily hauling the entire milk product of patrons' farms to the creamery, often several miles distant, is too great a tax upon the industry. A movement toward relief to the patrons and economy in creamery management has been the establishment of neighborhood "skimming stations," equipped only with a separator and power to operate it, as branches of the central plant. From these stations the cream is transported to the parent butter-making factory. Centrifugal separators in use by creameries were first enumerated for the census of 1900, also, for the first time, the branch factories or separating or skimming stations. Separators to the number of 9,701 were returned and 2,719 branch stations of all kinds. While cheese factories sometimes have branches of the parent establishment, they do not have separating or skimming stations; all the latter class of subsidiary establishments, and also a part of the other branch factories, may therefore be taken as belonging to creameries. Hence, if to the 5,567 creameries there be added 2,050 skimming stations and 669 other branches, 8,286 establishments are found having use for separators. About 1,600 creameries, therefore, use two or more separators. The exact number which are still operated without the centrifuge, or upon the old cream-gathering plan, remains undetermined.

The new elements influencing modification in the creamery system are the invention of what is known as

the Babcock fat test for milk and the adoption of the farm separator in sizes for either hand or power. The Babcock test is a chemico-mechanical contrivance, not difficult to operate, by which the percentage of butter fat in either milk or cream may be measured with mathematical accuracy, and the value of the butter-making elements thus fixed, so far as quantity is concerned. Accordingly, the milk may be separated on the producing farm by the most convenient process, and only the cream sent to the creamery, where actual butter value is determined by test and the cream paid for accordingly. Milk delivered at creameries and cheese factories is now generally tested in this way, and paid for on the basis of its fat contents or butter-making value. The butter fat, as measured by this test, is paid for at a fixed price per pound, irrespective of the weight or bulk of serum with which it is mixed in the form of milk or cream. Farm and creamery methods are so much simplified by these improvements that many dairy farmers are procuring private separators. The state dairy commissioner of Iowa reports 904 farm separators owned by patrons of creameries in 1898, 1,762 in 1899, 3,332 in 1900, and 5,231 in 1901. This new form of the "cream-gathering plan" is rapidly extending. Cream again forms a large share of the raw material received at the factories for butter making, and the next census will probably show, instead of a decrease, a very considerable increase in this item.

**CREAMERY PRODUCTS.**—The quantity of butter made at creameries has been reported under two heads—"packed solid" and "prints or rolls." It appears that of all creamery butter, 328,956,590 pounds, or 78.3 per cent, is packed in solid form, and 91,169,956 pounds, or 21.7 per cent, in prints or rolls. The totals of these two forms in the several states indicate differences in the market requirements and the local customs as to preparing butter for shipment and sale. In the New England states, the numerous cities and large towns easy of access furnish markets where butter can be sold directly to retail dealers or consumers. For this purpose it is prepared in bricks, prints, or balls weighing a half pound or a pound. Vermont excepted, the creameries of these states make twice as much butter into prints as they pack in solid form. In Rhode Island and Connecticut, with consuming markets at their doors, 8 pounds of creamery butter is put into prints to every pound packed. In Vermont, on the contrary, with little local demand and the consequent necessity of shipping away to market, only about one-fourth of the creamery butter is made into prints. In New York the practice has always been to pack butter solidly in firkins, tubs, or boxes; and print butter is rather exceptional in the great market of New York city. In that state, therefore,  $4\frac{1}{2}$  pounds of butter are packed to 1 pound put in prints. The Philadelphia market, on the contrary, and Pennsylvania markets in general,

have always been noted for print butter; consequently, it is not surprising to find that the creameries of that state report almost as much made into prints as the quantity solid packed. From Iowa, Wisconsin, and Minnesota butter must be sent long distances to market, and naturally goes mainly in bulk; less than one-eighteenth of the creamery product of those states is made into prints. South Dakota, even more remote from market, packs 99 per cent of its creamery butter in solid form. But upon the Pacific coast local customs favor butter in rolls of 2 pounds weight; accordingly, in the states of California, Oregon, and Washington, three-fourths of all the butter made at creameries is reported as in prints or rolls.

**BUTTER PRICES.**—Creameries which are able to market butter in the form of prints or rolls generally derive a benefit therefrom. Although extra labor is required to prepare butter in this way, and packages and transportation for it cost rather more, it is a retail form, attractive, brings a higher price, and can be sold more directly to the consumer, saving the commissions of the middlemen. The average price obtained for all butter, as reported by the creameries for the census year 1900, was very nearly 20.1 cents per pound. The average for that packed solid, for the United States, was 19.4 cents, and for the prints or rolls 22.1 cents. The advantage of near-by markets is shown by these average prices for print butter: Connecticut, 24.6 cents per pound; Massachusetts, 23.5 cents; and Pennsylvania, 23.4 cents. For California creamery rolls the average was 22.3 cents. Contrasted with these is the average price for the packed or tub butter of Iowa, Minnesota, and Wisconsin creameries, 19 cents; 18 cents for Nebraska, and 17 cents for Kansas.

**RICHNESS OF MILK, OR BUTTER RATIO.**—Assuming the substantial accuracy of the returns from creameries of milk and cream received for making butter, and of the butter made from it, interesting computations can be made of the ratio of milk to butter in the country at large and the several states. The results illustrate the difference in the average richness of milk in different localities. The nearest quarter-pound obtained in each calculation is taken as quite accurate enough for purposes of comparison. It is thus found that creameries of the United States require, on the average,  $22\frac{1}{2}$  pounds of milk, or its equivalent in cream, to make 1 pound of merchantable butter. New York appears to have the richest milk of any of the leading dairy states, its creameries making a pound of butter from every 21 pounds of milk received. New Hampshire stands second, with a ratio of  $21\frac{1}{4}$  to 1, and California third,  $21\frac{1}{2}$  to 1. Minnesota, Pennsylvania and Wisconsin are alike, showing 22 pounds as the average. Then Illinois,  $22\frac{1}{2}$ ; Kansas and Vermont,  $23\frac{1}{2}$ ; and Iowa 24, pounds. These 10 states suffice for illustration. The results can not be accepted as absolutely accurate; it is probable

that the average pounds of milk stated for the country at large and for most of the states named, is somewhat below the truth. For the United States the ratio stated would indicate that all milk contributed to creameries has an average of 3.8 per cent of butter fat. For New York the average would have to be 4.1 per cent fat. It is not likely that the average richness of milk is as great as this. Nor is it probable that there is so great a difference between New Hampshire and New York, and Vermont, in this respect. The comparison between Minnesota and Wisconsin, Illinois and Iowa, is believed to be correct. Wisconsin has large holdings of "special-purpose cows," animals giving rich milk, and the same is true of Minnesota to a considerable degree, while in Iowa the "general-purpose cow" is popular, giving milk less in quantity and poorer in butter quality.

If, instead of the above, 28 pounds of milk to a pound of butter is assumed as the average for the United States, this would necessitate milk with an average of 3.7 per cent of butter-fat. No state has dared to fix a legal standard as high as this, and only one has a standard above 3.5 per cent.

**CREAM SALES.**—The returns of creamery products give evidence that the sale of cream has become a large and profitable branch of the business in some states. The creameries of New York, Illinois, and Pennsylvania made sales of cream, respectively, as follows: 1,492,926 gallons at 53 cents, 1,190,125 gallons at 56 cents, and 686,316 gallons at 58 cents. No other state sold as much as a million gallons, but in these 3 the cream sales equalled 8 per cent of the value of butter sold. A different and notable case is that of the state of Maine: its creameries sold 755,845 gallons of cream at 71 cents a gallon, or \$534,295, and this was considerably more than half as much as the total butter sales of the state. The quantity of cream reported as sold by all the creameries of the United States was 7,720,569 gallons, valued at \$4,435,444, or 57 cents per gallon; the profit of this branch of the business is seen by the fact that, at the average creamery receipts for butter, this quantity of cream, if made into butter, would have realized only \$3,438,754. Ordinarily the gallon of cream thus sold would be the equivalent of a fraction less than 2 pounds of butter.

**SKIM MILK.**—Of this by-product of the creameries the great amount of 2,253,494,156 pounds is reported as "sold, fed, or returned to patrons." The total value is given at \$2,531,460, or 11.2 cents per 100 pounds. Skim milk is believed to be actually worth twice as much as this to farmers who will use it judiciously as food for young stock. But commercially it is worth less, or about 10 cents per 100 pounds; this is the usual price allowed to patrons who sell it to the creameries for conversion into casein.

**DRIED CASEIN.**—A comparatively new branch of the dairy industry, which has acquired importance enough

to deserve mention, is the production of commercial casein from the skim milk of creameries. Milk from which all the fat has been extracted by the separator is coagulated by acid, the whey drawn off, the acid washed from the curd, and the curd or casein then dried. The desiccated product has a commercial value of 3 to 5 cents per pound at the creameries where made, depending largely upon subsequent cost of transportation, and is used for making a glue good for paper sizing, as a "binder" for cheap paint, a "filler" for dressing wood and heavy fabrics, and for various other purposes. The statistics of creamery products show 12,298,405 pounds of this material made during the census year 1900, having a value, at the creameries, of \$383,581, or only a little more than 3 cents a pound. The state of New York produced more than half the total quantity, and Pennsylvania and Illinois are the only others in which over one million pounds were made.

**CHEESE-FACTORY PRODUCTS.**—The management of the cheese factory is in some respects similar to that of the creamery. Patrons deliver the whole milk at the factory daily, while still sweet and sound, and it is made into cheese without delay. Cheese is the only commercial product of the factory, and the only waste product is whey. The latter may be returned to patrons, or fed to swine at the factory, or sold to be used as the material for making sugar-of-milk. For a score of years or more after these factories became numerous they made cheese which, although different in form, size, color, and quality, was nearly all made upon the same general plan, closely resembling that of the English cheddar. Hence a certain uniformity of type was established which became known as the "standard American," or "full-cream factory" cheese, also often called cheddar. During the last ten or twenty years, however, a much greater variety has entered into the factory cheese; this is chiefly the result of imitating certain popular foreign kinds. The Twelfth Census has, for the first time, attempted to classify the factory product. It appears that the 3,871 cheese factories of the United States reported a total production of 281,972,324 pounds of cheese during the census year, as against 238,035,065 pounds in 1890, and that of the former quantity 225,776,105 pounds was of the American standard factory kind, and 56,196,219 pounds, or 20 per cent, of the several other varieties.

In New York 89.2 per cent of the cheese product was of the standard full-cream, cheddar-made variety, and this preponderates in Ohio, Michigan, and Pennsylvania. These are the oldest cheese-making states. In Wisconsin the 77,748,680 pounds was divided as follows: American standard 62.1 per cent and the other kinds 37.9 per cent. In Illinois, however, the standard

is exceeded in quantity by the other varieties—4,324,461 pounds of the former to 4,730,658 pounds of the latter. These "other kinds" comprise various well-known foreign varieties, those made in large quantity being mainly the Swiss gruyère or emmenthaler and the limburger; there are also some resembling the latter, especially the "brick" cheese. The Neufchâtel and cream cheese, the brie and camembert, are also made in considerable quantities. The value of cheese at the factory is reported as averaging nearly 9.5 cents per pound, being a little more for the standard variety than the average for all other kinds.

**WHEY.**—The quantity of whey reported as the waste product of cheese factories is 209,067,667 pounds, but this had a value of only \$204,277. It appears that of this only 21.3 per cent was sold and the remainder "used" or returned to the patrons. As milk-sugar is the sole commercial product for which whey is utilized in the United States, it is probable that all reported sold was for that purpose. The quantity of sugar-of-milk manufactured was not ascertained. There are only three or four places in the United States where this article is made, and yet it is produced here in greater quantity than anywhere else in the world.

**THE CONDENSED-MILK INDUSTRY.**—The condensed-milk industry was started about the same time as the factory system for making butter and cheese. Some method had long been sought for preserving milk, but none was successful until the invention of Gail Borden. After ten years of experimenting, he decided that a semiliquid state was the best form of preservation, and in 1856 settled upon the process which has since popularized the product in every quarter of the globe. The present extensive industry, in Europe as well as America, with its numerous different establishments and many commercial names or brands, is based upon Mr. Borden's methods. This applies to the unsweetened article as well as that preserved with sugar, for "plain condensed milk" was first introduced and put upon the market about the year 1861. It was then mainly in open vessels and intended for early use. Between 1860 and 1870 milk in both forms had become well known, and four or five factories were in operation, each producing about 5,000 1-pound cans per day.

Prior to the Twelfth Census, the statistics of this industry were few. In 1880 the total annual product was reported as 13,033,267 pounds, valued at \$1,547,588, and ten years later the same items were 37,926,821 pounds, and \$3,586,927. For 1890 the total materials reported as used cost \$2,792,086, and included 83,617,655 pounds of milk and 13,372,365 pounds of sugar. There is little doubt that these figures were considerably below the actual facts.

It now appears that in the year 1900 there were 50 establishments for condensing milk, operating in 14 different states, with a business shown by the following aggregates:

MATERIALS.	Quantity (pounds).	Cost.
Milk bought.....	421, 378, 073	\$4, 682, 437
Sugar bought.....	50, 878, 859	2, 589, 687
Cans, labels, etc.....		1, 654, 897
Materials used, aggregate cost.....		8, 907, 021
PRODUCTS.	Quantity (pounds).	Value.
Condensed milk.....	186, 921, 787	\$11, 888, 792
Other and incidental products.....		83, 680
Products, aggregate value.....		11, 922, 472

The two states of New York and Illinois contain more than half of the condenseries reported, and produce over three-fourths of the entire output. Eleven states produced over 1,000,000 pounds of condensed milk each during the census year 1900. Arranged in the order of greatest product, they were (with number of condenseries in each from which statistics were obtained): New York, 16; Illinois, 11; Michigan, 4; California, 2; Wisconsin, 4; Pennsylvania, 3; New Hampshire, 1; Maine, 1; Vermont, 2; Washington, 1, and New Jersey, 1. The number of these establishments, with the position of the state in this list, gives a fair idea of the distribution of the industry. The total product in New York was 75,447,148 pounds, followed closely by Illinois, with 71,257,449. As the latter state has only 11 factories while the former has 16, the size of those in Illinois must be relatively large. Michigan made 18,378,869 pounds of condensed milk, but no other state in the above list made as much as 5,000,000 pounds. Missouri, Indiana, Kansas, and Ohio, with one condensery each, produced from 100,000 to 380,500 pounds.

Of the 50 establishments reported, 38 had condensed milk as their only product; 11 made butter also. The latter class is highly suggestive of a skimmed or partly skimmed article of milk being condensed. Five of these factories are in Illinois and 3 in New York. One factory in New York made both cheese and condensed milk, and 1 in Illinois both of these articles, and butter also.

There are several interesting items in the statistics of this industry. Although a considerable but unknown part of the product is the plain or unsweetened article, the sugar used for the remainder costs more than half as much as all of the milk condensed and preserved. The materials have a total value of \$8,907,021, and that of the finished product is \$11,922,472 for the whole country. But the cost of manufacture includes, besides the materials, the use and wear and tear of the factories, with their expensive machinery and general equipment,

and the wages of many skilled employees. The value of the condensed milk, at the factories, appears to average a little over 6½ cents per pound, in cans. There is a variation between 6 and 7 cents in different states, which is easily accounted for. In some the proportion of unsweetened milk is much greater and the cost and value correspondingly less. The quality of milk and of condensed product is very much better in some cases than in others, and the consequent cost and value are more. Under the general designation of "condensed milk" are included all the preparations of milk from which a large part of the water has been evaporated, including sweetened and unsweetened "condensed milk," "evaporated milk," "condensed cream," and "evaporated cream." These names are rather indiscriminately used, as cream or even enriched milk is seldom condensed or evaporated, while it is unfortunately true, on the other hand, that much poor and skimmed milk is condensed without being so marked or named.

MILK PRICES.—The census returns of the prices to patrons for milk are probably not altogether reliable, although they can not be far from the truth. It appears that for the census year 1900 the average price paid to producers delivering milk to butter factories was 77 cents per 100 pounds, while cheese factories paid an average of 78 cents and condensed-milk factories \$1.11. According to the returns, the prices for milk for making butter ranged from 64 and 65 cents per 100 pounds, in Kansas, South Dakota, Utah, and Wyoming, and 77 cents (the average) in Illinois and Iowa, to 82 cents in New York, 85 in California, 84 in Oregon, 87 in Washington, 90 in Pennsylvania, 93 in New Hampshire, 95 in Massachusetts, and \$1.08 in Connecticut. For cheese making the factories paid an average of 86 cents per 100 pounds for milk in California, 83 cents in New York, 76 in Michigan, 74 in Wisconsin, and 72 in Ohio. Condenseries are reported as paying 96 cents per 100 pounds for milk in Illinois, \$1.14 in California, \$1.15 in Pennsylvania, and \$1.35 in New York.

#### CONSUMPTION OF DAIRY PRODUCTS IN THE UNITED STATES.

Computation of the per capita consumption of dairy products annually in this country is a simple matter so far as butter and cheese are concerned. To the aggregates made on farms and in factories, including urban establishments, as already given, the imports must be added and the foreign and domestic exports deducted. The average of butter imported per annum for the five years reported nearest to the census year was 47,400 pounds, and the corresponding exports, 25,600,000; but for 1900 these quantities were 44,977 pounds (net) and 18,266,371 pounds. Consequently, there was available for consumption in the census year the net quantity of



## MANUFACTURES.

1,474,477,749 pounds of butter, which provided a small fraction over 19 pounds for each inhabitant.

Of cheese, the average imports for the same period were 12,400,000 pounds (net) and the exports 46,000,000 pounds. For the year 1900 the exact quantities reported were, respectively, 13,247,714 pounds (net) and 48,419,353 pounds. The quantity available for consumption in the year was, therefore, 263,835,179 pounds, or 3.3 pounds of cheese per capita of the population.

Condensed milk is both exported and imported, but

the records are reported by the Treasury Department in values only, not in quantities. The best course possible is to value all alike at 8 cents per pound. Upon this estimate, for the census year 1900, the imports of this commodity were equivalent to 533,196 pounds (net) and the exports 14,242,525 pounds, making the quantity available for consumption in the United States 173,212,458 pounds, or at the rate of 2.3 pounds per capita per annum. This result is rather surprising, but may be regarded as approximately correct.

TABLE 9.—QUANTITY AND VALUE OF CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, IN THE FIVE STATES OF GREATEST PRODUCTION: 1900.

	NEW YORK.		WISCONSIN.		IOWA.		ILLINOIS.		PENNSYLVANIA.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Aggregate:										
1900 .....		\$20,557,888		\$20,120,147		\$15,846,077		\$12,879,299		\$10,290,006
1890 .....		14,385,966		6,960,711		10,545,182		8,004,991		5,319,434
Total for butter factories or creameries										
Butter, total .....	40,693,846	9,422,865	61,813,502	12,535,528	77,233,264	15,417,779	34,055,312	7,921,321	87,137,161	9,133,883
Solid packed .....	33,068,820	8,087,210	55,820,290	11,921,914	74,795,240	14,911,539	30,238,587	6,891,033	13,458,287	8,303,912
Prints and rolls .....	7,625,026	6,471,515	6,987,212	10,714,115	2,438,024	14,484,216	3,816,725	6,108,308	23,678,874	2,767,190
Cream sold .....	11,492,926	1,615,695	125,121	1,207,799	191,875	477,323	1,190,125	782,725	1,686,316	5,530,722
Skimmed milk disposed of .....	294,465,866	784,623	391,065,003	123,578	477,164,867	44,776	215,740,194	669,185	200,182,662	390,168
Casein, dried .....	6,223,085	326,726	101,300	458,187	3,800	449,355	60,132	3,108,281	116,760	244,100
Other butter-factory products .....		154,272		2,390		76		23,873		78,003
Total for cheese factories		70,034		29,459		12,033				
Cheese, total .....	127,386,032	12,833,800	77,748,680	7,858,394	4,242,637	428,298	9,055,119	643,681	10,267,443	895,288
Standard factory .....	113,629,093	12,226,783	48,278,373	7,281,181	3,787,490	424,678	4,824,461	338,723	9,333,008	888,733
Other kinds .....	13,756,939	10,913,498	29,470,302	4,584,908	475,147	869,622	4,730,658	288,261	934,435	834,724
Whey, sold .....	10,176,310	1,313,285	6,410,260	2,746,273	674,318	55,056	7,828,516	4,890	94,950	54,069
Otherwise disposed of .....	25,246,487	87,314	51,438	4,706	4,864,423	198	1,754,500	1,236	6,364,328	4,762
Other cheese-factory products .....		10,996		16,069		3,422		10,571		1,618
Total for condensed-milk factories										
Condensed milk .....	75,447,143	4,801,223	3,466,516	231,225			71,257,449	4,314,297	2,862,000	255,635
Other condensery products .....		4,801,223		231,225				4,808,597		255,635

<sup>1</sup> Gallons.

Table 9 shows the location of the greatest activity in the industry, by giving statistics of production in selected states. The 5 leading states, and the only ones which reported for this industry factory products having an aggregate value of over \$10,000,000 during the last census year, are New York, Wisconsin, Iowa, Illinois, and Pennsylvania.

Of the 5 states, Wisconsin shows the greatest development, the value of total production having increased from 1890 to 1900, 189.1 per cent; while Pennsylvania increased 93.4 per cent; New York, 84.6 per cent, Illinois, 60.9 per cent; and Iowa, 50.3 per cent. In each of 13 other states the total value of products for the census year was over \$1,000,000, and in some of these the apparent increase was remarkable. The gain was

well distributed from east to west. In the old dairy regions of New England, Maine gained 330.2 per cent; Vermont, 252.9 per cent, New Hampshire, 196.8 per cent; and Massachusetts, 107.7 per cent; Connecticut increased only 24.1 per cent. In the new dairy territory of the Pacific coast, the increase in California was from \$172,579 to \$3,582,942, and in Washington from \$33,100 to \$1,190,239. In the great central basin the notable examples include new dairy states as well as old ones. Among the newer, Michigan gained 232.4 per cent in value of these products; Minnesota, 186.6 per cent; Kansas, 297.1 per cent; Nebraska, 90.5 per cent; and South Dakota, 1,089 per cent. Ohio, for years a large producer, increased from \$3,001,606 to \$3,808,996, or 26.9 per cent.



TABLE 10.—COMPARATIVE SUMMARY, CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES, ARRANGED GEOGRAPHICALLY: 1890 AND 1900.

STATES.	Year.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Total wages.			
United States.....	1900	9,242	\$36,803,164	2,818	\$911,712	12,799	\$6,145,561	\$1,574,790	\$108,841,200	\$130,788,849
	1890	4,562	16,016,573	1,160	1,867,151	12,219	4,248,884	813,954	49,819,801	60,685,705
New England states.....	1900	493	2,570,625	285	103,690	1,077	514,909	148,420	9,453,851	11,182,888
	1890	268	882,094	108	52,417	640	263,556	58,610	3,399,345	4,048,124
Maine.....	1900	61	429,510	39	16,646	162	70,283	23,065	1,407,050	1,727,684
	1890	40	110,215	16	7,311	84	29,881	4,698	334,403	401,626
New Hampshire.....	1900	53	311,308	34	11,490	119	58,323	21,229	1,226,388	1,467,503
	1890	28	71,992	15	10,044	51	24,495	7,777	420,767	494,466
Vermont.....	1900	255	1,222,892	137	37,514	522	236,377	66,992	4,885,289	5,656,265
	1890	123	367,353	47	18,569	263	77,403	14,947	1,387,445	1,602,641
Massachusetts.....	1900	50	324,382	24	12,513	99	61,636	15,240	1,024,575	1,198,159
	1890	29	118,781	7	3,632	84	48,122	10,951	484,798	576,742
Rhode Island.....	1900	8	7,800	4	1,125	9	3,427	628	28,938	39,569
	1890	4	16,983	5	3,736	14	6,810	6,910	71,894	91,322
Connecticut.....	1900	71	274,783	47	24,402	166	84,863	21,266	881,614	1,093,703
	1890	49	196,770	18	9,125	144	77,342	13,427	700,038	881,327
Middle states.....	1900	2,816	10,678,755	391	181,670	3,636	1,686,782	478,445	32,428,452	38,404,587
	1890	1,653	5,508,929	773	260,376	3,320	938,165	219,823	17,184,432	20,178,862
New York.....	1900	1,908	7,084,130	227	122,292	2,439	1,157,081	337,303	22,486,869	26,557,888
	1890	1,308	4,002,026	614	196,790	2,461	640,827	149,946	12,362,992	14,385,066
New Jersey.....	1900	53	242,284	14	4,350	74	36,852	9,219	488,105	610,006
	1890	16	88,959	3	1,330	36	13,862	3,888	120,223	146,394
Pennsylvania.....	1900	749	3,038,128	127	45,506	976	445,708	116,195	8,711,635	10,290,006
	1890	300	1,322,384	138	55,521	766	267,147	61,665	4,433,395	5,319,434
Delaware.....	1900	22	85,155	5	2,120	34	13,093	4,577	184,196	252,892
	1890	5	19,086	4	1,575	15	5,265	1,642	107,542	124,780
Maryland.....	1900	84	234,058	18	7,312	113	33,998	11,151	557,647	693,795
	1890	24	75,875	14	5,100	42	11,064	2,682	160,280	202,288
Southern states.....	1900	68	183,897	13	5,986	81	27,298	6,126	269,762	370,846
	1890	22	93,057	3	1,346	66	10,141	2,106	185,921	238,062
West Virginia.....	1900	4	5,835	.....	.....	2	480	80	10,228	12,284
	1890	3	6,905	.....	.....	4	680	146	5,242	6,540
Virginia.....	1900	10	15,145	.....	.....	8	2,158	930	39,951	51,942
	1890	12	47,575	3	1,346	41	11,687	803	168,226	202,544
Georgia.....	1900	4	13,497	1	400	4	1,860	360	10,515	14,166
	1890	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kentucky.....	1900	9	18,640	.....	.....	17	5,206	1,261	55,447	77,035
	1890	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee.....	1900	12	36,175	6	2,340	20	4,193	1,113	49,846	69,722
	1890	4	19,405	.....	.....	11	2,249	585	15,176	18,605
Alabama.....	1900	4	13,670	.....	.....	4	1,277	175	8,084	12,969
	1890	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas.....	1900	8	26,503	3	1,446	5	1,734	374	24,538	32,717
	1890	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oklahoma.....	1900	5	12,762	.....	.....	3	1,520	185	13,749	18,994
	1890	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas.....	1900	12	41,670	3	1,800	18	8,870	1,648	51,454	81,017
	1890	3	19,172	.....	.....	10	1,575	567	7,277	10,373
Central states.....	1900	5,004	17,880,811	1,616	402,832	6,220	3,077,002	684,554	54,832,800	66,415,204
	1890	2,374	8,377,962	1,150	492,309	7,294	2,717,696	441,803	27,018,318	33,453,212
Ohio.....	1900	479	1,041,093	89	19,088	389	139,804	35,214	3,054,764	3,808,996
	1890	330	819,720	116	36,281	774	228,348	41,223	2,481,372	3,001,006
Michigan.....	1900	286	1,250,897	92	25,360	503	222,245	37,001	3,274,264	3,918,995
	1890	100	481,770	71	28,656	353	111,017	30,891	946,152	1,179,139
Indiana.....	1900	112	287,360	23	6,542	118	56,751	15,724	711,059	929,858
	1890	52	129,414	32	14,327	155	56,420	5,888	299,599	402,556
Illinois.....	1900	527	4,465,752	220	136,463	1,483	696,688	177,417	10,199,429	12,879,299
	1890	262	2,180,685	196	129,796	1,344	503,218	103,850	6,582,144	8,004,991
Wisconsin.....	1900	2,018	4,917,940	414	69,676	1,780	893,499	157,123	16,623,859	20,120,147
	1890	966	1,833,988	444	140,184	1,373	405,227	75,721	5,376,630	6,960,711

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 11.)<sup>2</sup> No establishments reported.<sup>3</sup> Included in "all other states."

## MANUFACTURES.

TABLE 10.—COMPARATIVE SUMMARY, CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES  
ARRANGED GEOGRAPHICALLY: 1890 AND 1900—Continued.

STATES.	Year.	Number of es- tablish- ments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscella- neous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Total wages.			
Central states—Continued.										
Minnesota.....	1900	596	\$2,264,956	841	\$50,284	740	\$398,224	\$102,096	\$7,188,711	\$8,479,896
	1890	106	606,184	72	43,917	783	353,701	50,849	2,168,307	2,958,476
Iowa.....	1900	907	3,469,017	413	81,425	1,133	588,653	153,990	13,501,556	15,846,077
	1890	497	2,074,177	190	87,904	2,355	944,895	121,160	8,360,689	10,545,182
Missouri.....	1900	79	199,796	24	4,994	74	31,138	5,989	329,158	481,936
	1890	61	252,024	29	11,294	187	49,870	9,721	299,925	400,551
Western states.....	1900	551	3,282,183	366	133,555	1,170	526,414	166,468	7,378,983	8,981,447
	1890	198	922,980	108	56,927	813	277,855	80,148	1,826,247	2,436,190
Montana.....	1900	3	6,823			2	1,101	199	6,022	8,418
	1890									
Idaho.....	1900	19	74,693	8	3,895	14	7,076	1,411	85,140	116,056
	1890	4	25,175	3	775	13	2,025	1,314	11,461	17,805
North Dakota.....	1900	21	51,515	5	1,250	13	7,725	1,281	96,286	122,128
	1890	10	38,490	1	600	25	6,813	2,227	67,528	85,140
South Dakota.....	1900	138	460,982	95	11,786	148	77,401	18,523	1,005,237	1,199,493
	1890	16	33,993	5	1,487	55	13,122	1,552	76,157	100,884
Nebraska.....	1900	93	952,185	66	40,569	333	146,522	38,823	1,854,228	2,253,893
	1890	58	339,165	47	29,241	428	151,126	49,563	868,839	1,183,000
Nevada.....	1900	4	49,766	9	2,570	11	6,428	1,099	127,044	148,301
	1890									
Utah.....	1900	57	269,247	54	15,976	159	63,135	13,788	550,096	713,889
	1890	3	22,800	1	500	11	4,110	345	13,859	18,650
Colorado.....	1900	38	203,947	18	11,415	80	40,323	13,912	471,003	618,281
	1890	6	30,065	10	7,630	10	6,210	2,208	75,226	110,924
Kansas.....	1900	171	1,139,595	97	40,908	395	167,293	71,883	3,062,335	3,652,530
	1890	101	433,792	41	16,694	271	94,449	22,939	713,677	919,787
Arizona.....	1900	7	73,480	14	5,686	15	9,410	6,099	121,592	148,458
	1890									
Pacific states.....	1900	306	1,684,677	145	83,604	610	311,596	90,529	4,421,945	5,412,403
	1890	34	221,790	8	3,776	82	34,189	11,061	201,023	272,105
Washington.....	1900	60	304,178	35	27,159	146	80,985	16,516	932,190	1,190,239
	1890	3	9,850	1	75	3	1,050	262	24,475	33,100
Oregon.....	1900	68	223,409	20	8,981	62	27,302	11,852	508,793	639,222
	1890	12	36,290	2	971	30	9,779	3,608	45,265	66,426
California.....	1900	178	1,157,090	90	47,464	402	203,359	62,161	2,980,962	3,582,942
	1890	19	125,650	5	2,730	49	23,860	7,191	131,283	172,579
All other states <sup>a</sup> .....	1900	4	16,216	2	875	5	1,610	248	11,404	15,379
	1890	3	10,381			4	1,252	408	7,015	9,160

<sup>1</sup> Not included in "all other states."<sup>2</sup> No establishments reported.<sup>a</sup> Includes establishments distributed as follows: 1900—Mississippi, 2; Wyoming, 2. 1890—Kentucky, 1; Montana, 1; Wyoming, 1.

## CHEESE, BUTTER, AND MILK, FACTORY PRODUCT.

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TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES: 1900.

	United States.	Alabama.	Arizona.	Arkansas.	California.	Colorado.	Connecticut.	Delaware.
Number of establishments .....	9,242	4	7	8	178	38	71	22
Character of organization:								
Individual .....	4,509	2	1	2	80	14	21	13
Firm and limited partnership .....	1,340	1	2	1	29	11	11	8
Incorporated company .....	1,628	1	4	5	62	13	16	.....
Miscellaneous .....	1,765				7		23	1
Capital:								
Total .....	\$36,303,164	\$13,670	\$73,480	\$26,503	\$1,157,090	\$208,947	\$274,733	\$35,155
Land .....	\$1,818,519	\$700	\$2,975	\$885	\$196,192	\$12,092	\$13,288	\$11,675
Buildings .....	\$11,514,198	\$3,600	\$16,125	\$6,229	\$259,832	\$61,625	\$91,513	\$17,690
Machinery, tools, and implements .....	\$13,827,667	\$7,870	\$25,494	\$16,021	\$460,270	\$72,078	\$76,572	\$37,850
Cash and sundries .....	\$9,142,780	\$2,000	\$28,886	\$3,368	\$240,796	\$53,152	\$83,360	\$18,080
Proprietors and firm members .....	6,987	4	4	5	137	35	49	29
Salaried officials, clerks, etc.:								
Total number .....	2,818		14	3	90	18	47	5
Total salaries .....	\$911,712		\$5,686	\$1,446	\$47,464	\$11,415	\$24,402	\$2,120
Officers of corporations—								
Number .....	1,014				19	6	18	.....
Salaries .....	\$266,304		\$2,266		\$7,100	\$4,000	\$6,896	.....
General superintendents, managers, clerks, etc.—								
Total number .....	1,804		6	8	71	12	31	5
Total salaries .....	\$645,408		\$3,420	\$1,446	\$40,364	\$7,415	\$17,506	\$2,120
Men—								
Number .....	1,717		4	3	69	11	28	5
Salaries .....	\$617,072		\$2,700	\$1,446	\$39,634	\$6,990	\$16,456	\$2,120
Women—								
Number .....	87		2		2	1	3	.....
Salaries .....	\$28,336		\$720		\$730	\$425	\$1,050	.....
Wage-earners, including pieceworkers, and total wages:								
Greatest number employed at any one time during the year .....	16,923	5	19	8	477	122	180	38
Least number employed at any one time during the year .....	13,722	5	12	6	366	82	161	33
Average number .....	12,799	4	15	5	402	80	163	34
Wages .....	\$6,145,561	\$1,277	\$9,410	\$1,734	\$203,359	\$40,823	\$84,863	\$13,093
Men, 16 years and over—								
Average number .....	11,637	3	15	5	352	76	161	34
Wages .....	\$5,838,989	\$1,217	\$9,410	\$1,734	\$187,848	\$39,143	\$83,793	\$13,093
Women, 16 years and over—								
Average number .....	1,041	1			50	4	4	.....
Wages .....	\$289,190	\$60			\$15,511	\$1,180	\$1,020	.....
Children, under 16 years—								
Average number .....	121						1	.....
Wages .....	\$17,382						\$50	.....
Average number of wage-earners, including pieceworkers, employed during each month:								
Men, 16 years and over—								
January .....	8,696	2	12	5	319	69	157	32
February .....	8,846	2	12	5	323	69	156	32
March .....	9,733	3	16	5	357	72	155	35
April .....	12,289	4	16	7	381	73	160	35
May .....	14,485	4	16	8	405	84	166	36
June .....	14,226	3	16	7	376	73	170	36
July .....	13,795	3	16	6	364	73	166	36
August .....	13,485	3	16	6	358	77	163	36
September .....	12,536	3	15	4	347	79	164	35
October .....	11,808	3	15	3	337	100	160	33
November .....	10,416	3	15	3	338	67	159	31
December .....	9,079	3	12	4	322	66	157	31
Women, 16 years and over—								
January .....	942	1			47	5	4	.....
February .....	980	1			42	5	4	.....
March .....	1,040	1			42	4	4	.....
April .....	1,121	1			45	4	4	.....
May .....	1,267	1			56	4	4	.....
June .....	1,240	1			55	4	4	.....
July .....	1,128	1			56	5	4	.....
August .....	1,072	1			56	5	4	.....
September .....	962	1			40	5	4	.....
October .....	929	1			47	4	4	.....
November .....	874	1			54	4	4	.....
December .....	868	1			53	4	4	.....
Children, under 16 years—								
January .....	90						1	.....
February .....	101						1	.....
March .....	114						1	.....
April .....	117						1	.....
May .....	150						1	.....
June .....	151						1	.....
July .....	146						1	.....
August .....	187						1	.....
September .....	127						1	.....
October .....	118						1	.....
November .....	102						1	.....
December .....	99						1	.....
Miscellaneous expenses:								
Total .....	\$1,574,790	\$175	\$6,099	\$374	\$62,161	\$13,912	\$21,266	\$4,577
Rent of works .....	\$182,807		\$1,200		\$10,379	\$2,194	\$2,508	\$530
Taxes, not including internal revenue .....	\$173,464	\$108	\$467	\$167	\$6,098	\$1,267	\$1,376	\$367
Rent of offices, interest, insurance, and all sundry expenses not hitherto included .....	\$1,189,915	\$67	\$2,332	\$187	\$44,764	\$10,133	\$14,320	\$3,640
Contract work .....	\$28,604		\$1,500	\$20	\$920	\$318	\$3,062	.....
Materials used:								
Total cost .....	\$108,841,200	\$8,034	\$121,592	\$24,588	\$2,980,962	\$471,003	\$881,614	\$184,196
In making butter—								
Milk bought or received from patrons—								
Pounds .....	8,514,806,634	668,998	9,380,494	8,479,767	281,686,502	29,569,674	14,020,591	21,676,468
Cost .....	\$65,835,287	\$6,158	\$77,534	\$22,442	\$2,392,620	\$230,222	\$151,159	\$170,341
Gathered cream—								
Pounds .....	203,673,958				1,151,300	2,033,425	15,856,688	102,400
Cost .....	\$8,154,068				\$65,985	\$103,372	\$684,971	\$5,120
Tubs, boxes, color, salt, etc. ....	\$1,984,894	\$307	\$1,274	\$710	\$35,384	\$6,200	\$12,200	\$2,498

## MANUFACTURES.

TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	United States.	Alabama.	Arizona.	Arkansas.	California.	Colorado.	Connecticut.	Delaware.
Materials used—Continued.								
Total cost—Continued.								
In making cheese—								
Milk bought or received from patrons—								
Pounds.....	2,741,898,114	100,000	4,788,520	105,000	24,731,215	13,337,856	2,111,089	150,000
Cost.....	\$21,258,712	\$700	\$37,176	\$735	\$212,192	\$111,297	\$18,243	\$1,550
Boxes, salt, etc.....	\$708,225	\$20	\$604	\$30	\$8,528	\$4,341	\$455	\$30
In making condensed milk—								
Milk—								
Pounds.....	421,378,073				9,869,335			
Cost.....	\$4,662,437				\$112,339			
Sugar—								
Pounds.....	50,873,859				136,100			
Cost.....	\$2,589,687				\$6,900			
Cans, labels, etc.....	\$1,654,897				\$69,031			
Fuel.....	\$1,708,684	\$616	\$4,453	\$560	\$65,187	\$6,800	\$8,442	\$3,552
Rent of power and heat.....	\$17,285				\$423	\$218	\$300	
Mill supplies.....	\$249,556	\$233	\$539	\$56	\$5,267	\$1,526	\$2,191	\$905
Freight.....	\$522,518		\$12	\$15	\$7,106	\$7,027	\$3,653	\$100
Products:								
Total value.....	\$130,783,349	\$12,969	\$148,458	\$32,717	\$3,582,942	\$618,281	\$1,098,703	\$252,892
Creameries—								
Packed solid—								
Pounds.....	328,956,590	15,757	72,974	134,184	2,983,262	536,963	456,626	533,694
Value.....	\$63,961,893	\$3,500	\$15,092	\$24,181	\$584,478	\$112,336	\$135,521	\$116,452
Prints or rolls—								
Pounds.....	91,169,956	1,600	351,109	34,391	10,163,875	1,029,676	3,431,779	436,195
Value.....	\$20,117,861	\$376	\$73,812	\$6,782	\$2,270,154	\$288,269	\$345,879	\$110,932
Cream sold—								
Gallons.....	7,720,569	8,266	15,063		129,575	137,114	136,995	5,708
Value.....	\$4,485,444	\$5,782	\$9,578		\$120,283	\$78,099	\$91,973	\$3,008
Skimmed milk sold, fed, or returned to patrons—								
Pounds.....	2,253,494,156	280,820	4,000,000	309,000	61,422,468	3,874,330	4,796,552	908,500
Value.....	\$2,531,460	\$1,241	\$1,200	\$802	\$47,271	\$6,888	\$14,191	\$2,505
Casein dried, from skimmed milk—								
Pounds.....	12,298,405		16,800					
Value.....	\$383,581		\$1,000		8,500		800	133,500
All other creamery products.....	\$639,821	\$900	\$10,453		\$239		\$39	\$4,221
Cheese factories—								
Standard factory (cheddar)—								
Pounds.....	225,776,105	10,000	369,652	12,600	2,421,705	817,409	167,000	15,000
Value.....	\$21,363,477	\$1,200	\$37,005	\$1,008	\$244,510	\$91,715	\$15,780	\$2,400
Other kinds—								
Pounds.....	56,196,219		4,100		251,838	647,843	154,263	
Value.....	\$5,156,352		\$250		\$34,615	\$70,246	\$14,209	
Whey—								
Sold—								
Pounds.....	44,590,752			90,000	24,832			
Value.....	\$28,923			\$44	\$8			
Otherwise used—								
Pounds.....	164,476,915				558,346	4,438,000		
Value.....	\$175,354				\$503	\$200		
All other cheese factory products.....	\$66,711		\$68		\$422	\$4,850		\$690
Condensed milk factories—								
Condensed milk—								
Pounds.....	186,921,787				4,314,666			
Value.....	\$11,888,792				\$261,696			
All other condensed milk factory products.....	\$38,680				\$1,430			
Comparison of products:								
Number of establishments reporting for both years.....	3,281	1	8	3	66	16	45	8
Value for census year.....	\$63,595,664	\$3,394	\$83,916	\$13,457	\$1,643,873	\$348,508	\$650,508	\$111,710
Value for preceding business year.....	\$56,795,604	\$3,394	\$81,465	\$8,053	\$1,291,112	\$317,775	\$603,302	\$67,040
Branches:								
Cream separators.....	9,701	2	6		243	96	31	15
Factories.....	689			6	25	20	4	1
Separating stations.....	1,089		1		51	13	2	1
Skimming stations.....	961				44		2	1
Ice-cream plants.....	78		2				1	
Power:								
Number of establishments reporting.....	6,924	4	4	7	160	33	69	20
Total horsepower.....	88,373	48	101	72	1,932	408	531	254
Owned—								
Engines—								
Steam—								
Number.....	7,868	3	7	7	177	41	70	23
Horsepower.....	84,666	42	101	72	1,707	380	501	246
Gas or gasoline—								
Number.....	187				8			1
Horsepower.....	825				39			8
Water wheels—								
Number.....	110	1			6			
Horsepower.....	1,594	1			31			
Electric motors—								
Number.....	41				1			
Horsepower.....	311				10			
Other power—								
Number.....	30	1			3			
Horsepower.....	344	5			125			
Rented—								
Electric horsepower.....	316				19	23		
Other kinds of horsepower.....	317				1			
Furnished to other establishments, horsepower.....	84						30	
Establishments classified by number of persons employed, not including proprietors and firm members:								
Total number of establishments.....	9,242	4	7	8	178	38	71	22
No employees.....	1,320		1	3	24	8	7	8
Under 5.....	7,462	4	5	5	125	29	44	12
5 to 20.....	401				26	5	20	2
21 to 50.....	35		1		2	1		
51 to 100.....	11							
101 to 250.....	10							
251 to 500.....	1							
501 to 1,000.....	2							

## CHEESE, BUTTER, AND MILK, FACTORY PRODUCT.

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TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	Georgia.	Idaho.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.
Number of establishments.....	4	19	527	112	907	171	9	61
Character of organization:								
Individual.....	1	5	224	55	328	60	6	22
Firm and limited partnership.....	1	4	96	18	133	23	3	4
Incorporated company.....	2	10	127	17	187	76	.....	25
Miscellaneous.....	.....	.....	80	22	259	12	.....	5
Capital:								
Total.....	\$13,497	\$74,698	\$4,465,752	\$287,360	\$3,459,017	\$1,139,595	\$18,640	\$429,510
Land.....	\$450	\$3,350	\$224,494	\$18,310	\$145,198	\$41,280	\$165	\$16,951
Buildings.....	\$3,100	\$28,415	\$1,394,116	\$88,585	\$1,095,429	\$366,271	\$1,450	\$117,290
Machinery, tools, and implements.....	\$8,910	\$33,246	\$1,559,197	\$181,058	\$1,499,183	\$492,663	\$5,065	\$81,654
Cash and sundries.....	\$1,037	\$9,682	\$1,287,945	\$49,407	\$719,207	\$289,381	\$11,360	\$213,645
Proprietors and firm members.....	3	11	394	92	565	106	14	39
Salaried officials, clerks, etc.:								
Total number.....	1	8	220	23	418	97	.....	39
Total salaries.....	\$400	\$3,395	\$136,463	\$6,542	\$81,425	\$40,908	.....	\$16,646
Officers of corporations—								
Number.....	1	3	58	6	277	45	.....	20
Salaries.....	\$400	\$1,300	\$33,186	\$1,075	\$37,606	\$15,933	.....	\$6,385
General superintendents, managers, clerks, etc.—								
Total number.....	.....	5	162	17	136	52	.....	19
Total salaries.....	.....	\$2,095	\$103,277	\$5,467	\$43,819	\$24,975	.....	\$10,261
Men—								
Number.....	.....	5	154	17	131	46	.....	12
Salaries.....	.....	\$2,095	\$99,967	\$5,467	\$42,859	\$22,975	.....	\$7,417
Women—								
Number.....	.....	.....	8	.....	5	6	.....	7
Salaries.....	.....	.....	\$3,310	.....	\$960	\$2,000	.....	\$2,844
Wage-earners, including pieceworkers, and total wages:								
Greatest number employed at any one time during the year.....	4	22	1,751	142	1,369	408	18	192
Least number employed at any one time during the year.....	4	16	1,400	132	1,195	385	17	154
Average number.....	4	14	1,483	118	1,133	395	17	162
Wages.....	\$1,860	\$7,076	\$996,688	\$56,751	\$588,653	\$167,293	\$5,206	\$70,233
Men, 16 years and over—								
Average number.....	4	14	1,136	105	1,099	386	14	141
Wages.....	\$1,860	\$7,076	\$599,622	\$54,516	\$532,144	\$164,908	\$4,916	\$64,707
Women, 16 years and over—								
Average number.....	.....	.....	318	5	22	7	2	21
Wages.....	.....	.....	\$92,035	\$1,236	\$4,951	\$2,035	\$160	\$5,576
Children, under 16 years—								
Average number.....	.....	.....	29	8	12	2	1	.....
Wages.....	.....	.....	\$5,031	\$969	\$1,558	\$350	\$130	.....
Average number of wage-earners, including pieceworkers, employed during each month:								
Men, 16 years and over—								
January.....	4	16	1,054	95	952	348	14	121
February.....	4	16	1,071	95	978	340	14	122
March.....	4	13	1,107	95	1,027	357	14	126
April.....	4	13	1,181	103	1,151	399	15	143
May.....	4	14	1,270	121	1,256	438	15	157
June.....	4	16	1,232	122	1,233	423	14	163
July.....	4	16	1,211	120	1,190	419	14	165
August.....	4	13	1,187	112	1,163	419	14	161
September.....	4	13	1,132	105	1,133	403	15	150
October.....	4	13	1,093	98	1,064	368	15	137
November.....	4	13	1,048	97	1,026	357	15	126
December.....	4	15	1,046	97	1,013	351	14	122
Women, 16 years and over—								
January.....	.....	.....	323	3	14	8	2	20
February.....	.....	.....	329	3	18	8	2	20
March.....	.....	.....	340	4	22	8	2	19
April.....	.....	.....	345	4	27	8	2	20
May.....	.....	.....	333	7	33	8	2	20
June.....	.....	.....	341	7	31	7	2	22
July.....	.....	.....	330	7	29	6	2	22
August.....	.....	.....	326	6	22	7	2	22
September.....	.....	.....	310	6	19	7	2	20
October.....	.....	.....	281	6	17	6	2	22
November.....	.....	.....	266	4	17	6	2	22
December.....	.....	.....	234	3	15	6	1	21
Children, under 16 years—								
January.....	.....	.....	18	7	8	1	1	.....
February.....	.....	.....	21	8	11	1	1	.....
March.....	.....	.....	24	8	14	1	1	.....
April.....	.....	.....	24	8	15	2	1	.....
May.....	.....	.....	34	8	19	3	1	.....
June.....	.....	.....	35	8	19	4	1	.....
July.....	.....	.....	31	8	16	4	1	.....
August.....	.....	.....	33	8	13	3	1	.....
September.....	.....	.....	31	8	7	2	1	.....
October.....	.....	.....	35	8	8	1	1	.....
November.....	.....	.....	29	8	7	1	1	.....
December.....	.....	.....	33	8	7	1	1	.....
Miscellaneous expenses:								
Total.....	\$360	\$1,411	\$177,417	\$15,724	\$153,990	\$71,333	\$1,261	\$23,065
Rent of works.....	.....	\$48	\$10,936	\$1,085	\$12,080	\$5,569	\$826	\$1,643
Taxes, not including internal revenue.....	\$72	\$599	\$21,981	\$1,608	\$17,039	\$7,456	\$59	\$2,291
Rent of offices, interest, insurance, and all sundry expenses not hitherto included.....	\$288	\$764	\$142,145	\$12,667	\$121,816	\$57,946	\$376	\$15,273
Contract work.....	.....	.....	\$2,305	\$304	\$3,046	\$412	.....	\$3,848

TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	Georgia.	Idaho.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.
<b>Materials used:</b>								
Total cost.....	\$10,515	\$85,140	\$10,199,429	\$711,059	\$13,501,556	\$3,062,385	\$55,447	\$1,407,056
In making butter—								
Milk bought or received from patrons—								
Pounds.....	1,079,040	9,481,718	791,890,812	77,424,878	1,542,368,228	393,132,184	593,485	63,459,701
Cost.....	\$9,792	\$62,806	\$6,118,253	\$527,849	\$10,900,707	\$2,501,074	\$5,532	\$578,989
Gathered cream—								
Pounds.....		53,988	4,171,210	1,219,764	45,621,241	5,521,231	919,372	13,761,653
Cost.....		\$3,131	\$156,172	\$46,784	\$1,559,184	\$181,679	\$45,968	\$620,016
Tubs, boxes, color, salt, etc.....	\$135	\$1,874	\$154,937	\$17,189	\$378,105	\$123,401	\$1,163	\$24,397
In making cheese—								
Milk bought or received from patrons—								
Pounds.....		1,890,938	76,167,122	12,742,929	43,676,392	22,145,872	272,000	5,179,813
Cost.....		\$12,694	\$393,328	\$92,946	\$312,657	\$155,899	\$2,318	\$41,989
Boxes, salt, etc.....		\$519	\$22,436	\$2,829	\$18,205	\$7,149	\$49	\$1,566
In making condensed milk—								
Milk—								
Pounds.....			170,785,967	712,000		361,600		5,966,006
Cost.....			\$1,045,963	\$5,350		\$2,892		\$63,965
Sugar—								
Pounds.....			14,486,574					785,370
Cost.....			\$757,394					\$89,208
Cans, labels, etc.....			\$572,356	\$400		\$25		\$24,180
Fuel.....	\$551	\$3,300	\$205,416	\$13,744	\$244,332	\$57,768	\$370	\$12,112
Rent of power and heat.....			\$815	\$97	\$1,230	\$770		\$160
Mill supplies.....	\$32	\$176	\$60,493	\$1,803	\$35,298	\$5,858	\$42	\$2,680
Freight.....	\$5	\$640	\$112,966	\$2,068	\$56,788	\$25,920	\$5	\$7,723
<b>Products:</b>								
Total value.....	\$14,166	\$116,056	\$12,879,299	\$929,858	\$15,846,077	\$3,652,530	\$77,085	\$1,727,684
Creameries—								
Packed solid—								
Pounds.....	7,560	140,925	30,238,587	3,104,595	74,795,240	15,299,548	15,500	1,434,029
Value.....	\$1,598	\$30,430	\$6,108,808	\$607,730	\$14,434,216	\$2,650,731	\$2,485	\$507,720
Prints or rolls—								
Pounds.....	41,400	291,645	3,816,725	448,888	2,438,024	2,896,935	169,163	3,027,370
Value.....	\$9,552	\$59,699	\$782,725	\$92,220	\$477,323	\$574,587	\$43,014	\$637,275
Cream sold—								
Gallons.....	2,496	3,206	1,190,125	108,763	91,875	112,212	17,663	755,845
Value.....	\$1,978	\$1,865	\$669,185	\$58,605	\$44,776	\$53,395	\$9,000	\$534,295
Skimmed milk sold, fed, or returned to patrons—								
Pounds.....	384,000	2,261,966	215,740,194	15,578,806	477,164,867	106,627,436	1,147,600	8,536,314
Value.....	\$960	\$3,493	\$277,098	\$21,526	\$449,355	\$81,880	\$7,304	\$21,672
Casein dried, from skimmed milk—								
Pounds.....			1,784,559	5,760	3,800	20,000		12,560
Value.....			\$60,132	\$288	\$76	\$460		\$960
All other creamery products.....	\$78		\$23,878	\$12,409	\$12,033	\$33,594	\$11,372	\$3,482
Cheese factories—								
Standard factory (cheddar)—								
Pounds.....		150,932	4,324,461	988,985	3,767,490	2,192,516	8,000	553,946
Value.....		\$13,562	\$338,723	\$100,220	\$369,622	\$219,160	\$800	\$56,609
Other kinds—								
Pounds.....		43,448	4,730,658	271,183	475,147	230,194	20,000	
Value.....		\$4,032	\$288,261	\$25,605	\$55,056	\$23,038	\$2,000	
Whey—								
Sold—								
Pounds.....			7,828,616	263,000	674,313	535,000		120,000
Value.....			\$4,890	\$444	\$198	\$406		\$30
Otherwise used—								
Pounds.....		412,595	1,754,500	1,709,880	4,364,428	603,638		45,202
Value.....		\$1,375	\$1,236	\$715	\$3,422	\$656		\$75
All other cheese, factory products.....		\$1,600	\$10,571	\$856				
Condensed milk factories—								
Condensed milk—								
Pounds.....			71,257,449	204,000		144,640		2,873,756
Value.....			\$4,303,597	\$9,240		\$14,623		\$166,165
All other condensed milk, factory products.....			\$10,700					
<b>Comparison of products:</b>								
Number of establishments reporting for both years.....	1	5	171	41	313	62	6	33
Value for census year.....	\$8,640	\$17,167	\$6,782,241	\$345,054	\$6,424,916	\$3,639,087	\$74,817	\$1,251,743
Value for preceding business year.....	\$7,640	\$15,257	\$6,504,720	\$321,492	\$5,867,222	\$1,429,546	\$67,215	\$1,227,803
<b>Branches:</b>								
Cream separators.....	3	18	793	113	1,484	474	8	44
Factories.....		1	41	5	54	49		3
Separating stations.....		2	28	18	60	132		1
Skimming stations.....		1	29	6	116	126		4
Ice-cream plants.....			1			12	2	1
<b>Power:</b>								
Number of establishments reporting.....	3	16	492	95	843	152	4	47
Total horsepower.....	30	140	7,095	1,000	11,853	3,302	37	502
Owned—								
Engines—								
Steam—								
Number.....	3	16	543	105	913	320	4	49
Horsepower.....	30	140	6,798	977	11,716	3,200	37	485
Gas or gasoline—								
Number.....			11	3	18	8		
Horsepower.....			78	10	89	47		
Water wheels—								
Number.....						1		2
Horsepower.....						20		11
Electric motors—								
Number.....			30			2		1
Horsepower.....			209			14		6
Other power—								
Number.....				1		1		
Horsepower.....				5		20		
Rented—								
Electric, horsepower.....					48	1		
Other kinds, horsepower.....			10	8				
Furnished to other establishments, horsepower.....				15	2			

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	Georgia.	Idaho.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.
Establishments classified by number of persons employed, not including proprietors and firm members:								
Total number of establishments.....	4	19	527	112	907	171	9	61
No employees.....	2	5	66	21	94	8	1	8
Under 5.....	2	13	426	87	773	144	6	39
5 to 20.....		1	26	4	34	14	2	12
21 to 50.....			3			4		2
51 to 100.....			1		1	1		
101 to 250.....			4					
251 to 500.....			1					
501 to 1,000.....								

	Maryland.	Massachusetts.	Michigan.	Minnesota.	Missouri.	Montana.	Nebraska.	Nevada.	New Hampshire.
Number of establishments.....	84	50	286	596	79	3	93	4	53
Character of organization:									
Individual.....	53	15	121	116	29	1	32		17
Firm and limited partnership.....	19		37	50	17		8	1	4
Incorporated company.....	11	4	57	92	22	2	33	3	27
Miscellaneous.....	1	31	71	338	11		20		5
Capital:									
Total.....	\$284,058	\$324,382	\$1,250,897	\$2,264,956	\$199,796	\$6,823	\$952,185	\$49,766	\$311,308
Land.....	\$12,541	\$19,945	\$52,656	\$70,101	\$11,166	\$25	\$29,891	\$2,745	\$15,725
Buildings.....	\$47,770	\$85,483	\$340,299	\$630,629	\$67,255	\$800	\$318,572	\$25,000	\$128,414
Machinery, tools, and implements.....	\$118,440	\$76,854	\$446,224	\$1,089,986	\$90,209	\$3,433	\$312,816	\$9,300	\$86,816
Cash and sundries.....	\$55,307	\$142,100	\$411,718	\$474,240	\$31,166	\$2,565	\$290,906	\$12,721	\$80,353
Proprietors and firm members.....	91	18	203	210	66	1	47		27
Salaried officials, clerks, etc.:									
Total number.....	18	24	92	341	24		66	9	34
Total salaries.....	\$7,312	\$12,513	\$25,360	\$59,284	\$4,994		\$40,569	\$2,570	\$11,490
Officers of corporations—									
Number.....	8	4	25	28	6		11	6	19
Salaries.....	\$210	\$1,925	\$5,599	\$7,852	\$296		\$7,750	\$620	\$2,930
General superintendents, managers, clerks, etc.—									
Total number.....	15	20	67	313	18		55	3	15
Total salaries.....	\$7,102	\$10,588	\$19,761	\$51,432	\$4,698		\$32,819	\$1,950	\$8,560
Men—									
Number.....	15	19	63	307	18		48	3	14
Salaries.....	\$7,102	\$10,438	\$18,607	\$49,902	\$4,698		\$27,919	\$1,950	\$8,155
Women—									
Number.....		1	4	6			7		1
Salaries.....		\$150	\$1,154	\$1,530			\$4,900		\$405
Wage-earners, including pieceworkers, and total wages:									
Greatest number employed at any one time during the year.....	126	112	669	909	91	4	396	12	138
Least number employed at any one time during the year.....	117	100	547	802	79	3	306	9	115
Average number.....	113	99	503	740	74	2	333	11	119
Wages.....	\$33,998	\$61,636	\$222,245	\$398,224	\$31,138	\$1,101	\$146,522	\$6,428	\$58,823
Men, 16 years and over—									
Average number.....	109	99	392	724	66	2	324	11	99
Wages.....	\$33,205	\$61,636	\$186,596	\$395,729	\$29,775	\$1,101	\$144,676	\$6,428	\$52,562
Women, 16 years and over—									
Average number.....	2		109	7	5		8		19
Wages.....	\$602		\$35,328	\$1,560	\$963		\$1,726		\$5,611
Children under 16 years—									
Average number.....	2		2	9	3		1		1
Wages.....	\$191		\$321	\$1,485	\$400		\$120		\$150
Average number of wage-earners, including pieceworkers, employed during each month:</									



## MANUFACTURES.

TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT BY STATES AND TERRITORIES:  
1900—Continued.

	Maryland.	Massachu- setts.	Michigan.	Minnesota.	Missouri.	Montana.	Nebraska.	Nevada.	New Hampshire.
Miscellaneous expenses:									
Total .....	\$11,151	\$15,240	\$37,001	\$102,096	\$5,989	\$199	\$38,823	\$1,099	\$21,229
Rent of works .....	\$4,158	\$3,974	\$3,424	\$12,794	\$1,843	\$147	\$4,976		\$1,112
Taxes, not including internal revenue .....	\$1,072	\$1,916	\$6,367	\$10,214	\$912	\$30	\$4,212	\$279	\$1,980
Rent of offices, interest, insurance, and all sundry expenses not hitherto included .....	\$5,891	\$8,320	\$27,085	\$75,326	\$3,284	\$22	\$29,533	\$820	\$18,127
Contract work .....	\$80	\$880	\$125	\$3,762			\$102		\$10
Materials used:									
Total cost .....	\$557,647	\$1,024,575	\$3,274,264	\$7,188,711	\$329,158	\$6,022	\$1,854,228	\$127,044	\$1,226,388
In making butter—									
Milk bought or received from patrons—									
Pounds .....	61,470,380	24,036,955	168,778,899	827,582,793	29,425,255	804,395	176,821,039	13,960,646	99,580,500
Cost .....	\$497,842	\$218,027	\$1,198,949	\$5,941,138	\$198,833	\$5,457	\$1,303,697	\$107,636	\$923,600
Gathered cream—									
Pounds .....	862,069	15,709,294	2,816,106	14,816,175	569,005		9,941,850		2,149,851
Cost .....	\$37,800	\$746,985	\$103,464	\$622,292	\$25,040		\$376,326		\$97,803
Tubs, boxes, color, salt, etc .....	\$5,788	\$20,017	\$39,110	\$232,131	\$7,504	\$221	\$53,345	\$3,421	\$26,805
In making cheese—									
Milk bought or received from patrons—									
Pounds .....		2,761,420	49,985,822	25,145,631	10,879,869		3,140,000	688,425	1,200,633
Cost .....		\$19,433	\$760,550	\$76,359	\$73,512		\$21,242	\$4,901	\$9,982
Boxes, salt, etc .....		\$630	\$26,081	\$6,785	\$2,728		\$890	\$78	\$247
In making condensed milk—									
Milk .....									
Pounds .....		324,000	45,107,250		737,140				6,354,829
Cost .....		\$4,320	\$447,268		\$5,200				\$63,548
Sugar—									
Pounds .....			7,599,220		8,000				975,651
Cost .....			\$379,961		\$440				\$48,732
Cans, labels, etc .....		\$500	\$245,816		\$5,000				\$29,121
Fuel .....	\$9,279	\$9,051	\$48,121	\$146,806	\$8,439	\$296	\$45,439	\$3,707	\$12,925
Rent of power and heat .....	\$270	\$48	\$600	\$1,480	\$108	\$13	\$2,000		\$4,745
Mill supplies .....	\$1,382	\$1,777	\$4,126	\$15,969	\$1,000	\$18	\$8,106	\$480	\$3,007
Freight .....	\$5,286	\$3,787	\$19,618	\$45,748	\$1,353	\$17	\$48,183	\$6,821	\$5,813
Products:									
Total value .....	\$693,795	\$1,198,159	\$3,918,995	\$8,479,896	\$431,936	\$8,418	\$2,253,893	\$148,301	\$1,467,503
Creameries—									
Packed solid—									
Pounds .....	1,121,807	1,888,570	7,553,059	39,145,380	1,270,604	2,000	10,077,362		2,255,816
Value .....	\$256,076	\$448,304	\$1,472,672	\$7,320,401	\$240,222	\$400	\$1,864,748		\$484,884
Prints or rolls—									
Pounds .....	1,419,909	2,703,349	267,653	2,029,089	170,012	32,238	1,648,818	623,402	2,778,454
Value .....	\$804,087	\$637,199	\$53,199	\$414,944	\$34,898	\$7,558	\$310,852	\$132,916	\$615,212
Cream sold—									
Gallons .....	107,857	86,849	131,161	370,899	12,829	502	62,158	857	102,695
Value .....	\$93,201	\$58,461	\$60,032	\$195,102	\$7,601	\$376	\$30,133	\$535	\$83,663
Skimmed milk sold, fed, or returned to patrons—									
Pounds .....	10,561,974	3,221,968	52,942,908	129,883,119	10,271,866		5,503,184	10,401,275	19,353,469
Value .....	\$14,196	\$8,090	\$61,703	\$152,559	\$12,883		\$4,801	\$5,562	\$51,205
Casein dried, from skimmed milk—									
Pounds .....	72,350	152,267		50,000					114,983
Value .....	\$3,461	\$7,613		\$2,000					\$3,249
All other creamery products .....	\$22,774	\$6,073	\$11,079	\$148,127	\$9,948	\$84	\$11,999	\$400	\$16,107
Cheese factories—									
Standard factory (cheddar)—									
Pounds .....		238,542	9,995,766	3,033,693	1,022,751		294,300	80,150	116,741
Value .....		\$23,539	\$932,776	\$217,647	\$98,163		\$29,430	\$8,888	\$11,351
Other kinds—									
Pounds .....		12,000	426,816	251,326	50,000		19,300		
Value .....		\$1,200	\$49,783	\$28,307	\$4,600		\$1,930		
Whey—									
Sold—									
Pounds .....			12,400,314	18,000					
Value .....			\$4,003	\$20					
Otherwise used—									
Pounds .....			9,857,733	1,125,680	448,100				
Value .....			\$5,910	\$722	\$321				
All other cheese, factory products .....			\$1,421	\$67					
Condensed-milk factories—									
Condensed milk—									
Pounds .....		108,000	18,378,869		380,500				2,876,157
Value .....		\$6,480	\$1,262,817		\$23,300				\$201,331
All other condensed-milk factory products .....									
Comparison of products:									
Number of establishments reporting for both years .....	38	31	93	193	28		26	2	23
Value for census year .....	\$324,909	\$939,456	\$2,202,719	\$3,355,053	\$199,485		\$1,131,688	\$104,466	\$602,330
Value for preceding business year .....	\$282,671	\$915,390	\$2,165,987	\$2,893,052	\$183,056		\$938,532	\$89,351	\$538,070
Branches:									
Cream separators .....	101	28	242	940	60	4	325	9	74
Factories .....	10	1	19	25	4		19		3
Separating stations .....	25		14	45	1		128		15
Skimming stations .....	12	3	5	21	7		137		3
Ice-cream plants .....			2		2				
Power:									
Number of establishments reporting .....	79	48	217	570	61	3	92	4	47
Total horsepower .....	800	449	2,371	8,053	639	16	2,263	45	711
Owned—									
Engines—									
Steam—									
Number .....	83	45	217	594	63	2	218	4	43
Horsepower .....	757	455	2,324	7,876	639	14	2,126	45	551
Gas or gasoline—									
Number .....	1		7	2					
Horsepower .....	15		17	30		1	25		
Water wheels—						2	122		
Number .....	3	1	1	2					1
Horsepower .....	18	10	10	29					59
Electric motors—									
Number .....				2					
Horsepower .....				28					
Other power—									
Number .....				3					
Horsepower .....				23					

## CHEESE, BUTTER, AND MILK, FACTORY PRODUCT.

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TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	Maryland.	Massachu- setts.	Michigan.	Minnesota.	Missouri.	Montana.	Nebraska.	Nevada.	New Hampshire.
Power—Continued.									
Total horsepower—Continued.									
Rented—									
Electric horsepower.....		3	20	14			15		10
Other kinds of horsepower.....	10	1		53					100
Furnished to other establishments, horse- power.....							12		
Establishments classified by number of persons employed, not including proprietors and firm members:									
Total number of establishments.....	84	50	286	596	79	3	93	4	53
No employees.....	11	1	35	80	15		2		4
Under 5.....	71	41	238	552	62	3	78	3	37
5 to 20.....	2	8	11	13	2		11	1	11
21 to 50.....				1					1
51 to 100.....			1				1		
101 to 250.....			1						
251 to 500.....									
501 to 1,000.....									
	New Jersey.	New York.	North Dakota.	Ohio.	Oklahoma.	Oregon.	Pennsylv- ania.	Rhode Island.	South Dakota.
Number of establishments.....	53	1,908	21	479	5	68	749	3	138
Character of organization:									
Individual.....	32	1,274	10	282		40	394		25
Firm and limited partnership.....	9	280	3	97	3	14	153		14
Incorporated company.....	5	195	6	63	2	9	83	2	41
Miscellaneous.....	7	159	2	87		5	119	1	58
Capital:									
Total.....	\$242,284	\$7,084,130	\$51,515	\$1,041,093	\$12,762	\$223,409	\$3,033,128	\$7,800	\$460,932
Land.....	\$18,735	\$359,122	\$1,095	\$55,547	\$1,320	\$10,355	\$126,836	\$400	\$12,192
Buildings.....	\$73,810	\$2,671,475	\$14,750	\$324,312	\$3,900	\$42,237	\$896,453	\$1,850	\$150,143
Machinery, tools, and implements.....	\$97,040	\$2,342,306	\$26,800	\$385,546	\$5,600	\$98,944	\$1,268,416	\$3,350	\$243,390
Cash and sundries.....	\$52,699	\$1,811,227	\$8,870	\$275,688	\$1,942	\$71,858	\$741,423	\$2,200	\$55,207
Proprietors and firm members.....	55	1,772	13	391	5	60	692		44
Salaried officials, clerks, etc.:									
Total number.....	14	227	5	89		20	127	4	95
Total salaries.....	\$4,350	\$122,292	\$1,250	\$19,088		\$8,981	\$45,596	\$1,125	\$11,786
Officers of corporations—									
Number.....	4	70	1	21		8	40		59
Salaries.....	\$320	\$51,017	\$60	\$5,655		\$4,533	\$10,021		\$6,056
General superintendents, managers, clerks, etc.—									
Total number.....	10	157	4	68		12	87	4	36
Total salaries.....	\$4,030	\$71,275	\$1,190	\$13,433		\$4,448	\$35,572	\$1,125	\$5,730
Men—									
Number.....	9	146	4	66		10	79	3	35
Salaries.....	\$3,910	\$67,746	\$1,190	\$13,273		\$4,185	\$34,016	\$1,085	\$5,250
Women—									
Number.....	1	11		2		2	8	1	1
Salaries.....	\$120	\$3,529		\$160		\$263	\$1,556	\$40	\$480
Wage-earners, including pieceworkers, and total wages:									
Greatest number employed at any one time during the year.....	94	3,669	20	627	5	93	1,294	9	206
Least number employed at any one time dur- ing the year.....	84	2,853	19	515	3	82	1,120	9	163
Average number.....	74	2,439	13	389	3	62	976	9	148
Wages.....	\$36,852	\$1,157,081	\$7,725	\$189,804	\$1,520	\$27,302	\$445,708	\$3,427	\$77,401
Men, 16 years and over—									
Average number.....	74	2,085	13	376	3	61	922	9	147
Wages.....	\$36,852	\$1,063,837	\$7,725	\$186,621	\$1,520	\$27,202	\$435,101	\$3,427	\$77,201
Women, 16 years and over—									
Average number.....		345		11		1	35		
Wages.....		\$91,917		\$2,913		\$100	\$8,629		
Children, under 16 years—									
Average number.....		9		2			19		1
Wages.....		\$1,327		\$270			\$1,978		\$200
Average number of wage-earners, including pieceworkers, employed during each month:									
Men, 16 years and over—									
January.....	76	1,119	9	194	3	47	711	9	117
February.....	76	1,165	9	193	3	48	725	9	117
March.....	78	1,481	9	228	3	51	798	9	125
April.....	80	2,354	11	392	3	67	993	9	156
May.....	85	2,940	16	553	5	83	1,154	9	186
June.....	75	2,865	16	546	3	72	1,105	9	183
July.....	73	2,749	18	529	3	71	1,072	9	173
August.....	72	2,646	19	494	3	69	1,042	9	169
September.....	66	2,483	15	471	3	62	987	9	156
October.....	69	2,257	14	398	3	62	921	9	139
November.....	68	1,745	11	298	3	52	820	9	124
December.....	70	1,214	9	211	3	48	735	9	116
Women, 16 years and over—									
January.....		275		4		1	26		
February.....		313		6		1	31		
March.....		340		6		1	32		
April.....		393		12		1	28		
May.....		478		35		1	37		
June.....		484		19		1	37		
July.....		369		17		1	39		
August.....		352		16		1	40		
September.....		329		9		1	43		
October.....		314		6		1	41		
November.....		279		3		1	31		
December.....		266		3		1	29		

## MANUFACTURES.

TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	New Jersey.	New York.	North Dakota.	Ohio.	Oklahoma.	Oregon.	Pennsylvania.	Rhode Island.	South Dakota.
Average number of wage-earners, including pieceworkers, employed during each month—Continued.									
Children, under 16 years—									
January		4		2			23		1
February		4		2			25		1
March		8		2			26		1
April		8		2			18		1
May		15		2			19		1
June		10		2			20		1
July		11		2			20		1
August		9		2			20		1
September		13		2			16		1
October		11		2			16		1
November		7		2			15		1
December		6		2			15		1
Miscellaneous expenses:									
Total	\$9,219	\$337,303	\$1,281	\$35,214	\$185	\$11,852	\$116,195	\$628	\$18,523
Rent of works	\$1,372	\$31,270	\$55	\$6,865	\$58	\$3,314	\$23,823	\$315	\$568
Taxes, not including internal revenue	\$1,165	\$31,715	\$208	\$5,205	\$97	\$1,118	\$11,868	\$30	\$2,555
Rent of offices, interest, insurance, and all sundry expenses not hitherto included	\$6,632	\$273,752	\$968	\$22,884	\$30	\$7,230	\$79,344	\$288	\$14,856
Contract work	\$50	\$566		\$260		\$190	\$1,165		\$524
Materials used:									
Total cost	\$488,105	\$22,486,869	\$96,286	\$3,054,764	\$13,749	\$508,793	\$8,711,635	\$28,938	\$1,005,237
In making butter—									
Milk bought or received from patrons—									
Pounds	45,776,228	908,604,425	9,622,428	197,557,284	1,322,000	39,173,740	824,301,194		136,419,306
Cost	\$420,819	\$7,448,865	\$71,971	\$1,477,372	\$7,752	\$331,085	\$7,386,725		\$887,767
Gathered cream—									
Pounds	40,000	2,496,780		5,700,296		1,200,505	3,587,900	530,112	114,857
Cost	\$1,600	\$107,103		\$154,985		\$60,817	\$151,863	\$28,252	\$13,807
Tubs, boxes, color, salt, etc.	\$6,118	\$186,421	\$4,352	\$37,019	\$232	\$5,124	\$114,126	\$292	\$31,605
In making cheese—									
Milk bought or received from patrons—									
Pounds	1,000,000	1,252,685,286	2,258,736	177,156,588	652,570	11,324,119	96,578,519		4,322,623
Cost	\$7,000	\$10,354,330	\$14,845	\$1,283,449	\$4,722	\$94,201	\$804,691		\$27,627
Boxes, salt, etc.	\$260	\$305,981	\$710	\$41,493	\$178	\$3,104	\$26,180		\$929
In making condensed milk—									
Milk—									
Pounds	3,835,500	148,409,886		300,000			7,075,622		
Cost	\$38,350	\$2,001,794		\$2,100			\$81,129		
Sugar—									
Pounds	20,000	23,811,929		50,000			994,000		
Cost	\$1,000	\$1,217,102		\$2,650			\$49,700		
Cans, labels, etc.	\$300	\$517,883		\$1,500			\$55,716		
Fuel	\$10,640	\$256,402	\$2,639	\$38,120	\$705	\$6,669	\$108,658	\$307	\$33,094
Rent of power and heat		\$417		\$149		\$266	\$914		\$75
Mill supplies	\$1,152	\$36,494	\$1,146	\$4,749	\$125	\$896	\$18,629	\$82	\$3,225
Freight	\$1,366	\$54,077	\$623	\$11,228	\$35	\$6,631	\$25,804	\$5	\$7,107
Products:									
Total value	\$610,006	\$26,557,888	\$122,128	\$3,808,996	\$18,994	\$639,222	\$10,290,006	\$39,569	\$1,199,493
Creameries—									
Packed solid—									
Pounds	587,424	33,068,820	361,224	6,802,419		425,727	13,458,287	6,000	6,110,726
Value	\$128,485	\$6,471,515	\$74,839	\$1,335,512		\$95,733	\$2,767,190	\$1,200	\$1,184,228
Prints or rolls—									
Pounds	738,095	7,025,026	101,964	1,285,212	53,200	1,549,630	23,678,874	142,195	61,831
Value	\$173,606	\$1,615,695	\$20,393	\$304,039	\$10,640	\$344,866	\$5,536,722	\$34,739	\$14,739
Cream sold—									
Gallons	404,917	1,492,926	300	787,331	227	58,750	686,316	3,991	1,596
Value	\$212,570	\$784,623	\$120	\$396,743	\$158	\$10,141	\$396,108	\$2,980	\$1,070
Skimmed milk sold, fed, or returned to patrons—									
Pounds	10,801,835	294,465,866	3,090,083	50,554,032		3,479,764	200,182,662		9,690,340
Value	\$16,432	\$326,726	\$5,285	\$51,453		\$19,056	\$244,100		\$5,670
Casein dried, from skimmed milk—									
Pounds	21,820	6,223,085		73,600			3,103,281		
Value	\$1,091	\$154,272		\$3,632			\$116,760		
All other creamery products	\$16,732	\$70,034	\$90	\$25,955	\$1,000	\$2,790	\$78,003	\$600	\$3,437
Cheese factories—									
Standard factory (cheddar)—									
Pounds	100,000	113,629,093	225,399	14,570,866	26,578	1,106,505	9,333,008		420,779
Value	\$9,000	\$10,913,498	\$21,291	\$1,304,795	\$3,163	\$126,827	\$834,724		\$37,299
Other kinds—									
Pounds	13,756,939	1,313,235		3,585,661	39,800	89,059	934,435		
Value				\$350,928	\$4,038	\$9,054	\$54,009		
Whey—									
Sold—									
Pounds	10,176,310			5,276,552		350,000	94,950		
Value	\$8,707			\$3,836		\$335	\$475		
Otherwise used—									
Pounds	25,246,487		596,300	16,814,646		755,891	6,364,328		
Value	\$87,314		\$110	\$8,231		\$420	\$4,762		
All other cheese factory products	\$10,996			\$15,822			\$1,318		
Condensed milk factories—									
Condensed milk—									
Pounds	1,072,000	75,447,148		100,000			2,862,000		
Value	\$52,040	\$4,801,223		\$6,500			\$255,835		
All other condensed milk factory products									
Comparison of products:									
Number of establishments reporting or both years	20	793	2	179	1	33	313	3	55
Value for census year	\$26,252	\$14,557,565	\$32,889	\$1,499,085	\$2,000	\$467,344	\$5,748,044	\$39,569	\$590,576
Value for preceding business year	\$249,535	\$13,094,2	\$25,125	\$1,316,282	\$2,000	\$376,536	\$5,612,391	\$41,609	\$480,710
Branches:									
Cream separators	58	1,081	16	261	3	51	1,033	2	165
Factories	2	159		20		7	50		
Separating stations	1	114		5		5	169		6
Skimming stations		87		31		5	81		19
Ice-cream plants		22				3			

## CHEESE, BUTTER, AND MILK, FACTORY PRODUCT.

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TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	New Jersey.	New York.	North Dakota.	Ohio.	Oklahoma.	Oregon.	Pennsylvania.	Rhode Island.	South Dakota.
<b>Power:</b>									
Number .....	50	1,289	17	286	8	60	692	3	125
Total horsepower .....	607	13,907	191	2,569	32	491	8,868	18	1,679
Owned—									
Engines—									
Steam—									
Number .....	54	1,425	17	307	3	56	823	3	130
Horsepower .....	605	13,052	191	2,553	32	461	8,402	18	1,499
Gas or gasoline—									
Number .....	1	6		1			6		9
Horsepower .....	2	54		4			86		74
Water wheels—									
Number .....		35				1	24		3
Horsepower .....		709				2	286		6
Electric motors—									
Number .....		1					1		
Horsepower .....		2					10		
Other power—									
Number .....		9							
Horsepower .....		82							
Rented—									
Electric horsepower .....						28	85		
Other kinds of horsepower .....		8		12					
Furnished to other establishments, horsepower .....		6				5	44		
Establishments classified by number of persons employed, not including proprietors and firm members:									
Total number of establishments .....	53	1,908	21	479	5	68	749	3	138
No employees .....	9	328	5	96	2	13	88		6
Under 5 .....	37	1,514	16	376	3	51	680	1	126
5 to 20 .....	7	51		4		4	28	2	5
21 to 50 .....		6		3			2		1
51 to 100 .....		4					1		
101 to 250 .....		3							
251 to 500 .....									
501 to 1,000 .....		2							
	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states. <sup>1</sup>
Number of establishments .....	12	12	57	255	10	60	4	2,018	4
Character of organization:									
Individual .....	3	10	17	96	5	32	2	1,118	1
Firm and limited partnership .....	1		7	23	3	12	1	234	
Incorporated company .....	5	2	31	85	2	10		289	2
Miscellaneous .....	3		2	51		6	1	377	1
<b>Capital:</b>									
Total .....	\$36,175	\$41,670	\$269,247	\$1,222,892	\$15,145	\$304,178	\$5,835	\$4,917,940	\$16,216
Land .....	\$2,465	\$4,970	\$11,351	\$53,712	\$900	\$30,303	\$300	\$220,406	\$860
Buildings .....	\$9,500	\$15,500	\$80,861	\$315,163	\$1,750	\$41,755	\$1,200	\$1,767,497	\$6,600
Machinery, tools, and implements .....	\$19,175	\$15,300	\$113,007	\$194,622	\$7,850	\$104,259	\$2,825	\$1,850,428	\$7,600
Cash and sundries .....	\$5,045	\$5,900	\$64,028	\$350,495	\$4,685	\$127,861	\$1,510	\$1,079,609	\$1,156
Proprietors and firm members .....	4	9	39	142	12	56	2	1,538	8
<b>Salaries, officials, clerks, etc.:</b>									
Total number .....	6	3	54	137		35		414	2
Total salaries .....	\$2,340	\$1,800	\$15,976	\$37,514		\$27,159		\$69,676	\$375
Officers of corporations—									
Number .....	2	1	32	81		6		128	
Salaries .....	\$450	\$300	\$3,230	\$13,277		\$3,060		\$24,393	
General superintendents, managers, clerks, etc.—									
Total number .....	4	2	22	56		29		285	2
Total salaries .....	\$1,800	\$1,500	\$12,746	\$24,237		\$23,499		\$45,283	\$375
Men—									
Number .....	4	2	22	56		28		285	2
Salaries .....	\$1,800	\$1,500	\$12,746	\$22,967		\$22,999		\$45,043	\$375
Women—									
Number .....				6		1		1	
Salaries .....				\$1,270		\$500		\$240	
<b>Wage-earners, including pieceworkers, and total wages:</b>									
Greatest number employed at any one time during the year .....	24	23	194	683	9	200	4	2,491	6
Least number employed at any one time during the year .....	24	20	164	446	8	130	4	2,027	5
Average number .....	20	18	159	522	8	146	2	1,780	5
Wages .....	\$4,193	\$3,870	\$63,135	\$236,377	\$2,158	\$80,935	\$480	\$893,499	\$1,610
Men, 16 years and over—									
Average number .....	14	18	152	509	8	127	1	1,742	5
Wages .....	\$3,755	\$3,870	\$61,963	\$232,894	\$2,158	\$76,115	\$320	\$884,673	\$1,610
Women, 16 years and over—									
Average number .....	3		7	13		16	1	25	
Wages .....	\$258		\$1,172	\$3,483		\$4,495	\$160	\$6,479	
Children, under 16 years—									
Average number .....	3					3		13	
Wages .....	\$180					\$325		\$2,347	
<b>Average number of wage-earners, including pieceworkers, employed during each month:</b>									
Men, 16 years and over—									
January .....	14	20	147	361	5	128		1,021	5
February .....	14	20	148	364	5	132		1,033	5
March .....	18	19	157	406	6	139		1,203	5
April .....	18	20	162	481	7	148		1,795	5
May .....	18	23	173	603	8	160		2,315	5
June .....	14	19	161	650	9	163		2,323	6
July .....	14	19	148	641	9	120		2,262	6
August .....	14	18	146	627	9	119		2,207	6
September .....	14	16	144	608	9	115	3	2,108	6
October .....	12	15	142	542	9	104	3	1,902	5
November .....	12	18	144	446	8	101	2	1,587	5
December .....	12	15	151	380	7	105	2	1,144	6

<sup>1</sup> Includes establishments distributed as follows: Mississippi, 2; Wyoming, 2.

## MANUFACTURES.

TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states. <sup>1</sup>
Average number of wage-earners, including pieceworkers, employed during each month—									
Continued.									
Women, 16 years and over—									
January.....	2		6	9		28		14	
February.....	2		6	9		26		15	
March.....	2		6	10		29		18	
April.....	3		6	12		27		22	
May.....	3		10	20		28	2	32	
June.....	3		10	20		28	2	38	
July.....	3		9	20		8	2	32	
August.....	3		9	17		3	2	32	
September.....	3		6	14		3		32	
October.....	2		6	10		3		28	
November.....	2		6	9		3		23	
December.....	2		6	8		10		14	
Children, under 16 years—									
January.....	3					2		6	
February.....	3					2		6	
March.....	3					3		6	
April.....	3					3		10	
May.....	3					3		19	
June.....	3					3		20	
July.....	3					3		20	
August.....	3					3		19	
September.....	3					3		19	
October.....	3					3		13	
November.....	3					2		11	
December.....	3					2		7	
Miscellaneous expenses:									
Total.....	\$1,113	\$1,648	\$13,788	\$60,992	\$930	\$16,516	\$80	\$157,123	\$218
Rent of works.....	\$100	\$870	\$3,544	\$4,905	\$243	\$4,615	\$40	\$13,285	
Taxes, not including internal revenue.....	\$144	\$232	\$1,628	\$5,373	\$107	\$1,904	\$15	\$22,022	\$9
Rent of offices, interest, insurance, and all sundry expenses not hitherto included.....	\$869	\$546	\$8,060	\$54,511	\$580	\$9,997	\$25	\$113,310	\$157
Contract work.....			\$556	\$2,203				\$2,506	
Materials used:									
Total cost.....	\$49,846	\$51,454	\$550,096	\$4,885,280	\$30,951	\$932,190	\$10,228	\$16,623,850	\$11,401
In making butter—									
Milk bought or received from patrons—									
Pounds.....	5,621,753	6,804,350	59,373,117	382,616,771	4,511,081	50,075,824	882,000	1,199,200,152	1,528,076
Cost.....	\$46,728	\$12,193	\$387,051	\$3,262,211	\$34,100	\$438,250	\$6,720	\$8,629,413	\$10,508
Gathered cream—									
Pounds.....		58,400	151,780	22,868,877		3,071,243		27,026,227	
Cost.....		\$2,336	\$9,360	\$888,955		\$206,173		\$1,047,375	
Tubs, boxes, color, salt, etc.....	\$829	\$774	\$8,542	\$153,103	\$738	\$11,644	\$203	\$276,272	\$325
In making cheese—									
Milk bought or received from patrons—									
Pounds.....	68,900	582,900	18,549,169	44,691,588	600,000	14,785,570	346,252	765,184,808	10,000
Cost.....	\$447	\$3,966	\$124,701	\$378,071	\$3,600	\$130,636	\$3,121	\$5,073,436	\$54
Boxes, salt, etc.....	\$20	\$213	\$4,534	\$13,516	\$112	\$3,924	\$66	\$202,100	\$16
In making condensed milk—									
Milk—									
Pounds.....				4,940,744		7,200,000		9,368,200	
Cost.....				\$47,967		\$64,800		\$86,052	
Sugar—									
Pounds.....				769,010				1,238,005	
Cost.....				\$38,450				\$18,000	
Cans, labels, etc.....				\$22,870		\$59,900		\$50,299	
Fuel.....	\$1,175	\$1,751	\$8,570	\$67,687	\$790	\$11,945	\$113	\$257,676	\$167
Rent of power and heat.....			\$316	\$472	\$80	\$964		\$24,607	
Mill supplies.....	\$132	\$176	\$1,866	\$8,627	\$98	\$1,649	\$5	\$28,724	\$21
Freight.....	\$515	\$45	\$4,556	\$13,360	\$458	\$7,305		\$28,724	\$20
Products:									
Total value.....	\$69,722	\$81,017	\$713,889	\$5,656,265	\$51,942	\$1,190,239	\$12,284	\$20,120,147	\$15,970
Creameries—									
Packed solid—									
Pounds.....	154,071	70,450	332,865	17,366,750	87,700	1,100,070	40,000	55,826,290	73,725
Value.....	\$32,768	\$14,525	\$62,872	\$3,611,065	\$17,536	\$284,775	\$8,000	\$10,714,115	\$14,150
Prints or rolls—									
Pounds.....	58,752	182,264	2,186,349	5,088,631	82,821	2,098,351	1,000	5,987,212	4,300
Value.....	\$11,074	\$42,460	\$437,412	\$1,101,226	\$19,729	\$508,003	\$150	\$1,207,799	\$1,056
Cream sold—									
Gallons.....	37,257	21,665	39,860	215,839	12,623	54,634		251,321	300
Value.....	\$22,026	\$9,063	\$26,505	\$152,209	\$7,317	\$48,977		\$123,678	\$300
Skimmed milk sold, fed, or returned to patrons—									
Pounds.....	2,611,627	900,000	10,300,788	114,219,796	400,000	15,300,851		391,665,003	58,000
Value.....	\$2,420	\$3,300	\$10,939	\$115,663	\$1,000	\$15,896		\$468,187	\$297
Caseln dried, from skimmed milk—									
Pounds.....				399,200				101,300	
Value.....				\$22,298				\$2,800	
All other creamery products.....	\$774	\$5,020	\$1,106	\$15,037	\$960	\$1,486		\$20,459	\$6
Cheese factories—									
Standard factory (cheddar)—									
Pounds.....	6,201	58,290	1,874,179	4,068,063	57,000	1,436,127		48,278,378	1,000
Value.....	\$620	\$6,574	\$174,571	\$406,764	\$5,400	\$169,285		\$4,584,908	\$150
Other kinds—									
Pounds.....				645,042		46,000	40,860	29,470,302	
Value.....				\$96,814		\$4,740	\$4,084	\$2,746,273	
Whey—									
Sold—									
Pounds.....			320,200					6,410,260	8,500
Value.....			\$200					\$4,706	\$21
Otherwise used—									
Pounds.....	51,000		1,620,000	8,142,467		72,000		79,495,694	
Value.....	\$40		\$172	\$7,660		\$72		\$51,438	
All other cheese factory products.....		\$75	\$112	\$1,809		\$5	\$50	\$16,069	
Condensed milk factories—									
Condensed milk—									
Pounds.....				1,973,556		1,962,500		3,466,516	
Value.....				\$185,720		\$157,000		\$231,225	
All other condensed milk factory products.....				\$20,000					

<sup>1</sup> Includes establishments distributed as follows: Mississippi, 2; Wyoming, 2.

TABLE 11.—CHEESE, BUTTER, AND CONDENSED MILK, FACTORY PRODUCT, BY STATES AND TERRITORIES:  
1900—Continued.

	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washing- ton.	West Virginia.	Wisconsin.	All other states. <sup>1</sup>
<b>Comparison of products:</b>									
Number of establishments reporting for both years.....	6	4	22	104	4	28	2	580	4
Value for census year.....	\$31,124	\$25,440	\$365,555	\$2,882,022	\$22,807	\$376,117	\$3,052	\$6,214,917	\$15,979
Value for preceding business year.....	\$29,150	\$19,031	\$310,620	\$2,531,382	\$21,090	\$493,218	\$2,832	\$5,460,111	\$15,350
<b>Branches:</b>									
Cream separators.....	13	7	54	382	5	74	1	1,374	2
Factories.....			2	22		10		113	
Separating stations.....			6	138		9		97	
Skimming stations.....	1		8	24		4		181	
Ice-cream plants.....	1			24				7	
<b>Power:</b>									
Number.....	9	6	55	209	7	47	1	992	3
Total horsepower.....	83	84	616	3,639	48	526	12	12,430	26
<b>Owned—</b>									
Engines—									
Steam—									
Number.....	9	6	58	247	6	51	1	1,109	3
Horsepower.....	83	64	546	3,217	43	476	12	12,187	26
Gas or gasoline—									
Number.....		1		1		1		26	
Horsepower.....		20		4		2		123	
Water wheels—									
Number.....			4	14		4		7	
Horsepower.....			60	255		17		79	
Electric motors—									
Number.....				1				2	
Horsepower.....				15				17	
Other power—									
Number.....				7				5	
Horsepower.....				64				20	
<b>Rented—</b>									
Electric horsepower.....			10		5	31		4	
Other kinds of horsepower.....				84					
Furnished to other establishments, horse- power.....									
<b>Establishments classified by number of persons employed, not including proprietors and firm members:</b>									
Total number of establishments.....	12	12	57	255	10	60	4	2,018	4
No employees.....	1	1	6	23	3	15	2	373	
Under 5.....	10	10	30	200	7	39	2	1,602	4
5 to 20.....	1	1	20	30		4		39	
21 to 50.....			1	1		2		4	
51 to 100.....									
101 to 250.....				1					
251 to 500.....									
501 to 1,000.....									

<sup>1</sup>Includes establishments distributed as follows: Mississippi, 2; Wyoming, 2.

## MANUFACTURES.

TABLE 12.—CHEESE AND BUTTER, URBAN DAIRY PRODUCT: 1900.

	United States.	California.	Illinois.	Kentucky.	Maryland.	Michigan.	Missouri.	New York.	Ohio.	Pennsylvania.	All other states. <sup>1</sup>
Number of establishments.....	118	8	7	18	4	4	36	20	5	5	6
Character of organization:											
Individual.....	84	3	6	16	4	3	33	12	2	3	2
Firm and limited partnership.....	16	4	1	2	1	1	1	2	3	2	2
Incorporated company.....	18	1	1				3	6		2	2
Capital:											
Total.....	\$204,851	\$12,798	\$4,414	\$1,022	\$1,800	\$15,900	\$15,435	\$64,161	\$14,080	\$11,632	\$60,559
Land.....	\$29,875			\$175	\$480	\$5,000	\$3,150	\$4,850	\$7,820	\$2,500	\$5,900
Buildings.....	\$42,246	\$500		\$250	\$1,070	\$6,250	\$2,950	\$11,391	\$800	\$4,500	\$14,535
Machinery, tools, and implements.....	\$69,485	\$8,620	\$2,914	\$565	\$195	\$2,150	\$4,735	\$22,695	\$2,925	\$3,150	\$21,536
Cash and sundries.....	\$63,245	\$3,678	\$1,500	\$3,032	\$55	\$2,500	\$4,600	\$25,225	\$2,585	\$1,532	\$18,558
Proprietors and firm members.....	117	12	6	20	4	5	34	16	9	7	4
Salaried officials, clerks, etc.:											
Total number.....	10		1	1				4		2	2
Total salaries.....	\$3,730		\$800	\$75				\$941		\$480	\$1,434
Officers of corporations—											
Number.....	3		1					2			
Salaries.....	\$1,540		\$800					\$740			
General superintendents, managers, clerks, etc.—											
Total number.....	7			1				2		2	2
Total salaries.....	\$2,190			\$75				\$201		\$480	\$1,434
Men—											
Number.....	5							1		2	2
Salaries.....	\$2,011							\$97		\$180	\$1,434
Women—											
Number.....	2			1				1			
Salaries.....	\$179			\$75				\$104			
Wage-earners, including pieceworkers, and total wages:											
Greatest number employed at any one time during the year.....	99	5	6	9		3	15	35	8	4	14
Least number employed at any one time during the year.....	79	5	6	9		3	15	19	8	4	10
Average number.....	66	4	3	9		1	15	14	7	3	10
Wages.....	\$25,109	\$1,809	\$990	\$2,726		\$300	\$4,897	\$7,120	\$2,152	\$991	\$4,124
Men, 16 years and over—											
Average number.....	57	3	3	9		1	13	12	4	3	9
Wages.....	\$23,207	\$1,529	\$990	\$2,726		\$300	\$4,527	\$6,790	\$1,440	\$991	\$3,974
Women, 16 years and over—											
Average number.....	8	1					2	2	3		
Wages.....	\$1,092	\$280					\$370	\$330	\$712		
Children, under 16 years—											
Average number.....	1										1
Wages.....	\$150										\$150
Average number of wage-earners, including pieceworkers employed during each month:											
Men 16 years and over—											
January.....	47	2	2	9			13	19	3	1	7
February.....	48	2	3	9			13	9	3	2	7
March.....	53	4	3	9			13	9	3	2	10
April.....	62	4	4	9		3	13	10	4	3	12
May.....	80	4	6	9		3	13	24	5	4	12
June.....	77	3	4	9		3	13	27	4	4	10
July.....	60	2	2	10		3	13	12	4	4	10
August.....	55	3	2	10		3	13	8	3	4	9
September.....	53	3	1	10		3	13	8	4	4	7
October.....	48	3	1	10		3	13	8	3	3	7
November.....	47	3	1	10		3	13	7	3	3	7
December.....	54	3	1	10		3	13	10	7	3	7
Women 16 years and over—											
January.....	7	1					2	1	3		
February.....	7	1					2	1	3		
March.....	7	1					2	1	3		
April.....	7	1					2	1	3		
May.....	9	1					2	1	3		
June.....	9	1					2	3	3		
July.....	4	1					2	3	3		
August.....	10	1					2	4	3		
September.....	10	1					2	4	3		
October.....	10	1					2	4	3		
November.....	9	1					2	4	3		
December.....	7	1					2	1	3		
Children under 16 years—											
January.....	1										1
February.....	1										1
March.....	1										1
April.....	1										1
May.....	1										1
June.....	1										1
July.....	1										1
August.....	1										1
September.....	1										1
October.....	1										1
November.....	1										1
December.....	1										1
Miscellaneous expenses:											
Total.....	\$15,976	\$1,297	\$974	\$1,992	\$91	\$213	\$3,859	\$4,128	\$894	\$452	\$2,076
Rent of works.....	\$9,056	\$1,076	\$594	\$1,849	\$80	\$110	\$2,272	\$2,343	\$160	\$222	\$370
Taxes, not including internal revenue.....	\$948	\$34	\$30	\$10	\$25	\$92	\$147	\$240	\$124	\$36	\$210
Rent of offices, insurance, interest, and all sundry expenses not hitherto included.....	\$5,722	\$37	\$350	\$133	\$6	\$11	\$1,440	\$1,545	\$610	\$194	\$1,326
Contract work.....	\$250	\$150									\$100
Materials used:											
Total cost.....	\$310,005	\$43,525	\$19,931	\$27,440	\$1,371	\$12,225	\$30,800	\$111,793	\$8,781	\$5,411	\$45,728
In making butter—											
Milk bought or received from patrons—											
Pounds.....	20,104,778	2,333,320	1,880,800	1,431,621	48,600	1,156,800	1,512,800	6,801,817	813,900	522,000	3,003,620
Cost.....	\$197,021	\$21,747	\$17,676	\$17,774	\$486	\$9,807	\$12,704	\$68,558	\$6,939	\$4,800	\$36,450
Gathered cream—											
Pounds.....	1,066,756	309,544	37,000	198,445	15,252	25,584	260,751	18,390	28,760	76,430	96,000
Cost.....	\$53,649	\$20,640	\$1,650	\$9,069	\$355	\$1,248	\$9,859	\$1,074	\$1,470	\$3,057	\$4,727
Tubs, boxes, color, salt, etc.....	\$7,240	\$363	\$146	\$457	\$12	\$170	\$585	\$1,648	\$144	\$250	\$3,465

<sup>1</sup> Includes establishments distributed as follows: Connecticut, 1; Indiana, 1; Massachusetts, 1; Tennessee, 1; West Virginia, 1; Wisconsin, 1.



## CHEESE, BUTTER, AND MILK, FACTORY PRODUCT.

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TABLE 12.—CHEESE AND BUTTER, URBAN DAIRY PRODUCT: 1900—Continued.

	United States.	California.	Illinois.	Kentucky.	Maryland.	Michigan.	Missouri.	New York.	Ohio.	Pennsylvania.	All other states. <sup>1</sup>
Materials used—Continued.											
Total cost—Continued.											
In making cheese—											
Milk bought or received from patrons—											
Pounds.....	7,415,499		38,000			25,500	8,670,138	3,681,861			
Cost.....	\$44,755		\$140			\$255	\$6,983	\$37,377			
Boxes, salt, etc.....	\$823		\$2			\$7	\$209	\$605			
Fuel.....	\$3,978	\$423	\$126	\$140	\$16	\$214	\$230	\$1,669	\$155	\$275	\$730
Rent of power and heat.....	\$342	\$185	\$166				\$85	\$310			\$86
Mill supplies.....	\$882	\$57	\$25			\$34	\$10	\$134	\$23	\$29	\$70
Freight.....	\$1,315	\$110			\$2	\$190	\$135	\$388			\$190
Products:											
Total value.....	\$415,928	\$50,681	\$26,494	\$40,877	\$2,120	\$17,964	\$44,276	\$136,835	\$16,745	\$18,959	\$61,027
Butter—											
Packed solid—											
Pounds.....	334,588	2,000	18,800	25,700	1,820	22,780	20,990	132,620	2,240	17,000	91,188
Value.....	\$72,360	\$600	\$3,660	\$6,005	\$455	\$4,609	\$4,336	\$27,293	\$448	\$4,250	\$20,704
Prints or rolls—											
Pounds.....	492,882	163,686	33,100	81,296	2,980	6,000	57,200	66,138	27,450	19,720	35,362
Value.....	\$123,302	\$41,511	\$3,174	\$20,406	\$670	\$1,200	\$18,852	\$15,537	\$6,860	\$4,470	\$10,622
Cream sold—											
Gallons.....	164,114	4,535	22,700	5,616		13,500	17,918	54,315	4,850	16,850	28,880
Value.....	\$112,092	\$5,619	\$11,880	\$3,088		\$9,600	\$8,700	\$42,961	\$3,090	\$8,160	\$18,994
Skimmed milk, sold, fed, or returned to patrons—											
Pounds.....	5,517,877	351,200	752,000	645,912		1,745,000	591,800	476,285	284,000	14,760	656,920
Value.....	\$24,008	\$1,158	\$2,605	\$5,223		\$2,125	\$6,924	\$1,585	\$940	\$2,041	\$1,407
Casein dried from skimmed milk—											
Pounds.....	12,889	310		2,400				9,179	1,000		
Value.....	\$710	\$81		\$120				\$459	\$100		
All other butter factory products.....	\$32,222	\$1,712		\$6,035	\$995	\$180	\$3,505	\$5,200	\$5,307	\$38	\$9,800
Cheese—											
Standard factory (cheddar)—											
Pounds.....	360,450							360,450			
Value.....	\$86,050							\$36,050			
Other kinds—											
Pounds.....	301,714		3,300			3,000	246,701	48,713			
Value.....	\$14,601		\$175			\$300	\$6,376	\$7,750			
Whey—											
Sold—											
Pounds.....	75,000						75,000				
Value.....	\$75						\$75				
All other cheese factory products.....	\$508						\$508				
Equipment:											
Cream separators.....	36	5	3					11	4	4	9
Branch factories.....	1										1
Separating stations.....	2							2			
Comparison of products:											
Establishments reporting for both years.....	81	4	3	13	2	2	34	12	3	4	4
Value for census year.....	\$288,615	\$35,052	\$5,390	\$32,823	\$1,050	\$2,734	\$32,962	\$111,474	\$12,117	\$16,344	\$38,659
Value for preceding business year.....	\$258,227	\$28,802	\$5,110	\$28,712	\$985	\$2,600	\$30,315	\$100,164	\$12,109	\$14,400	\$35,000
Power:											
Number of establishments reporting.....	45	8	3			4	4	12	4	5	5
Total horsepower.....	328	46	18			29	20	107	26	23	59
Owned—											
Engines—											
Steam—											
Number.....	35	4				3	2	12	4	5	5
Horsepower.....	280	41				27	9	99	26	23	55
Gas or gasoline—											
Number.....	3					1	1	1			
Horsepower.....	10					2	5	3			
Electric motors—											
Number.....	2						1	1			
Horsepower.....	11						6	5			
Rented—											
Electric, horsepower.....	27	5	18								4
Establishments classified by number of persons employed, not including proprietors or firm members:											
Total number of establishments.....	113	8	7	18	4	4	36	20	5	5	6
No employees.....	47	1	1	10	4	1	26	2		1	1
Under 5.....	63	7	6	8		3	9	17	5	4	4
5 to 20.....	8						1	1			1

<sup>1</sup> Includes establishments distributed as follows: Connecticut, 1; Indiana, 1; Massachusetts, 1; Tennessee, 1; West Virginia, 1; Wisconsin, 1.

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# CANNING AND PRESERVING.

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# CANNING AND PRESERVING, FRUITS, VEGETABLES, FISH, AND OYSTERS.

By ARTHUR L. HUNT.

The hermetic sealing of food, usually referred to under the generic title of "canning," is an industry which has grown to be an important factor in the commercial and industrial development of the United States. It has long since passed the experimental stage and has taken its place among the leading industries of the country.

From earliest times man's thoughts have been occupied in devising ways and means to prevent articles of food from deterioration or putrefaction. In their natural state most foods are seasonable only during limited periods of the year, and their consumption is restricted to certain localities. Their preservation in such a manner as to make them palatable during the entire year, in all localities, has been the subject of much research.

Independent experiments by such well-known scientists as Cagniard de la Tour, Schwann, Helmholtz, Pasteur, Schultz, and others established beyond a doubt that the decomposition of food is due to the presence of a living organism known as "ferment." It was reasoned that anything that would kill this organism or preclude its presence would preserve the article treated. The known processes that will accomplish this result, and at the same time preserve the food, are desiccation, use of antiseptics, refrigeration, and canning. Desiccation, or drying, was undoubtedly the first method used, but food preserved by this means loses much of its natural flavor and becomes tough in texture. The same objections arise in the use of antiseptics. Refrigerated foods, unless great care is exercised in the thawing, are not palatable.

Prior to 1795, drying and the use of salt and sugar were the only methods used to any extent in the preservation of foods. At this time Nicholas Appert, a Frenchman, who had spent most of his life in the preparation and preservation of articles of food, being stimulated in his work by the offer of a reward by the French navy department for a method of preservation of foods for sea service, submitted to his Govern-

ment an exhaustive treatise bearing upon the hermetic sealing of all kinds of food. His method was to inclose fruit in a glass jar, which was then corked, and subjected to the action of boiling water for a time, varying according to the nature of the article treated. A description of his process can be best summed up in his own words, as follows: "It is obvious that this new method of preserving animal and vegetable substances proceeds from the simple principle of applying heat in a due degree to the several substances after having deprived them as much as possible of all contact with the external air. It might, on the first view of the subject, be thought that a substance, either raw or previously acted upon by fire, and afterwards put into hot bottles, might, if a vacuum were made in those bottles and they were completely corked, be preserved equally well with the application of heat in the water bath. This would be an error, for all trials I have made convince me that the absolute privation of the contact of external air (the internal air being rendered of no effect by the action of heat) and the application of heat by means of the water bath, are both indispensable to the complete preservation of alimentary substances." Time has proved his method to be the most satisfactory for preserving food in its natural state. France purchased his process and gave it to manufacturing firms in France and England for the production of the goods. By this means the industry gradually spread over England, Ireland, and France.

In the year 1810 Peter Durant secured a patent from the English Government for the preservation of fruits, vegetables, and fish in hermetically sealed tin and glass cans. He did not claim to be the discoverer of the process, but said that it had been communicated to him by a "foreigner residing abroad." The secret of the process was jealously guarded, but the employees of the different establishments became more or less familiar with its essentials, and in this manner the industry found its way to America.

One of the first men to come to America with a knowl-

edge of the process gained in its actual use was Ezra Daggett, who arrived in New York some time between the years 1815 and 1818. In the year 1819 he and his son-in-law, Thomas Kensett, were engaged in the manufacture of hermetically sealed goods, the principal foods packed being salmon, lobsters, and oysters. In the following year the industry was launched in Boston by William Underwood and Charles Mitchell, emigrants from England, where they had been employed in canning establishments. Their principal business, however, during the early days of their establishment, was the preparation of pickles, sauces, jellies, jams, and mustard; but they also canned damsons, quinces, cranberries, and currants. The industry also owes much to Allen Taylor, an Englishman, and M. Gallagher, an Irishman, both of whom learned their trade at Sligo, Ireland, the latter having in his possession a copy of Appert's treatise on the subject of canning. These men came to America at about the same time as those mentioned above, and were for a time employed in New York. Prior to 1840 the industry was established in Baltimore, and Kensett, Taylor, and Gallagher did much to place it upon a permanent basis.

Glass jars were gradually abandoned, as it was found that they could not withstand the extremes of temperature and were expensive, bulky, and costly in transportation. In 1825, Thomas Kensett secured a patent on the use of tin cans in preserving food, and in the same year began using the patented process in his factory. Tin has been the favorite material for the construction of cans. Their early manufacture was by hand and very crude, the bodies being cut with shears and the side seam made with a plumb joint (that is, meeting, but not overlapping) and then soldered together. Heads were made to set into the body, and were soldered in place in a very crude manner. The construction of the cans was slow and costly, the making of 100 being considered a good day's work. In 1847 Allen Taylor invented the stamp can, which proved a decided improvement over the plumb-joint can just described, and about two years later Henry Evans, jr., of New Jersey, invented the "pendulum" press for making can tops. The latest important improvement in can manufacture was the invention of the key-opening can, which by the genius of a Mr. Zimmerman has been so reduced in cost that it has come into general use.

Can making is now a distinct industry, and not usually carried on, as formerly, in connection with the actual canning of the foods. It is estimated, however, that about 10 per cent of the cans are still made by the canning establishments. For the past fifteen years labor-saving machines have been introduced in can manufacture until now all the parts are made and put together by mechanical devices. The tin cans are made from Bessemer steel plates cut into sheets 14 by 20 inches and weighing about one pound. They are then subjected to an acid to remove all dirt, grease, scales, etc., and coated

with pure tin by the acid process or the palm-oil process, the latter being the safer and better of the two methods. The objection having been urged against the use of tin cans that the natural acids of fruits, vegetables, meats, and fish act upon the tin and solder in such a way as to form metallic salts or metallic compounds that are injurious to the health; the matter was carefully investigated by expert chemists, who reported that the objection is groundless if good tin is used. In the poorer grades of tin injurious substances were found, but in such small quantities that they were of no consequence.

By the Appert process the goods were cooked in open kettles, the highest temperature obtainable by this method being 212° F., or the temperature of boiling water. The process was necessarily slow, but gradually improvements were made in the methods and a higher degree of temperature was obtained by the addition of common salt to the water. This innovation was followed by the use of chloride of calcium, which made possible a temperature of 240° F. The cans, however, under this process become discolored, involving considerable expense in cleaning them to make the goods merchantable. In 1874 Mr. A. K. Shriver, of Baltimore, invented a closed-process kettle to cook the goods by superheating water with steam. About the same time Mr. John Fisher, of the same city, invented a patent-process kettle which secured the same results by the use of dry steam. By these methods, which are used at the present time, any desired temperature can be obtained and the heat regulated to meet requirements.

The canning and preserving of food products is an industry which lies on the border line both between manufacture and agriculture and between manufacture and fishing, and for this reason the several branches of the industry have not always been regarded in census reports as manufacturing. In theory, all industries which expend manufacturing forces upon raw materials, came under the scope of manufacturing. They are distinguished from mining, fishing, and agriculture in that the latter either withdraw raw materials from nature or aid her in their production, but do not themselves make use of raw materials. Therefore, although the preparation of food products from fruits and vegetables and fish was an established industry prior to 1850, no reliable statistics are available previous to 1870. For instance, in the census of 1850, the fishing industry was classed with manufactures and reports were received from 1,407 establishments with products valued at \$10,056,163. Fisheries were again reported in 1860, and returns were received from 1,970 establishments, with a product of \$14,284,405. Presumably the reports from establishments engaged in fish canning for the two periods were included in these statistics, as there was no separate classification for fish canning and preserving. In the census reports of 1850 and 1860 no mention is made of fruit and vegetable canning, but in the latter year the classi-

fication "provisions" appears and returns were secured from 352 establishments reporting the value of products as \$31,986,433. It is not known just what was included under this caption, but in all probability it contained the statistics for fruit and vegetable canning, if at that time the industry was considered manufacturing. From 1870 the several branches of the food products were differentiated and separate classifications appear for each branch with the exception of oyster canning and preserving. The statistics for the latter in 1870 were probably included under the head of "fish, cured and packed".

In the earlier stages of the industry the canning of fruits and vegetables, fish, and oysters was not only frequently but generally carried on by the same individual, firm, or corporation, and it was impossible to ascertain the amount of capital invested in each branch or to segregate the labor employed and the cost of materials according to the several classifications. The various branches of the industry are still closely correlated and overlap to a certain extent, many establishments being engaged in the canning of fruits and vegetables during the summer months, and in the canning of fish and oysters during the winter months. For this reason the three branches of the industry have been grouped together and the statistics included in this report are presented under the following heads: Fruits and vegetables, fish, and oysters, canning and preserving, as returned by the establishments engaged in these several industries during the census year ending May 31, 1900.

In the tabulation of the reports the office adopted the rule of classifying establishments as engaged in the canning of fruits and vegetables, of fish, or of oysters in accordance with the predominating product. Thus fruits and vegetables may appear under the products of establishments engaged in the canning and preserv-

ing of fish and oysters, or visa versa. Furthermore, some establishments classified under the heads of "food preparations" and "pickles, preserves, and sauces," the statistics for which are not included herein, reported the canning of fruits and vegetables. It has therefore been attempted in subsequent tables to present the total quantities and values of fruits and vegetables, fish, and oysters irrespective of the general classification under which they were reported.

Although the canning industry was established in three great commercial centers in the United States as early as 1825, it did not become of much importance until within the past quarter of a century. The tardy introduction of machinery, the secrecy observed in the method of canning, the skepticism of the public regarding the healthfulness of the articles canned, the general prejudice against canned foods, the cost of production, and the high price of the goods may be given as reasons for the slow growth of this industry. Gradually these obstacles in its progress were overcome, and by 1883 machines were used for practically all operations in canned goods' manufacture, and to-day even the labeling, trimming of labels, and the boxing of goods are done by mechanical devices run by steam or electric power. After the invention of the patent-process kettles, the secret of the process was no longer guarded, and the industry spread over the country with remarkable rapidity, so that at the present time there are canneries in most every fruit and vegetable raising locality in the United States and in states in close proximity to the fish and oyster supply. The several branches of the industry have collectively assumed large proportions.

Table 1 shows the statistics for each of the industries according to the several subdivisions, with the percentages of each to the total.

TABLE 1.—FRUITS AND VEGETABLES, FISH AND OYSTERS, CANNING AND PRESERVING: SUMMARY FOR THE UNITED STATES, 1900.

	Total.	Fruits and vegetables.	Per cent of total.	Fish.	Per cent of total.	Oysters.	Per cent of total.
Number of establishments.....	2,195	1,808	82.4	848	15.8	39	1.8
Capital.....	\$48,497,978	\$27,748,067	57.2	\$19,514,215	40.2	\$1,240,696	2.6
Land.....	\$3,554,980	\$2,702,470	76.0	\$757,510	21.3	\$95,000	2.7
Buildings.....	\$8,670,574	\$4,517,008	52.1	\$3,914,858	45.1	\$238,713	2.8
Machinery, tools, and implements.....	\$10,113,482	\$4,797,719	47.4	\$5,164,046	51.0	\$151,717	1.5
Cash and sundries.....	\$26,168,942	\$15,725,870	60.1	\$9,677,806	37.0	\$755,266	2.9
Salaried officials, clerks, etc., number.....	2,478	1,741	70.8	618	24.9	119	4.8
Salaries.....	\$1,975,067	\$1,277,028	64.7	\$585,160	29.6	\$112,879	5.7
Wage-earners, average number.....	52,590	36,401	69.2	13,410	25.5	2,779	5.3
Total wages.....	\$12,910,447	\$8,080,798	62.8	\$4,229,638	32.8	\$630,016	4.9
Miscellaneous expenses.....	\$3,400,748	\$2,423,678	71.8	\$883,868	26.0	\$93,797	2.7
Cost of materials used.....	\$53,365,055	\$37,524,297	70.8	\$18,232,001	24.8	\$2,608,757	4.9
Value of products.....	\$82,592,196	\$56,688,818	68.6	\$22,255,749	26.9	\$3,670,134	4.5

The totals for the three industries show 2,195 establishments with a capital of \$48,497,978; 52,581 wage-earners; \$12,910,399 paid for wages; \$53,365,055 for materials; and products valued at \$82,592,196.

As indicated by Table 1, the canning and preserving of fruits and vegetables is by far the largest of the

three branches of the industry. There were 1,808 establishments, or 82.4 per cent of the total number, reporting nearly 60 per cent of the total capital, nearly 70 per cent of the total wage-earners, over 60 per cent of the total wages, and nearly 70 per cent of the total value of the products. The canning and preserving of

fish ranked second and reported over 15 per cent of the total number of establishments, 40.2 per cent of the total capital, 25.5 per cent of the total wage-earners, nearly 33 per cent of the total wages, and over 25 per cent of the value of products. The canning and preserving of oysters is a small industry in comparison with the other two branches of the industry. Most of the items enumerated for this branch in Table 1 formed less than 5 per cent of the total for the combined industry.

In this connection it is interesting to note the imports

and exports of fruits and vegetables and fish during the past decade. Table 2 shows the imports of fish and fruits and vegetables, canned or preserved, for each year from 1891 to 1900, inclusive, and Table 3 shows the exports for the same period as reported by the Bureau of Statistics, Treasury Department. Although their classifications are not strictly comparable with those adopted by the Census Office, the figures may nevertheless be studied to advantage in their relation to the statistics given in the other tables of this report.

TABLE 2.—IMPORTS OF FISH, FRUITS, AND VEGETABLES, CANNED OR PRESERVED, FOR EACH YEAR, 1891 TO 1900, INCLUSIVE.

ARTICLES.	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891
Total.....	\$8,023,763	\$6,546,682	\$6,121,294	\$6,010,447	\$6,217,626	\$5,348,145	\$5,666,216	\$6,719,259	\$6,854,557	\$7,570,498
Fish, total.....	5,771,863	4,619,714	4,455,624	4,352,329	4,566,524	3,638,256	4,293,010	4,761,180	4,443,629	5,101,649
Lobsters, canned or uncanned <sup>1</sup> .....	931,219	780,460	599,577	791,602	788,638	241,778	549,049	589,109	604,052	966,792
Cured or preserved:										
Anchovies and sardines packed in oil or otherwise.....	1,483,768	1,152,981	1,110,674	902,742	970,347	767,857	976,952	1,366,966	1,201,149	1,080,976
Cod, haddock, hake, and pollock, smoked, salted, or pickled.....	543,172	425,414	525,968	451,654	467,059	499,245	509,395	553,113	449,567	527,113
Herring—										
Dried or smoked.....	127,555	87,279	107,840	88,085	74,460	58,597	77,079	56,485	66,466	101,493
Pickled or salted.....	1,355,013	1,077,198	1,053,050	886,647	1,133,693	1,030,669	962,311	1,164,942	1,178,514	922,099
Mackerel, pickled or salted.....	1,276,900	1,105,027	992,822	1,164,424	1,063,476	995,231	1,133,509	967,352	883,473	1,413,875
Salmon, pickled or salted.....	54,236	41,416	65,693	67,175	63,851	44,879	84,715	63,222	60,418	80,312
Fruits, total.....	1,243,479	1,020,644	922,357	605,053	598,928	570,568	526,561	864,166	1,234,828	1,289,137
Prepared or preserved.....	1,243,479	1,020,644	922,357	605,053	598,928	570,568	526,561	864,166	1,234,828	1,289,137
Vegetables, total.....	1,008,421	906,324	743,313	1,053,065	1,052,174	1,139,321	846,645	1,093,904	1,176,100	1,179,682
Pickles and sauces.....	306,223	352,022	243,354	332,243	324,377	321,632	341,135	454,099	421,292	511,163
Prepared or preserved.....	702,198	554,302	499,959	720,822	727,797	817,689	505,510	639,805	754,808	668,519

<sup>1</sup> Includes values of uncanned lobster. Impossible to separate.

TABLE 3.—EXPORTS OF FISH, FRUITS, AND VEGETABLES, CANNED OR PRESERVED, FOR EACH YEAR, 1891 TO 1900, INCLUSIVE.

ARTICLES.	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891
Total.....	\$10,557,857	\$8,501,453	\$7,898,188	\$8,091,629	\$7,530,989	\$5,343,532	\$3,786,271	\$5,822,891	\$6,707,826	\$5,267,497
Fish, total.....	4,019,450	3,913,507	3,557,022	4,369,089	4,153,547	3,313,901	2,800,174	3,587,314	3,113,287	3,593,522
Dried, smoked, or cured:										
Cod, haddock, hake, and pollock.....	404,212	370,150	300,953	396,422	443,286	514,370	704,652	728,475	765,199	890,277
Herring.....	82,407	66,082	74,844	105,770	96,462	97,719	123,882	93,412	82,772	105,260
All other.....	56,684	40,308	48,442	38,571	37,654	61,082	50,966	88,258	85,353	80,814
Pickled:										
Mackerel.....	14,352	12,771	14,830	23,990	15,692	35,725	43,032	33,480	47,108	37,123
All other.....	99,627	61,650	75,403	84,978	104,374	108,178	149,316	147,932	169,643	159,571
Salmon:										
Canned.....	2,693,648	2,906,475	2,564,017	3,215,798	3,084,889	2,266,727	1,026,215	2,279,625	1,738,465	2,096,957
All other, fresh or cured <sup>1</sup> .....	535,276	331,601	332,023	284,891	167,991	88,789	58,659	49,230	78,680	83,993
Canned fish, other than salmon or shellfish.....	133,244	124,520	146,510	213,669	193,199	141,311	143,402	166,902	146,067	139,392
Fruits, total.....	5,438,577	3,643,347	3,604,970	3,070,158	2,787,141	1,380,099	1,039,992	1,844,126	3,061,660	1,207,451
Apples, dried.....	2,247,851	1,245,733	1,897,725	1,340,159	1,340,507	461,214	168,054	482,085	1,288,102	409,605
Fruits, preserved:										
Canned.....	3,127,278	2,330,715	1,624,741	1,636,723	1,376,281	871,465	660,723	1,137,660	1,558,820	703,880
All other.....	63,448	60,899	82,504	43,276	70,353	47,420	211,215	224,381	214,738	93,996
Vegetables, total.....	1,099,830	944,599	736,196	652,382	590,311	649,532	446,105	391,451	532,879	466,494
Canned.....	603,288	555,691	386,039	408,840	407,506	441,838	255,857	242,284	373,068	235,321
All other, including pickles and sauces <sup>2</sup> .....	496,542	388,908	350,157	243,542	182,805	208,144	190,248	149,167	159,811	130,173

<sup>1</sup> Includes small amounts of fresh fish.

<sup>2</sup> Includes fresh vegetables other than beans, pease, onions, and potatoes. Impossible to separate values of pickles, etc., from other vegetables.

Table 2 indicates that the imports of fish and fruits and vegetables have slightly increased during the decade. From 1891 to 1895, inclusive, there was a steady decrease each year, but from 1895 to 1900, inclusive,

with the exception of 1896 and 1897, there has been a substantial increase. This is evidently due to the increase in the imports of fish, especially sardines and pickled or salted herring, as there has been a

decrease in the total imports of both fruits and vegetables. It appears that the exports have fluctuated considerably during the decade, but on the whole there has been an increase of over 100 per cent since 1890. The total exports of fish show a gain for the decade of 11.9 per cent, but the gain is solely due to the marked increase in the exports of salmon, whereas the exports in all other fish have decreased. The greatest growth and development in exports has been in the direction of fruits and vegetables, the exports in the former having increased from \$1,207,481 to \$5,438,577, an absolute increase of \$4,231,096, or 350.4 per cent. There has been a most marked increase in the exports of dried apples, and also of canned fruits. The exports of vegetables increased from \$466,494 to \$1,099,830, an increase of \$633,336, or 135.8 per cent. Thus the principal

points brought out by Tables 2 and 3 are the following: The total exports for 1900 were \$10,557,857, or 31.6 per cent larger than the imports; the imports of fish have increased faster than the exports; the imports of fruits and vegetables since 1891 have decreased 3.5 and 14.5 per cent, respectively, while the exports of fruits and vegetables have shown most marked increases.

As stated above, the difference between the classifications used by the Treasury Department and those adopted by the Census Office precludes accurate comparisons, but in a general way the figures are comparable. The value of products, the exports and imports of fruits and vegetables and fish, with the per cent of exports and imports to the value of the domestic product of each, are shown in Table 4.

TABLE 4.—FRUITS AND VEGETABLES AND FISH, CANNING AND PRESERVING: VALUE OF PRODUCTS IMPORTS AND EXPORTS, AND PER CENT OF IMPORTS AND EXPORTS TO PRODUCTS, 1900.

FRUITS AND VEGETABLES.					FISH.				
Value of products.	Value of imports.	Per cent of imports to products.	Value of exports.	Per cent of exports to products.	Value of products.	Value of imports.	Per cent of imports to products.	Value of exports.	Per cent of exports to products.
\$56,668,313	\$2,251,900	4.0	\$6,538,407	11.5	\$22,253,749	\$5,771,863	25.9	\$4,019,450	18.0

Table 4 indicates that the value of imports of fruits and vegetables was but 4 per cent of the value of those canned and preserved in the country, while the value of exports was 11.5 per cent of the total value of the domestic product. The value of imports of fish formed

25.9 per cent of the total value of domestic fish products, and the value of exports formed 18 per cent. The comparatively insignificant percentage of exports of each shows the extent of the home consumption of these varieties of canned goods.

### FRUITS AND VEGETABLES, CANNING AND PRESERVING.

Table 5 is a comparative summary of the statistics for the establishments engaged in the canning and preserving of fruits and vegetables as returned at the cen-

suses of 1870 to 1900, inclusive, with the percentages of increase for each decade.

TABLE 5.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: COMPARATIVE SUMMARY, 1870 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.				PER CENT OF INCREASE.		
	1900	1890	1880	1870	1890 to 1900	1880 to 1890	1870 to 1880
Number of establishments.....	1,808	886	411	97	104.1	115.6	323.7
Capital.....	\$27,743,067	\$15,315,185	\$8,247,488	\$2,385,925	81.1	85.7	253.1
Salaried officials, clerks, etc., number.....	1,741	1,119	( <sup>2</sup> )	( <sup>2</sup> )	55.6	.....	.....
Salaries.....	\$1,277,028	\$592,390	( <sup>2</sup> )	( <sup>2</sup> )	115.6	.....	.....
Wage-earners, average number.....	30,401	49,762	31,905	5,869	326.8	56.0	443.6
Wages.....	\$8,050,793	\$4,651,317	\$2,679,960	\$771,648	73.1	73.6	247.3
Men, 16 years and over.....	13,542	18,469	10,638	1,658	27.4	75.3	541.6
Wages.....	\$4,122,104	\$2,488,328	( <sup>2</sup> )	( <sup>2</sup> )	65.7	.....	.....
Women, 16 years and over.....	19,699	25,714	15,463	3,484	23.4	66.3	350.3
Wages.....	\$3,600,243	\$2,000,846	( <sup>2</sup> )	( <sup>2</sup> )	79.9	.....	.....
Children, under 16 years.....	3,160	5,779	5,804	777	43.4	3.9	647
Wages.....	\$328,446	\$162,141	( <sup>2</sup> )	( <sup>2</sup> )	102.6	.....	.....
Miscellaneous expenses.....	\$2,423,678	\$1,280,681	( <sup>2</sup> )	( <sup>2</sup> )	87.9	.....	.....
Cost of materials used.....	\$37,527,297	\$18,665,163	\$12,051,293	\$3,094,846	101.1	54.9	289.4
Value of products.....	\$56,668,313	\$23,862,416	\$17,599,576	\$5,425,677	89.8	69.7	224.4

<sup>1</sup>Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 14.)

<sup>2</sup>Not reported separately.

<sup>3</sup>Decrease.

<sup>4</sup>Not reported.



The canning and preserving of fruits and vegetables had its inception in this country prior to 1850, but the census of 1870 was the first which contained the statistics of the industry. At that time the number of establishments engaged primarily in this industry was 97, and the capital \$2,335,925. They reported 5,869 wage-earners, \$771,643 for wages, \$3,094,846 for materials, and \$5,425,677 as the value of products. The development in this industry during the past thirty years has been most marked, especially during the past decade. The number of establishments from 1890 to 1900 increased 922; the capital, \$12,427,882; and the value of products, \$26,805,897. Notwithstanding these increases, the average capital per establishment has decreased from \$24,082 to \$15,345, a decrease of \$8,737, or 36.3 per cent. This is presumably accounted for by the great number of establishments employing small capital which have become engaged in the industry since 1870. Nevertheless there were in 1900 several establishments employing more capital than the combined capital of the 97 establishments reporting for 1870. The average value of product per establishment has also shown a decrease from \$55,935 to \$31,343; that is, the average value of product in 1900 was only slightly over one-half that reported for 1870. This decrease is primarily due to the great decrease in the cost of production brought about by the introduction of machinery in every detail of the business, both in the making of cans and in the preparation of the product. From 1890 to 1900 every item, with the exception of wage-earners, has shown a substantial increase. The decrease in the average number of wage-earners was 26.8 per cent. This is only apparent, however, the decrease being due to the difference in the methods employed at the two censuses. The method adopted in the present census gives the average number for the entire year, 12 (the number of calendar months) being used as a divisor to obtain the sum of the average numbers reported for each month. In 1890 the average number was computed for the actual time that the establishments were reported as being in operation. The greatest number employed at any one time during the last census year was 133,106. This number was undoubtedly much larger than at any one time in 1890.

A careful investigation of the schedules for various states discloses the fact that establishments engaged in the canning and preserving of fruits and vegetables employ a large number of wage-earners during four months of the year, and that during the remaining months they employ a relatively small number of operatives, usually before the opening of the canning season, in making cans, and later, after the season, in labeling, packing, and preparing the product for market.

The length of the "canning season" varies considerably in the several states, owing to climatic influences and the character of the goods canned. In the Northern states, for instance, the season is much shorter than

in states with a milder climate, where a greater variety of fruits and vegetables are grown for the market.

In the United States as a whole, the four months which constituted the "busy season" were July, August, September, and October. If this be regarded as the industrial year and if the computation be made according to the method used in 1890, the total average number of wage-earners in 1900 was 81,659. The total average number of wage-earners (men, women, and children) for each month during 1900 is given in the following statement:

AVERAGE NUMBER OF WAGE-EARNERS FOR EACH MONTH: 1900.

July .....	45,577	November.....	27,718	March.....	7,821
August.....	97,372	December.....	11,039	April.....	8,620
September.....	116,550	January.....	6,205	May.....	13,246
October.....	67,143	February.....	5,643	June.....	30,430

Thus it will be seen that the number of wage-earners has in reality shown an increase commensurate with the increase in the other items, and the apparent decrease is due solely to the difference in the methods of computation employed at the two censuses.

From 1890 to 1900 the wages increased from \$4,651,317 to \$8,050,793, an increase of \$3,399,476, or 73.1 per cent. This is in accord with the gradual increase in the rate of wages paid employees in this industry. Increased competition has compelled the various factories to adopt modern machinery, necessitating the employment of a higher class of labor. In the infancy of the industry all work was done by hand, and the female labor employed was of the cheapest possible character. The introduction of machinery, however, has resulted in an increase in the number of men employed and a corresponding decrease in the number of women. This has inured to the benefit of the wage-earner by making employment for men at an increased rate of wages, and the females employed are not obliged to do the burdensome work formerly required of them. During the past decade the wages paid children increased from \$162,141 to \$328,446, an increase of \$166,305, or 102.6 per cent. This striking increase is primarily due to the fact that children under 12 years of age are no longer employed, and accordingly the children over this age are able to command higher wages than the younger children formerly employed. Further, the wage rate per day has also materially increased owing to competition for labor of this character.

From 1890 to 1900 the cost of materials increased from \$18,665,163 to \$37,524,297, an increase of \$18,859,134, or 101.1 per cent. As fully 65 per cent of the cost of materials used is for farm products, it demonstrates what a vast advantage this industry is to the farming interests of this country, in that it stimulates the culture of every variety of fruits and vegetables.

The individual form of organization predominates in this industry. Of the total number of establishments, 919, or 50.8 per cent, were conducted by individuals. Of the remaining number, 505, or 27.9 per cent, were operated by firms or limited partnerships; 365, or 20.2 per cent, by incorporated companies; and the remaining 19, or 1.1 per cent, were cooperative or miscellaneous in character.

Table 6 shows, by states and territories arranged geographically, the number of establishments from which returns were received in 1900, with the increase during the decade.

TABLE 6.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: COMPARATIVE SUMMARY, NUMBER OF ACTIVE ESTABLISHMENTS, 1890 AND 1900, AND THE INCREASE DURING THE DECADE, BY STATES AND TERRITORIES ARRANGED GEOGRAPHICALLY.

	1900	1890	Increase.
United States .....	1,808	886	922
New England states .....	80	62	18
Maine.....	59	44	15
New Hampshire.....	3	6	13
Vermont.....	3	.....	3
Massachusetts.....	9	10	11
Rhode Island.....	1	1	.....
Connecticut.....	5	1	4
Middle states .....	945	445	500
New York.....	511	159	352
New Jersey.....	73	34	39
Pennsylvania.....	39	27	12
Delaware.....	51	28	23
Maryland.....	271	197	74
Southern states .....	204	95	109
West Virginia.....	9	3	6
Virginia.....	88	51	34
North Carolina.....	19	5	14
South Carolina.....	12	2	10
Georgia.....	8	4	4
Florida.....	2	.....	2
Kentucky.....	8	2	6
Tennessee.....	11	4	7
Alabama.....	3	.....	3
Mississippi.....	.....	2	12
Arkansas.....	34	8	26
Louisiana.....	.....	11	11
Texas.....	10	10	.....
Central states .....	380	196	184
Ohio.....	70	38	32
Michigan.....	98	90	8
Indiana.....	60	11	49
Illinois.....	61	23	38
Wisconsin.....	16	1	15
Minnesota.....	4	3	1
Iowa.....	26	17	9
Missouri.....	45	13	32

<sup>1</sup>Decrease.

TABLE 6.—FRUITS AND VEGETABLES, CANNING AND PRESERVING, COMPARATIVE SUMMARY: NUMBER OF ACTIVE ESTABLISHMENTS, 1890 AND 1900, ETC.—Cont'd.

	1900	1890	Increase.
Western states .....	28	25	3
Idaho.....	2	.....	2
South Dakota.....	.....	1	11
Nebraska.....	5	7	12
Utah.....	8	2	6
Colorado.....	7	5	4
Kansas.....	5	12	17
New Mexico.....	1	.....	1
Pacific states.....	171	68	108
Washington.....	18	.....	18
Oregon.....	17	2	15
California.....	136	61	75

The remarkable increase in the number of establishments from 1890 to 1900 in nearly every state, with the exceptions hereafter noted, shows that the industry is not localized and controlled by a few large establishments, but is well distributed throughout the country.

Table 6 shows that, in general, the states showing the large increases in the number of establishments were those which produce the different varieties of fruits and vegetables in large quantities. It appears that the greatest increase occurred in the Middle states, which group reported 445 establishments in 1890 and 945 in 1900, an increase of 500, or 112.4 per cent. The Central states followed, with an increase of 184, or 93.9 per cent; the Southern states reported an increase of 109, or 114.7 per cent; and the Pacific states followed, with an increase of 108, or 171.4 per cent. There was an increase of but 3 establishments in the Western states.

The greatest absolute increase was shown in New York, which reported an increase of 352. California followed with an increase of 75 and Maryland came third with an increase of 74. The leading 10 states, with the number of establishments reported for 1900, were as follows: New York, 511; Maryland, 271; California, 136; Michigan, 98; Virginia, 88; New Jersey, 73; Ohio, 70; Illinois, 61; Indiana, 60; Maine, 59.

The above table should be considered in connection with Table 7, which is a summary of the totals for the canning and preserving of fruits and vegetables as returned at the censuses of 1890 and 1900.

TABLE 7.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: COMPARATIVE SUMMARY, BY STATES AND TERRITORIES, 1890 AND 1900.

	Year.	United States.	Ala-bama.	Arkan-sas.	Califor-nia.	Colo-rado.	Connec-ticut.	Delaware.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Ken-tucky.
Number of establishments	1900 1890	1,808 886	3 ( <sup>1</sup> )	34 8	136 61	7 3	5 ( <sup>2</sup> )	51 28	8 4	61 23	60 11	26 17	5 12	( <sup>2</sup> ) 8
Capital:														
Total.....	1900 1890	\$27,743,067 \$16,315,185	\$7,585 ( <sup>1</sup> )	\$33,038 \$63,530	\$4,397,935 \$2,622,890	\$277,325 \$158,000	\$91,463 ( <sup>2</sup> )	\$966,660 \$391,038	\$24,801 \$29,217	\$1,551,977 \$638,871	\$1,205,494 \$419,253	\$1,027,321 \$445,258	\$30,300 \$201,433	\$95,000 ( <sup>2</sup> )
Land .....	1900 1890	\$2,702,470 \$1,338,584	\$4,110 ( <sup>1</sup> )	\$2,580 \$5,345	\$1,132,110 \$255,285	\$28,500 \$55,000	\$2,450 ( <sup>2</sup> )	\$31,080 \$16,400	\$1,851 \$1,750	\$72,077 \$22,075	\$104,151 \$22,068	\$37,900 \$24,975	\$4,200 \$13,140	\$6,000 ( <sup>2</sup> )
Buildings.....	1900 1890	\$4,517,008 \$2,387,232	\$1,125 ( <sup>1</sup> )	\$13,128 \$16,110	\$728,891 \$278,768	\$79,500 \$16,500	\$21,232 ( <sup>2</sup> )	\$148,338 \$51,650	\$5,700 \$1,200	\$221,647 \$30,931	\$284,000 \$90,000	\$190,900 \$129,230	\$10,702 \$4,117	\$18,150 ( <sup>2</sup> )
Machinery, tools, and implements.....	1900 1890	\$4,797,719 \$2,480,027	\$850 ( <sup>1</sup> )	\$7,835 \$23,400	\$554,086 \$292,556	\$62,700 \$17,500	\$29,496 ( <sup>2</sup> )	\$141,164 \$73,466	\$5,500 \$8,250	\$369,810 \$110,870	\$225,005 \$65,700	\$311,869 \$133,409	\$5,766 \$39,667	\$34,400 ( <sup>2</sup> )
Cash and sundries....	1900 1890	\$15,725,870 \$9,109,342	\$1,500 ( <sup>1</sup> )	\$9,500 \$18,675	\$1,982,848 \$1,796,281	\$106,625 \$89,000	\$35,285 ( <sup>2</sup> )	\$646,078 \$249,522	\$11,750 \$18,017	\$388,443 \$420,995	\$592,329 \$250,887	\$486,652 \$157,644	\$6,632 \$104,509	\$37,050 ( <sup>2</sup> )

<sup>1</sup> None reported in 1890.

<sup>2</sup> Reported under head of other States in 1890.

TABLE 7.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: COMPARATIVE SUMMARY BY STATES AND TERRITORIES, 1890 AND 1900—Continued.

	Year.	United States.	Ala-bama.	Arkan-sas.	California.	Colo-rado.	Connec-ticut.	Delaware.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Ken-tucky.
Salaried officials, clerks, etc.:														
Number .....	1900	1,741	1	2	259	18	7	29	4	99	155	46	11	12
	1890	1,119	( <sup>2</sup> )	7	122	11	( <sup>3</sup> )	35	3	24	31	55	18	( <sup>3</sup> )
Salaries.....	1900	\$1,277,028	\$300	\$350	\$242,388	\$23,700	\$3,260	\$14,278	\$3,650	\$101,515	\$112,174	\$27,305	\$3,254	\$5,840
	1890	\$592,390	( <sup>2</sup> )	\$1,730	\$81,058	\$14,800	( <sup>3</sup> )	\$13,482	\$1,737	\$14,497	\$10,705	\$7,673	\$3,700	( <sup>3</sup> )
Wage-earners, average number.	1900	36,401	16	136	7,486	206	100	1,437	81	1,444	2,002	609	116	231
	1890	49,762	( <sup>2</sup> )	320	5,670	99	( <sup>3</sup> )	2,463	49	2,182	1,989	1,581	1,153	( <sup>3</sup> )
Total wages .....	1900	\$8,050,793	\$2,380	\$21,942	\$1,987,649	\$62,561	\$24,967	\$220,149	\$10,545	\$392,636	\$386,467	\$184,710	\$17,148	\$36,903
	1890	\$4,051,317	( <sup>2</sup> )	\$23,904	\$756,797	\$45,930	( <sup>3</sup> )	\$192,476	\$4,088	\$185,967	\$170,933	\$83,924	\$60,828	( <sup>3</sup> )
Men, 16 years and over	1900	13,542	9	50	1,819	66	35	527	26	815	824	321	51	89
	1890	18,469	( <sup>2</sup> )	91	2,131	41	( <sup>3</sup> )	600	18	825	453	356	194	( <sup>3</sup> )
Wages .....	1900	\$4,122,104	\$1,760	\$10,079	\$702,428	\$37,855	\$12,203	\$113,751	\$5,260	\$278,626	\$219,239	\$114,630	\$10,124	\$19,248
	1890	\$2,488,328	( <sup>2</sup> )	\$10,033	\$377,165	\$30,562	( <sup>3</sup> )	\$89,510	\$2,402	\$80,781	\$83,247	\$41,009	\$31,660	( <sup>3</sup> )
Women, 16 years and over.	1900	19,699	4	72	5,252	116	64	750	38	582	1,068	266	51	105
	1890	25,714	( <sup>2</sup> )	150	3,156	50	( <sup>3</sup> )	1,416	28	883	1,327	986	609	( <sup>3</sup> )
Wages .....	1900	\$3,600,243	\$400	\$10,495	\$1,233,861	\$19,456	\$12,614	\$100,119	\$4,410	\$108,182	\$156,473	\$54,675	\$5,504	\$14,094
	1890	\$2,000,848	( <sup>2</sup> )	\$10,979	\$357,199	\$14,120	( <sup>3</sup> )	\$83,201	\$1,614	\$40,972	\$78,531	\$35,076	\$23,560	( <sup>3</sup> )
Children, under 16 years.	1900	3,160	3	14	415	24	1	160	17	47	110	112	14	37
	1890	5,579	( <sup>2</sup> )	79	383	8	( <sup>3</sup> )	447	3	474	209	230	350	( <sup>3</sup> )
Wages .....	1900	\$328,446	\$220	\$1,368	\$51,360	\$5,250	\$150	\$12,279	\$875	\$5,328	\$10,745	\$15,605	\$1,400	\$3,561
	1890	\$162,141	( <sup>2</sup> )	\$2,892	\$22,433	\$1,248	( <sup>3</sup> )	\$19,765	\$72	\$2,155	\$7,239	\$5,708	( <sup>3</sup> )	( <sup>3</sup> )
Miscellaneous expenses ..	1900	\$2,423,673	\$135	\$962	\$412,737	\$14,598	\$1,985	\$27,169	\$4,262	\$295,558	\$165,755	\$68,185	\$11,722	\$10,100
	1890	\$1,289,681	( <sup>2</sup> )	\$7,946	\$351,334	\$7,467	( <sup>3</sup> )	\$26,519	\$1,417	\$60,005	\$29,811	\$51,943	\$17,614	( <sup>3</sup> )
Cost of materials used ....	1900	\$37,524,297	\$3,418	\$50,954	\$9,102,400	\$223,454	\$81,887	\$1,083,142	\$67,192	\$2,447,194	\$1,526,088	\$767,231	\$68,465	\$75,346
	1890	\$18,665,163	( <sup>2</sup> )	\$54,455	\$3,888,323	\$90,420	( <sup>3</sup> )	\$432,317	\$12,460	\$768,556	\$581,016	\$294,817	\$147,801	( <sup>3</sup> )
Value of products .....	1900	\$56,668,313	\$7,947	\$100,503	\$13,081,829	\$343,394	\$124,280	\$1,570,790	\$3,730,030	\$3,730,030	\$2,589,908	\$1,859,908	\$113,675	\$192,787
	1890	\$29,862,416	( <sup>2</sup> )	\$93,101	\$6,211,440	\$207,424	( <sup>3</sup> )	\$740,090	\$28,770	\$1,106,181	\$885,145	\$521,711	\$292,505	( <sup>3</sup> )

	Year.	Maine.	Maryland.	Massa-chusetts.	Michigan.	Minne-sota.	Missouri.	Ne-braska.	New Hamp-shire.	New Jer-sey.	New York.	North Caro-lina.	Ohio.
Number of establishments ..	1900	59	271	9	98	4	45	5	8	73	511	19	76
	1890	44	197	10	90	3	13	7	6	34	159	5	38
Capital:													
Total .....	1900	\$365,825	\$4,459,660	\$48,375	\$898,668	\$43,650	\$345,360	\$123,623	\$21,642	\$1,420,221	\$6,649,059	\$30,340	\$910,670
	1890	\$1,014,980	\$2,739,008	\$182,924	\$420,265	\$28,350	\$419,130	\$211,347	\$18,590	\$957,583	\$2,211,715	\$5,940	\$505,654
Land .....	1900	\$42,845	\$378,143	\$625	\$91,603	\$1,800	\$22,117	\$6,800	\$150	\$111,805	\$355,910	\$3,035	\$65,490
	1890	\$7,225	\$376,675	\$2,500	\$42,852	\$2,750	\$4,875	\$19,100	\$690	\$106,675	\$223,211	\$200	\$33,505
Buildings .....	1900	\$132,493	\$420,586	\$900	\$204,315	\$10,000	\$71,255	\$35,000	\$1,600	\$334,279	\$1,025,624	\$4,575	\$150,973
	1890	\$61,210	\$381,900	\$13,500	\$109,506	\$5,100	\$50,927	\$50,927	\$3,960	\$204,750	\$588,262	\$905	\$110,100
Machinery, tools, and implements.	1900	\$230,028	\$633,234	\$19,900	\$146,649	\$11,300	\$128,736	\$41,325	\$9,542	\$250,618	\$906,809	\$7,480	\$200,057
	1890	\$198,514	\$300,311	\$56,008	\$103,863	\$7,700	\$95,600	\$53,303	\$6,800	\$131,279	\$391,163	\$1,150	\$83,075
Cash and sundries.....	1900	\$459,559	\$3,017,697	\$26,950	\$456,101	\$20,550	\$123,252	\$40,498	\$10,350	\$732,519	\$4,360,719	\$15,250	\$494,150
	1890	\$748,081	\$1,620,122	\$131,266	\$164,044	\$12,800	\$303,105	\$83,017	\$7,140	\$514,879	\$1,009,070	\$3,685	\$278,974
Salaried officials, clerks, etc.:													
Number .....	1900	102	231	9	70	2	74	9	1	63	261	2	103
	1890	46	165	17	83	.....	35	4	3	57	161	2	60
Salaries.....	1900	\$50,854	\$213,080	\$7,600	\$45,279	\$1,600	\$23,007	\$6,400	\$600	\$33,880	\$201,025	\$300	\$58,975
	1890	\$19,538	\$124,878	\$15,170	\$14,424	.....	\$33,291	\$542	\$305	\$36,886	\$22,380	\$110	\$26,271
Wage-earners, average num-ber.	1900	904	7,505	139	1,165	45	650	161	19	1,992	5,518	78	1,608
	1890	2,087	13,048	286	1,831	111	610	600	68	3,608	5,986	87	2,177
Total wages .....	1900	\$203,509	\$1,379,131	\$39,945	\$240,102	\$8,523	\$116,467	\$21,686	\$5,957	\$422,092	\$1,402,820	\$10,736	\$305,393
	1890	\$196,082	\$1,416,386	\$50,032	\$114,544	\$2,700	\$102,798	\$37,850	\$4,695	\$262,723	\$516,648	\$1,392	\$170,516
Men, 16 years and over ..	1900	487	2,980	57	378	17	170	81	11	818	2,292	29	681
	1890	1,484	4,629	140	724	16	237	299	47	1,326	2,463	15	1,011
Wages .....	1900	\$144,508	\$744,516	\$21,660	\$121,412	\$6,070	\$49,803	\$13,200	\$4,700	\$232,316	\$811,564	\$6,506	\$158,919
	1890	\$169,650	\$634,986	\$32,920	\$64,025	\$10,000	\$76,260	\$27,076	\$3,655	\$156,938	\$307,502	\$535	\$91,191
Women, 16 years and over	1900	316	3,712	79	565	26	377	50	8	1,088	3,007	41	841
	1890	422	7,141	143	1,053	20	217	181	21	2,189	3,178	49	938
Wages .....	1900	\$49,385	\$559,310	\$17,760	\$95,054	\$10,590	\$56,883	\$6,000	\$1,257	\$180,952	\$628,168	\$3,805	\$123,835
	1890	\$22,581	\$752,980	\$16,635	\$48,018	\$700	\$21,559	\$8,714	\$1,040	\$103,223	\$201,066	\$619	\$76,219
Children, under 16 years.	1900	101	813	3	222	2	103	30	.....	86	219	8	186
	1890	181	1,278	3	54	75	156	120	.....	93	205	23	224
Wages .....	1900	\$9,616	\$75,305	\$525	\$23,636	\$263	\$9,781	\$2,486	.....	\$8,824	\$28,088	\$425	\$22,648
	1890	\$3,851	\$28,420	\$277	\$1,901	\$1,000	\$4,989	\$2,060	.....	\$2,562	\$8,075	\$238	\$9,106
Miscellaneous expenses .....	1900	\$43,119	\$371,108	\$7,392	\$123,514	\$1,452	\$23,399	\$10,325	\$270	\$33,418	\$495,478	\$414	\$78,781
	1890	\$43,067	\$151,496	\$28,106	\$35,884	\$4,182	\$79,721	\$18,960	\$972	\$33,798	\$143,241	\$155	\$36,771
Cost of materials.....	1900	\$762,102	\$8,786,518	\$384,600	\$1,154,698	\$17,929	\$559,651	\$130,573	\$21,111	\$1,401,101	\$5,592,462	\$44,494	\$1,197,269
	1890	\$700,719	\$4,416,352	\$245,130	\$304,464	\$24,650	\$1,107,691	\$120,720	\$6,709	\$1,159,340	\$1,747,798	\$2,997	\$506,809
Value of products .....	1900	\$1,335,671	\$11,996,245	\$531,545	\$1,760,875	\$49,200	\$869,977	\$210,688	\$29,964	\$2,199,176	\$8,975,321	\$64,440	\$1,941,398
	1890	\$1,192,682	\$7,196,109	\$412,005	\$591,546	\$38,375	\$1,480,469	\$201,549	\$17,165	\$1,843,675	\$2,918,671	\$5,506	\$928,213

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 14.)

<sup>2</sup> None reported in 1890.

<sup>3</sup> Reported under head of other states in 1890.

TABLE 7.—FRUITS AND VEGETABLES. CANNING AND PRESERVING: COMPARATIVE SUMMARY BY STATES AND TERRITORIES, 1890 AND 1900—Continued.

	Year.	Oregon.	Penn- sylvania.	South Carolina.	Ten- nessee.	Texas.	Utah.	Vermont.	Virginia.	Wash- ington.	West Virginia.	Wisconsin.	All other states.
Number of establishments..	1900 1890	17 ( <sup>2</sup> )	39 27	12 ( <sup>2</sup> )	11 4	10 10	8 ( <sup>2</sup> )	8 ( <sup>2</sup> )	88 54	18 ( <sup>2</sup> )	9 3	16 ( <sup>2</sup> )	16 15
Capital:													
Total .....	1900 1890	\$121,355 ( <sup>2</sup> )	\$520,206 \$736,604	\$23,862 ( <sup>2</sup> )	\$35,824 \$16,910	\$53,852 \$85,347	\$304,258 ( <sup>2</sup> )	\$68,528 ( <sup>2</sup> )	\$218,533 \$416,476	\$78,627 ( <sup>2</sup> )	\$95,200 \$16,511	\$650,115 ( <sup>2</sup> )	\$37,055 \$298,361
Land .....	1900 1890	\$16,030 ( <sup>2</sup> )	\$38,216 \$35,465	\$1,525 ( <sup>2</sup> )	\$880 \$200	\$1,575 \$9,890	\$33,045 ( <sup>2</sup> )	..... ( <sup>2</sup> )	\$22,500 \$26,785	\$1,394 ( <sup>2</sup> )	\$11,670 \$250	\$68,108 ( <sup>2</sup> )	\$9,600 \$31,700
Buildings .....	1900 1890	\$29,945 ( <sup>2</sup> )	\$77,355 \$30,676	\$2,075 ( <sup>2</sup> )	\$5,880 \$600	\$14,810 \$19,880	\$66,178 ( <sup>2</sup> )	\$13,500 ( <sup>2</sup> )	\$32,260 \$47,150	\$11,000 ( <sup>2</sup> )	\$22,390 \$2,000	\$112,458 ( <sup>2</sup> )	\$4,760 \$42,500
Machinery, tools, and implements.	1900 1890	\$26,650 ( <sup>2</sup> )	\$101,658 \$83,670	\$6,713 ( <sup>2</sup> )	\$9,825 \$7,100	\$23,100 \$30,100	\$57,707 ( <sup>2</sup> )	\$20,316 ( <sup>2</sup> )	\$47,790 \$60,550	\$10,177 ( <sup>2</sup> )	\$28,230 \$2,961	\$120,634 ( <sup>2</sup> )	\$6,855 \$62,062
Cash and sundries .....	1900 1890	\$48,730 ( <sup>2</sup> )	\$302,977 \$586,793	\$13,544 ( <sup>2</sup> )	\$19,239 \$9,010	\$14,867 \$25,477	\$146,733 ( <sup>2</sup> )	\$34,712 ( <sup>2</sup> )	\$115,933 \$281,991	\$56,056 ( <sup>2</sup> )	\$32,970 \$11,800	\$358,925 ( <sup>2</sup> )	\$15,850 \$162,099
Salaried officials, clerks, etc.: Number.	1900 1890	9 ( <sup>2</sup> )	35 88	6 ( <sup>2</sup> )	16 4	5 12	20 ( <sup>2</sup> )	4 ( <sup>2</sup> )	25 59	4 ( <sup>2</sup> )	4 1	42 ( <sup>2</sup> )	1 16
Salaries .....	1900 1890	\$10,350 ( <sup>2</sup> )	\$25,909 \$56,453	\$1,030 ( <sup>2</sup> )	\$2,043 \$1,257	\$3,420 \$2,215	\$8,068 ( <sup>2</sup> )	\$4,100 ( <sup>2</sup> )	\$3,477 \$17,561	\$4,250 ( <sup>2</sup> )	\$1,475 \$500	\$32,732 ( <sup>2</sup> )	\$200 \$6,267
Wage-earners, average num- ber.	1900 1890	129 ( <sup>2</sup> )	468 830	64 ( <sup>2</sup> )	116 111	111 708	141 ( <sup>2</sup> )	111 ( <sup>2</sup> )	637 1,470	44 ( <sup>2</sup> )	128 57	676 ( <sup>2</sup> )	88 636
Total wages .....	1900 1890	\$18,070 ( <sup>2</sup> )	\$123,179 \$88,446	\$7,410 ( <sup>2</sup> )	\$15,216 \$3,283	\$26,828 \$32,660	\$37,565 ( <sup>2</sup> )	\$21,762 ( <sup>2</sup> )	\$77,576 \$89,516	\$12,484 ( <sup>2</sup> )	\$18,108 \$4,621	\$117,090 ( <sup>2</sup> )	\$10,097 \$75,583
Men, 16 years and over..	1900 1890	82 ( <sup>2</sup> )	211 326	15 ( <sup>2</sup> )	24 26	22 248	62 ( <sup>2</sup> )	64 ( <sup>2</sup> )	196 512	15 ( <sup>2</sup> )	55 18	308 ( <sup>2</sup> )	10 289
Wages .....	1900 1890	\$8,995 ( <sup>2</sup> )	\$31,345 \$69,276	\$2,625 ( <sup>2</sup> )	\$4,992 \$1,850	\$9,157 \$16,324	\$26,037 ( <sup>2</sup> )	\$15,140 ( <sup>2</sup> )	\$33,915 \$42,488	\$5,839 ( <sup>2</sup> )	\$7,858 \$3,145	\$80,160 ( <sup>2</sup> )	\$5,064 \$42,049
Women, 16 years and over	1900 1890	60 ( <sup>2</sup> )	206 243	27 ( <sup>2</sup> )	56 55	63 249	73 ( <sup>2</sup> )	45 ( <sup>2</sup> )	312 640	24 ( <sup>2</sup> )	59 22	271 ( <sup>2</sup> )	25 348
Wages .....	1900 1890	\$6,075 ( <sup>2</sup> )	\$35,833 \$15,813	\$2,835 ( <sup>2</sup> )	\$6,539 \$1,155	\$14,832 \$10,714	\$10,172 ( <sup>2</sup> )	\$3,862 ( <sup>2</sup> )	\$33,577 \$41,342	\$5,675 ( <sup>2</sup> )	\$4,220 \$1,109	\$30,235 ( <sup>2</sup> )	\$4,655 \$31,909
Children, under 16 years.	1900 1890	37 ( <sup>2</sup> )	51 261	22 ( <sup>2</sup> )	36 30	26 206	6 ( <sup>2</sup> )	2 ( <sup>2</sup> )	129 318	5 ( <sup>2</sup> )	14 17	102 ( <sup>2</sup> )	3 49
Wages .....	1900 1890	\$3,000 ( <sup>2</sup> )	\$6,001 \$3,958	\$1,950 ( <sup>2</sup> )	\$3,685 \$278	\$2,339 \$5,022	\$1,356 ( <sup>2</sup> )	\$250 ( <sup>2</sup> )	\$10,084 \$5,686	\$970 ( <sup>2</sup> )	\$1,030 \$367	\$5,695 ( <sup>2</sup> )	\$378 \$1,625
Miscellaneous expenses .....	1900 1890	\$4,543 ( <sup>2</sup> )	\$58,788 \$46,264	\$503 ( <sup>2</sup> )	\$207 \$1,332	\$1,245 \$6,559	\$6,024 ( <sup>2</sup> )	\$3,390 ( <sup>2</sup> )	\$7,289 \$45,482	\$2,677 ( <sup>2</sup> )	\$2,983 \$5,098	\$91,887 ( <sup>2</sup> )	\$2,309 \$11,537
Cost of materials .....	1900 1890	\$79,290 ( <sup>2</sup> )	\$499,353 \$615,294	\$15,169 ( <sup>2</sup> )	\$37,598 \$19,307	\$85,275 \$59,650	\$211,279 ( <sup>2</sup> )	\$83,361 ( <sup>2</sup> )	\$342,689 \$1,131,863	\$24,781 ( <sup>2</sup> )	\$39,823 \$20,862	\$543,496 ( <sup>2</sup> )	\$13,399 \$204,639
Value of products .....	1900 1890	\$141,498 ( <sup>2</sup> )	\$801,250 \$981,008	\$28,565 ( <sup>2</sup> )	\$72,007 \$29,030	\$151,104 \$141,737	\$300,349 ( <sup>2</sup> )	\$166,184 ( <sup>2</sup> )	\$535,900 \$1,403,216	\$63,141 ( <sup>2</sup> )	\$66,886 \$36,750	\$1,007,765 ( <sup>2</sup> )	\$34,041 \$403,293

<sup>1</sup> Includes establishments distributed as follows: Florida, 2; Idaho, 2; New Mexico, 1; Rhode Island, 1.

<sup>2</sup> Reported under head of other states in 1890.

<sup>3</sup> None reported in 1890.

<sup>4</sup> Includes establishments distributed as follows: Connecticut, 1; Kentucky, 2; Louisiana, 1; Mississippi, 2; Oregon, 2; Rhode Island, 1; South Carolina, 2; South Dakota, 1; Utah, 2; Wisconsin, 1.

Table 7 gives the totals for the principal items of the industry for the two periods and indicates the marked growth and expansion which has occurred during the decade in each state. In 1890 the canning and preserving of fruits and vegetables was reported by 886 establishments located in 36 states and territories, and in 1900 the number had increased to 1,808, distributed among 39 states and territories. In order to avoid disclosing the operations of individual establishments, states having less than 3 establishments were grouped under "all other states." Nearly every state and territory has shown a most gratifying increase in the number of establishments, capital, and value of products. The exceptions are as follows: Kansas reported a decrease in all three items; Massachusetts, a decrease of 1 establishment, but a notable increase in capital and value of products; Maine, Missouri, Pennsylvania, and Virginia, a decrease in capital, but an increase in the other two items; Nebraska, a decrease in establishments and in

capital, but an increase in value of products; Texas, the same number of establishments, but an increase in the other two items.

Climatic conditions largely regulate the locality where each particular fruit or vegetable is canned. In general each state puts up the varieties of fruits and vegetables which are grown extensively therein. The leading 10 states, ranked according to the value of products for the census year, were as follows: California, \$13,081,829; Maryland, \$11,996,245; New York, \$8,975,321; Illinois, \$3,730,030; Indiana, \$2,589,908; New Jersey, \$2,199,176; Ohio, \$1,941,398; Delaware, \$1,570,790; Iowa, \$1,359,958, and Maine, \$1,335,671. The total value of products of these 10 states was \$48,780,326, or 86.1 per cent of the total value of products for the industry. The number of establishments reported by these 10 states was 1,318, or 72.9 per cent of the total number, and the capital was \$23,463,822, as compared with \$27,743,067 for the entire country, or

84.6 per cent of the total capital reported. Alabama, Vermont, and Washington have become engaged in the industry during the decade.

The summary of establishments engaged in the canning and preserving of fruits and vegetables, classified according to the number of employees (not including

proprietors and firm members), is shown in Table 8. In this connection, attention is here directed to the fact that the data contained in this table were computed from the greatest number employed at any one time during the year. This should be taken into consideration in making deductions.

TABLE 8.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: ESTABLISHMENTS CLASSIFIED BY NUMBER OF EMPLOYEES (NOT INCLUDING PROPRIETORS AND FIRM MEMBERS), BY STATES AND TERRITORIES ARRANGED GEOGRAPHICALLY, 1900.

STATES AND TERRITORIES.	Total number of establishments.	NUMBER OF ESTABLISHMENTS REPORTING—								
		No employ-ees.	Under 5.	5 to 20.	21 to 50.	51 to 100.	101 to 250.	251 to 500.	501 to 1,000.	Over 1,000.
United States.....	1,808	8	154	521	424	808	282	76	31	4
New England states.....	80	1	1	16	12	31	17		2	
Maine.....	59	1	1	8	10	25	12		2	
New Hampshire.....	3			2		1				
Vermont.....	3						3			
Massachusetts.....	9			6	1	1	1			
Rhode Island.....	1				1					
Connecticut.....	5					4	1			
Middle states.....	945	1	124	290	225	134	130	32	7	2
New York.....	511		118	241	72	27	37	13	2	1
New Jersey.....	73			9	5	22	33	4		
Pennsylvania.....	39		3	11	15	6	4			
Delaware.....	51		1		11	15	21	3		
Maryland.....	271	1	2	29	122	64	35	12	5	1
Southern states.....	204	3	4	79	76	33	7	2		
West Virginia.....	9		1		6	1	1			
Virginia.....	88			23	44	19	2			
North Carolina.....	19	2	1	12	1	3				
South Carolina.....	12	1		8	1	1				
Georgia.....	8		1	3	2	1		1		
Florida.....	2			2						
Kentucky.....	8				4	1	2	1		
Tennessee.....	11			2	5	4				
Alabama.....	3			1	2					
Arkansas.....	34			25	8		1			
Texas.....	10			3	3	3	1			
Central states.....	380	1	3	84	84	82	102	18	4	2
Ohio.....	70			12	18	23	14	1	2	
Michigan.....	98			55	25	7	9	1	1	
Indiana.....	60			7	8	13	25	5		2
Illinois.....	61	1	2	8	18	14	13	5		
Wisconsin.....	16				1	3	9	2	1	
Minnesota.....	4				1	2	1			
Iowa.....	26			1	2	5	14	4		
Missouri.....	45		1	1	11	15	17			
Western states.....	28		1	3	6	6	11	1		
Idaho.....	2		1	1						
Nebraska.....	5			1			4			
Utah.....	8				2	3	2	1		
Colorado.....	7			1	4		2			
Kansas.....	5					2	3			
New Mexico.....	1					1				
Pacific states.....	171	2	21	49	21	22	15	23	18	
Washington.....	18		6	10	2					
Oregon.....	17		4	7	3	1	1	1		
California.....	136	2	11	32	16	21	14	22	18	

Table 8 indicates that the largest number of establishments reported from 5 to 20 employees. Four establishments, 2 in Indiana and 1 each in Maryland and New York, employed over 1,000, and 31 establishments, 18 of which were located in California, gave employment to from 501 to 1,000. Maryland, New York and California, in the order named, reported the largest number of establishments employing more than 50. The largest number of establishments in

Maryland were reported for the class "21 to 50," and the largest number in New York and California from "5 to 20."

According to Table 8 it appears that the Middle states gave employment to the greatest number, while the Central states ranked second, and the Pacific states third. There were 8 small establishments reporting no employees, presumably all the work being done by the owner.

Table 9 presents a comparative summary of the statistics of capital for 1890 and 1900, with the percentages of the total and the increase for the several items.

TABLE 9.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: STATISTICS OF CAPITAL, 1890 AND 1900.

	1900		1890		Per cent of increase.
	Amount.	Per cent of total.	Amount.	Per cent of total.	
Total.....	\$27,743,067	100.0	\$15,315,185	100.0	81.15
Land.....	2,702,470	9.7	1,838,584	8.7	101.9
Buildings.....	4,517,008	16.3	2,387,232	15.6	89.2
Machinery, tools, and implements.....	4,797,719	17.3	2,480,027	16.2	93.5
Cash and sundries.....	15,725,870	56.7	9,109,342	59.5	72.6

Every item of capital showed a decided increase and relatively constituted nearly the same percentage of the total for both years. The item cash and sundries, including cash on hand, bills receivable, unsettled ledger accounts, raw materials, stock in process of manufacture, finished products on hand, and other sundries, formed the principal item of capital in both years. This is accounted for by the fact that the industry has a tendency to be suburban, as is indicated by the small per cent of the value of land to the total value. In consequence of this expensive buildings are unnecessary. Further, intricate machinery and mechanical appliances are not required in the preparation of the product. For these reasons comment upon the remaining items of capital is not called for.

As the several items of miscellaneous expenses for 1890 can not be shown separately, the usual detailed comparison with the figures reported for 1900 is impossible. The expenses of this nature in this industry do not call for special comment, but the several subdivisions for 1900 are shown in Table 14.

The cost of materials used, with the proportion each formed of the total for 1900, is given in Table 10.

TABLE 10.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: COST OF MATERIALS USED, 1900.

	Amount.	Per cent of total.
Total.....	\$37,524,297	100.0
Principal materials.....	36,428,791	97.1
Fuel.....	480,858	1.3
Rent of power and heat.....	10,388	( <sup>2</sup> )
Freight.....	604,260	1.6

<sup>1</sup>Includes mill supplies and all other materials, which are shown separately in Table 14.

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

Of the total cost the amount reported for principal materials formed 97.1 per cent. The principal materials are made up of those purchased in the raw state and those purchased in partially manufactured form, the latter comprising those materials upon which some manufacturing force has been expended. Included in

this item are mill supplies and all other materials, such as cans, solder, etc., which were required in the preparation of the product for the market. That the cost of fuel formed only 1.3 per cent of the total cost of materials is but natural in this industry.

Table 11 shows the value of products, by states, for 1900.

TABLE 11.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: VALUE OF PRODUCTS, BY STATES AND TERRITORIES, ARRANGED GEOGRAPHICALLY, 1900.

	VALUE.		
	Total product.	Fruits and vegetables.	All other products.
United States.....	\$56,668,313	\$44,460,665	\$12,207,648
New England states.....	2,194,644	1,511,416	683,228
Maine.....	1,335,671	1,129,415	206,256
New Hampshire.....	29,964	28,988	976
Vermont.....	166,184	166,184	—
Massachusetts.....	531,645	58,259	473,386
Other states <sup>1</sup> .....	131,280	128,570	2,710
Middle states.....	25,542,782	18,808,605	6,734,177
New York.....	8,975,321	7,082,750	1,942,571
New Jersey.....	2,199,176	1,965,502	233,674
Pennsylvania.....	801,250	684,298	116,952
Delaware.....	1,570,790	1,642,401	28,389
Maryland.....	11,990,245	7,683,659	4,312,586
Southern states.....	1,844,342	1,280,784	563,558
West Virginia.....	66,886	54,694	12,192
Virginia.....	585,900	588,542	2,358
North Carolina.....	64,440	60,590	3,850
South Carolina.....	28,565	11,715	16,850
Georgia.....	120,022	119,397	625
Kentucky.....	192,787	192,787	—
Tennessee.....	72,007	71,116	891
Arkansas.....	100,503	95,861	4,642
Texas.....	151,104	181,954	19,150
Other states <sup>2</sup> .....	12,128	9,128	3,000
Central states.....	13,800,111	9,688,385	4,111,726
Ohio.....	1,941,398	1,856,900	84,498
Michigan.....	1,760,375	720,572	1,040,303
Indiana.....	2,589,908	2,196,080	393,828
Illinois.....	3,730,030	1,942,938	1,787,092
Wisconsin.....	1,007,765	978,954	28,811
Minnesota.....	49,200	49,200	—
Iowa.....	1,359,958	1,330,807	29,151
Missouri.....	869,977	567,984	302,043
Western states.....	990,966	882,903	108,063
Nebraska.....	210,688	207,286	3,402
Utah.....	800,349	294,769	5,580
Colorado.....	343,394	250,833	92,561
Kansas.....	113,675	113,675	—
Other states <sup>3</sup> .....	22,860	16,340	6,520
Pacific states.....	13,286,468	12,338,572	947,896
Washington.....	63,141	14,645	48,496
Oregon.....	141,498	140,311	1,187
California.....	13,081,829	12,183,616	898,212

<sup>1</sup>Includes establishments distributed as follows: Rhode Island, 1; Connecticut, 5.

<sup>2</sup>Includes establishments distributed as follows: Florida, 2; Alabama, 8.

<sup>3</sup>Includes establishments distributed as follows: Idaho, 2; New Mexico, 1.

Table 11 shows that of the total value of products, \$44,460,665, or 78.5 per cent, was reported as the value of canned and preserved fruits and vegetables, and \$12,207,648, or 21.5 per cent, was returned as the value of "all other products." This latter item includes such articles as pineapples, figs, jams, jellies, condiments, catsup, apple butter, soups, and numerous other varieties of canned or preserved food not included in the above, the quantities and values of which it was impossible to show

separately. It will be noticed that in Massachusetts, Michigan, South Carolina, and Washington the value of other products exceeded the value of fruits and vegetables, and in Maryland and Illinois the value of other products formed a goodly proportion of the value of the total product—nearly equal to that of the fruits and vegetables.

The tables which have thus far been shown give an incomplete statistical photograph of the fruit and vegetable canning and preserving industry for the reason

given above, that establishments were classified according to the predominating product, and in many instances the canning and preserving of fruits and vegetables is carried on in connection with some other branch of the canning industry, and the totals have not been included in the above tables. It is possible, however, to show the quantity and value of the principal varieties of fruits and vegetables canned and preserved during the census year as reported by establishments of any character. This is done in Table 12.

TABLE 12.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: BY STATES AND TERRITORIES, 1900.

	United States.	NEW ENGLAND STATES.					
		Total.	Maine.	New Hampshire.	Vermont.	Massachusetts.	All other states. <sup>1</sup>
Canning and preserving:							
Aggregate value.....	\$45,379,548	\$1,520,722	\$1,187,765	\$28,988	\$166,184	\$58,259	\$129,526
Canned vegetables—							
Total pounds.....	1,172,467,073	49,700,288	36,024,288	744,144	5,745,120	3,246,864	3,939,792
Total value.....	\$29,368,158	\$1,452,780	\$1,107,286	\$18,603	\$164,584	\$57,504	\$104,768
Tomatoes—							
Pounds.....	641,219,993	5,068,640	299,804			953,424	3,840,912
Value.....	\$13,926,749	\$128,962	\$5,405			\$21,638	\$101,919
Corn—							
Pounds.....	305,566,439	40,932,512	34,330,112	652,512	5,649,120	206,688	94,080
Value.....	\$8,280,975	\$1,233,843	\$1,046,316	\$16,313	\$162,084	\$6,466	\$2,664
Pease—							
Pounds.....	131,436,061	140,352	98,400			41,952	
Value.....	\$4,679,426	\$4,325	\$3,825			\$1,000	
Beans—							
Pounds.....	75,729,160	2,866,312	720,712		96,000	2,044,800	4,800
Value.....	\$2,124,808	\$65,055	\$33,985		\$2,500	\$28,400	\$170
Pumpkins—							
Pounds.....	9,988,416	294,336	294,336				
Value.....	\$203,260	\$7,185	\$7,185				
Sweet potatoes—							
Pounds.....	6,205,488						
Value.....	\$127,667						
Gumbo or okra—							
Pounds.....	524,924						
Value.....	\$20,531						
Succotash—							
Pounds.....	1,796,592	373,056	281,424	91,632			
Value.....	\$54,742	\$13,360	\$11,070	\$2,290			
Canned fruits—							
Total pounds.....	302,127,819	2,393,208	1,211,256	213,120	57,600	9,408	901,824
Total value.....	\$11,589,885	\$64,267	\$30,479	\$6,660	\$1,600	\$755	\$24,773
Pears—							
Pounds.....	49,906,216	8,160				2,160	6,000
Value.....	\$2,233,166	\$907				\$157	\$750
Peaches—							
Pounds.....	107,609,194	4,080				1,680	2,400
Value.....	\$4,414,277	\$490				\$140	\$350
Apples—							
Pounds.....	48,104,074	2,355,240	1,211,256	213,120	57,600	1,920	371,344
Value.....	\$1,160,728	\$61,446	\$30,479	\$6,660	\$1,600	\$40	\$22,667
Blackberries—							
Pounds.....	9,957,160	480					480
Value.....	\$319,323	\$50					\$50
Strawberries—							
Pounds.....	11,756,800	21,888				288	21,600
Value.....	\$470,379	\$974				\$18	\$956
Raspberries—							
Pounds.....	8,826,137	3,360				3,360	
Value.....	\$355,603	\$400				\$400	
Apricots—							
Pounds.....	38,525,300						
Value.....	\$1,591,567						
Cherries—							
Pounds.....	5,549,368						
Value.....	\$310,114						
Plums—							
Pounds.....	21,894,070						
Value.....	\$736,728						
Dried fruits—							
Total pounds.....	81,814,406	53,750		53,750			
Total value.....	\$4,421,505	\$3,725		\$3,725			
Apples—							
Pounds.....	33,337,309	53,750		53,750			
Value.....	\$1,913,142	\$3,725		\$3,725			
Apricots—							
Pounds.....	5,465,217						
Value.....	\$455,394						
Pears—							
Pounds.....	701,506						
Value.....	\$49,279						
Peaches—							
Pounds.....	5,662,390						
Value.....	\$312,495						
Prunes—							
Pounds.....	25,413,763						
Value.....	\$970,927						
Raisins—							
Pounds.....	10,734,221						
Value.....	\$720,268						

<sup>1</sup> Includes establishments distributed as follows: Connecticut, 5; Rhode Island, 1.



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TABLE 12.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: BY STATES AND TERRITORIES, 1900—Continued.

	MIDDLE STATES.					
	Total.	New York.	New Jersey.	Pennsylvania.	Delaware.	Maryland.
Canning and preserving:						
Aggregate value .....	\$19,550,313	\$7,032,750	\$1,965,502	\$584,208	\$1,542,401	\$8,425,367
Canned vegetables—						
Total pounds .....	611,802,706	35,432,524	84,423,137	20,390,240	64,309,512	307,247,293
Total value .....	\$15,019,673	\$4,410,251	\$1,858,489	\$516,468	\$* 14,308	\$6,820,157
Tomatoes—						
Pounds .....	361,776,261	18,832,340	77,764,232	9,549,896	54,990,168	201,133,625
Value .....	\$7,374,134	\$483,112	\$1,068,855	\$201,304	\$1,121,546	\$3,899,317
Corn—						
Pounds .....	114,940,656	64,884,896	.....	7,063,008	2,553,520	40,937,232
Value .....	\$3,255,446	\$1,925,496	.....	\$187,834	\$65,950	\$1,076,166
Pease—						
Pounds .....	83,162,137	36,073,696	3,840,273	1,993,632	4,849,824	36,404,712
Value .....	\$2,997,232	\$1,473,912	\$96,255	\$82,776	\$176,578	\$1,167,711
Beans—						
Pounds .....	41,648,176	13,196,752	1,596,960	1,596,864	1,836,000	23,421,600
Value .....	\$1,172,261	\$448,314	\$64,768	\$41,740	\$49,244	\$568,195
Pumpkins—						
Pounds .....	2,617,848	1,783,368	182,520	186,840	72,000	393,120
Value .....	\$50,247	\$36,370	\$3,902	\$2,814	\$990	\$7,171
Sweet potatoes—						
Pounds .....	6,194,882	720,000	1,009,152	.....	.....	4,465,680
Value .....	\$127,271	\$15,000	\$23,829	.....	.....	\$88,442
Gumbo or okra—						
Pounds .....	163,196	58,856	30,000	.....	.....	79,340
Value .....	\$4,551	\$1,541	\$880	.....	.....	\$2,130
Succotash—						
Pounds .....	1,299,600	887,616	.....	.....	.....	411,084
Value .....	\$38,581	\$27,506	.....	.....	.....	\$11,025
Canned fruits—						
Total pounds .....	107,861,324	41,241,240	3,224,512	1,476,312	5,488,704	56,432,556
Total value .....	\$3,227,427	\$1,847,390	\$107,013	\$89,721	\$128,093	\$1,605,210
Pears—						
Pounds .....	15,516,976	4,178,592	1,760,496	45,000	2,621,464	6,911,424
Value .....	\$535,607	\$226,082	\$63,356	\$2,450	\$62,361	\$131,358
Peaches—						
Pounds .....	32,558,770	2,096,112	62,400	.....	1,791,240	28,609,018
Value .....	\$963,097	\$72,591	\$2,500	.....	\$41,282	\$846,724
Apples—						
Pounds .....	32,312,376	23,088,792	1,137,528	1,172,112	162,000	6,751,944
Value .....	\$764,129	\$560,048	\$26,945	\$22,371	\$3,065	\$151,700
Blackberries—						
Pounds .....	5,406,792	313,488	18,816	48,000	828,000	4,198,488
Value .....	\$144,834	\$17,216	\$873	\$2,760	\$17,960	\$106,025
Strawberries—						
Pounds .....	9,472,388	2,933,728	106,504	86,400	54,000	6,271,756
Value .....	\$351,320	\$141,049	\$8,554	\$5,040	\$1,925	\$194,752
Raspberries—						
Pounds .....	6,893,096	4,191,776	138,768	124,800	30,000	2,407,752
Value .....	\$256,674	\$163,494	\$4,785	\$7,100	\$1,500	\$79,795
Apricots—						
Pounds .....	2,400	2,400	.....	.....	.....	.....
Value .....	\$150	\$150	.....	.....	.....	.....
Cherries—						
Pounds .....	2,279,296	1,017,952	.....	.....	.....	1,261,844
Value .....	\$116,303	\$71,881	.....	.....	.....	\$44,422
Plums—						
Pounds .....	3,419,230	3,398,400	.....	.....	.....	20,630
Value .....	\$95,313	\$94,879	.....	.....	.....	\$434
Dried fruits—						
Total pounds .....	22,113,387	21,542,897	.....	570,490	.....	.....
Total value .....	\$1,303,213	\$1,275,109	.....	\$28,104	.....	.....
Apples—						
Pounds .....	22,113,387	21,542,897	.....	570,490	.....	.....
Value .....	\$1,303,213	\$1,275,109	.....	\$28,104	.....	.....
Apricots—						
Pounds .....	.....	.....	.....	.....	.....	.....
Value .....	.....	.....	.....	.....	.....	.....
Pears—						
Pounds .....	.....	.....	.....	.....	.....	.....
Value .....	.....	.....	.....	.....	.....	.....
Peaches—						
Pounds .....	.....	.....	.....	.....	.....	.....
Value .....	.....	.....	.....	.....	.....	.....
Prunes—						
Pounds .....	.....	.....	.....	.....	.....	.....
Value .....	.....	.....	.....	.....	.....	.....
Raisins—						
Pounds .....	.....	.....	.....	.....	.....	.....
Value .....	.....	.....	.....	.....	.....	.....

TABLE 12.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: BY STATES AND TERRITORIES, 1900—Continued.

		SOUTHERN STATES.										
	Total.	West Virginia.	Virginia.	North Carolina.	South Carolina.	Georgia.	Kentucky.	Tennessee.	Alabama.	Arkansas.	Texas.	All other states. <sup>1</sup>
Canning and preserving:												
Aggregate value.....	\$1,301,231	\$54,694	\$533,542	\$60,590	\$11,715	\$124,563	\$192,787	\$71,116	\$7,947	\$95,861	\$131,954	\$16,462
Canned vegetables—												
Total pounds.....	45,948,227	1,882,152	27,332,771	1,797,840	401,064	488,616	7,979,688	2,682,480	227,880	576,000	2,211,312	368,424
Total value.....	\$931,528	\$36,355	\$499,355	\$49,709	\$8,785	\$12,603	\$180,187	\$51,216	\$4,248	\$15,000	\$57,713	\$16,297
Tomatoes—												
Pounds.....	40,148,904	1,805,640	26,434,344	893,160	369,696	359,544	5,157,864	2,617,200	227,880	576,000	1,662,576	45,000
Value.....	\$759,734	\$34,133	\$474,305	\$19,292	\$8,000	\$7,814	\$106,227	\$49,996	\$4,248	\$15,000	\$39,629	\$1,000
Corn—												
Pounds.....	2,555,811	20,892	520,467	57,120		14,016	1,584,000				359,376	
Value.....	\$67,169	\$948	\$13,160	\$1,485		\$526	\$30,600				\$10,760	
Peas—												
Pounds.....	1,535,472		136,800	528,000		66,672	768,000				36,000	
Value.....	\$61,658		\$6,080	\$22,000		\$2,778	\$29,000				\$1,800	
Beans—												
Pounds.....	1,274,312	55,680	205,160	319,560	31,368	45,504	397,824	65,280			153,360	576
Value.....	\$35,587	\$1,574	\$5,195	\$6,932	\$895	\$1,461	\$12,960	\$1,220			\$5,534	\$16
Pumpkins—												
Pounds.....	72,000						72,000					
Value.....	\$1,400						\$1,400					
Gumbo or okra—												
Pounds.....												
Value.....												
Sweet potatoes—												
Pounds.....	861,728		36,000			2,880						322,848
Value.....	\$15,980		\$615			\$84						\$16,281
Succotash—												
Pounds.....												
Value.....												
Canned fruits—												
Total pounds.....	9,872,344	639,240	1,524,792	475,536	139,248	4,155,664	288,000	621,600	168,360		1,855,440	4,464
Total value.....	\$279,357	\$18,339	\$30,752	\$10,881	\$2,930	\$111,900	\$7,200	\$19,250	\$3,699		\$74,241	\$165
Pears—												
Pounds.....	1,041,552		108,000		1,152	724,800		96,000			111,600	
Value.....	\$29,021		\$1,650		\$25	\$20,200		\$3,500			\$3,646	
Peaches—												
Pounds.....	6,027,912	24,120	849,440	328,536	33,952	3,012,000	288,000	252,000	135,720		1,549,680	4,464
Value.....	\$181,916	\$500	\$7,300	\$7,996	\$1,655	\$33,475	\$7,200	\$10,000	\$2,850		\$60,775	\$165
Apples—												
Pounds.....	2,068,176	613,584	657,816	28,440	50,976	369,600		273,600			74,160	
Value.....	\$46,250	\$17,775	\$11,663	\$692	\$1,150	\$7,200		\$5,750			\$2,020	
Blackberries—												
Pounds.....	525,904	1,536	284,736	118,560	3,168	1,264			32,640		84,000	
Value.....	\$15,500	\$64	\$7,019	\$2,193	\$100	\$25			\$849		\$5,250	
Strawberries—												
Pounds.....	36,000										36,000	
Value.....	\$2,550										\$2,550	
Raspberries—												
Pounds.....	48,000					48,000						
Value.....	\$1,000					\$1,000						
Apricots—												
Pounds.....												
Value.....												
Cherries—												
Pounds.....	124,800		124,800									
Value.....	\$3,120		\$3,120									
Plums—												
Pounds.....												
Value.....												
Dried fruits—												
Total pounds.....	1,558,000		53,000				90,000	13,000		1,402,000		
Total value.....	\$90,346		\$3,435				\$5,400	\$650		\$80,861		
Apples—												
Pounds.....	1,558,000		53,000				90,000	13,000		1,402,000		
Value.....	\$90,346		\$3,435				\$5,400	\$650		\$80,861		
Apricots—												
Pounds.....												
Value.....												
Pears—												
Pounds.....												
Value.....												
Peaches—												
Pounds.....												
Value.....												
Prunes—												
Pounds.....												
Value.....												
Raisins—												
Pounds.....												
Value.....												

<sup>1</sup>Includes establishments distributed as follows: Florida, 2; Louisiana, 1; Mississippi, 1.

TABLE 12.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: BY STATES AND TERRITORIES, 1900—Continued.

	CENTRAL STATES.								
	Total.	Ohio.	Michigan.	Indiana.	Illinois.	Wisconsin.	Minnesota.	Iowa.	Missouri.
Canning and preserving:									
Aggregate value.....	\$9,715,994	\$1,856,900	\$762,985	\$2,196,080	\$1,976,834	\$973,954	\$49,200	\$1,330,807	\$569,234
Canned vegetables—									
Total pounds.....	869,470,692	76,362,754	8,573,568	91,566,684	80,214,384	30,333,424	2,101,992	58,612,790	26,700,096
Total value.....	\$8,834,552	\$1,769,432	\$211,425	\$2,169,003	\$1,802,309	\$973,954	\$49,200	\$1,322,622	\$536,607
Tomatoes—									
Pounds.....	155,958,988	40,968,068	5,827,968	63,272,984	13,533,120	2,528,696	358,776	6,124,680	23,346,696
Value.....	\$3,121,866	\$814,044	\$114,005	\$1,286,027	\$260,907	\$52,383	\$7,140	\$125,798	\$461,564
Corn—									
Pounds.....	139,349,460	24,854,854	.....	9,943,440	51,945,408	3,589,020	1,649,618	45,894,222	2,472,000
Value.....	\$3,463,910	\$642,161	.....	\$270,205	\$1,214,696	\$90,163	\$40,500	\$1,146,075	\$60,050
Pease—									
Pounds.....	41,404,020	2,127,792	2,656,800	10,089,380	1,965,840	23,534,208	.....	1,080,000	.....
Value.....	\$1,379,594	\$76,564	\$92,700	\$310,172	\$60,500	\$807,408	.....	\$32,250	.....
Beans—									
Pounds.....	26,953,224	7,987,776	88,800	6,533,584	11,656,376	615,600	.....	71,088	.....
Value.....	\$751,839	\$199,615	\$4,720	\$270,670	\$261,438	\$23,000	.....	\$1,851	.....
Pumpkins—									
Pounds.....	5,681,064	924,264	.....	1,746,336	1,113,640	72,000	93,600	849,824	831,400
Value.....	\$114,992	\$37,048	.....	\$31,439	\$14,728	\$1,000	\$1,560	\$14,229	\$14,993
Sweet potatoes—									
Pounds.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Value.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gumbo or okra—									
Pounds.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Value.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Succotash—									
Pounds.....	123,936	.....	.....	30,960	.....	.....	.....	92,976	.....
Value.....	\$2,851	.....	.....	\$430	.....	.....	.....	\$2,421	.....
Canned fruits—									
Total pounds.....	15,913,393	2,601,821	9,603,980	1,130,040	796,920	.....	.....	257,280	1,433,352
Total value.....	\$462,587	\$74,253	\$308,275	\$21,397	\$23,775	.....	.....	\$7,060	\$27,827
Pears—									
Pounds.....	297,120	648	282,144	10,008	4,320	.....	.....	.....	.....
Value.....	\$14,718	\$27	\$14,236	\$255	\$200	.....	.....	.....	.....
Peaches—									
Pounds.....	3,217,464	399,960	2,716,944	.....	100,560	.....	.....	.....	.....
Value.....	\$120,730	\$10,940	\$107,490	.....	\$2,300	.....	.....	.....	.....
Apples—									
Pounds.....	8,249,616	1,171,416	4,019,088	1,072,800	295,680	.....	.....	257,280	1,433,352
Value.....	\$177,639	\$27,892	\$88,053	\$20,132	\$6,675	.....	.....	\$7,060	\$27,827
Blackberries—									
Pounds.....	1,119,024	607,728	322,272	17,424	171,600	.....	.....	.....	.....
Value.....	\$36,147	\$17,801	\$12,008	\$338	\$6,000	.....	.....	.....	.....
Strawberries—									
Pounds.....	834,480	340,992	417,048	.....	76,440	.....	.....	.....	.....
Value.....	\$35,613	\$11,245	\$21,068	.....	\$3,200	.....	.....	.....	.....
Raspberries—									
Pounds.....	1,228,065	171,077	880,660	28,008	143,320	.....	.....	.....	.....
Value.....	\$46,858	\$6,348	\$34,483	\$622	\$5,400	.....	.....	.....	.....
Apricots—									
Pounds.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Value.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cherries—									
Pounds.....	68,016	.....	68,016	.....	.....	.....	.....	.....	.....
Value.....	\$4,166	.....	\$4,166	.....	.....	.....	.....	.....	.....
Plums—									
Pounds.....	899,608	.....	897,808	1,800	.....	.....	.....	.....	.....
Value.....	\$26,821	.....	\$26,771	\$50	.....	.....	.....	.....	.....
Dried fruits—									
Total pounds.....	7,501,102	269,500	4,418,453	101,000	2,569,149	.....	.....	26,100	116,900
Total value.....	\$418,855	\$18,215	\$243,285	\$5,680	\$150,760	.....	.....	\$1,125	\$4,800
Apples—									
Pounds.....	6,481,102	269,500	4,418,453	101,000	1,549,149	.....	.....	26,100	116,900
Value.....	\$357,755	\$18,215	\$243,285	\$5,680	\$89,650	.....	.....	\$1,125	\$4,800
Apricots—									
Pounds.....	155,000	.....	.....	.....	155,000	.....	.....	.....	.....
Value.....	\$12,850	.....	.....	.....	\$12,850	.....	.....	.....	.....
Pears—									
Pounds.....	100,000	.....	.....	.....	100,000	.....	.....	.....	.....
Value.....	\$7,000	.....	.....	.....	\$7,000	.....	.....	.....	.....
Peaches—									
Pounds.....	160,000	.....	.....	.....	160,000	.....	.....	.....	.....
Value.....	\$11,000	.....	.....	.....	\$11,000	.....	.....	.....	.....
Prunes—									
Pounds.....	605,000	.....	.....	.....	605,000	.....	.....	.....	.....
Value.....	\$30,250	.....	.....	.....	\$30,250	.....	.....	.....	.....
Raisins—									
Pounds.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Value.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE 12.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: BY STATES AND TERRITORIES, 1900—Continued.

	WESTERN STATES.						PACIFIC STATES.			
	Total.	Nebraska.	Utah.	Colorado.	Kansas.	All other states, <sup>1</sup>	Total.	Washing- ton.	Oregon.	California.
Canning and preserving:										
Aggregate value.....	\$882,903	\$207,286	\$294,769	\$250,833	\$113,675	\$16,340	\$12,408,385	\$14,645	\$140,311	\$12,253,429
Canned vegetables—										
Total pounds.....	32,667,480	7,429,488	12,552,336	7,092,216	5,089,440	504,000	62,877,760		324,000	62,553,760
Total value.....	\$837,382	\$193,286	\$271,488	\$247,083	\$110,825	\$14,700	\$2,292,293		\$14,300	\$2,277,993
Tomatoes—										
Pounds.....	20,814,024	1,512,000	12,800,048	3,393,336	3,104,640	504,000	57,428,176		110,400	57,317,776
Value.....	\$466,948	\$91,800	\$263,363	\$94,105	\$62,980	\$14,700	\$2,075,105		\$2,700	\$2,072,405
Corn—										
Pounds.....	7,773,600	5,740,800		720,000	1,312,800		14,400		14,400	
Value.....	\$220,202	\$167,890		\$27,000	\$35,312		\$405		\$405	
Peas—										
Pounds.....	1,560,000			1,440,000	120,000		3,634,080		141,600	3,492,480
Value.....	\$82,000			\$78,000	\$4,000		\$154,617		\$8,630	\$145,987
Beans—										
Pounds.....	1,271,088	162,288		1,080,800	48,000		1,716,048		57,600	1,658,448
Value.....	\$40,656	\$9,396		\$36,100	\$1,100		\$59,910		\$2,565	\$57,345
Pumpkins—										
Pounds.....	1,248,768	14,400	252,288	478,080	504,000		74,400			74,400
Value.....	\$27,576	\$200	\$8,125	\$11,818	\$7,433		\$1,800			\$1,800
Sweet potatoes—										
Pounds.....										
Value.....							10,656			10,656
Gumbo or okra—							\$396			\$396
Pounds.....										
Value.....										
Succotash—										
Pounds.....										
Value.....										
Canned fruits—										
Total pounds.....	1,311,408	451,200	631,248	108,000	120,960		164,776,142		2,585,760	162,190,382
Total value.....	\$43,781	\$13,900	\$28,281	\$3,750	\$2,850		\$7,512,466		\$106,560	\$7,405,916
Pears—										
Pounds.....	182,880		182,880				32,859,528		530,400	32,329,128
Value.....	\$6,994		\$6,994				\$1,645,919		\$22,000	\$1,623,919
Peaches—										
Pounds.....	91,488		91,488				65,709,480		72,000	65,637,480
Value.....	\$3,362		\$3,362				\$3,144,682		\$2,550	\$3,142,132
Apples—										
Pounds.....	892,800	451,200	212,640	108,000	120,960		2,225,866		405,600	1,820,266
Value.....	\$26,037	\$13,900	\$5,537	\$3,750	\$2,850		\$85,227		\$13,800	\$71,427
Blackberries—										
Pounds.....	20,880		20,880				2,884,080		422,400	2,461,680
Value.....	\$1,087		\$1,087				\$121,705		\$15,000	\$106,705
Strawberries—										
Pounds.....	4,800		4,800				1,386,744		168,000	1,218,744
Value.....	\$250		\$250				\$79,772		\$9,500	\$70,272
Raspberries—										
Pounds.....	6,144		6,144				647,472		124,800	522,672
Value.....	\$320		\$320				\$48,356		\$6,600	\$41,756
Apricots—										
Pounds.....	3,360		3,360				38,519,540			38,519,540
Value.....	\$175		\$175				\$1,591,242			\$1,591,242
Cherries—										
Pounds.....	7,920		7,920				3,069,336		699,360	2,369,976
Value.....	\$412		\$412				\$186,113		\$30,300	\$155,813
Plums—										
Pounds.....	101,136		101,136				17,474,096		163,200	17,310,896
Value.....	\$5,144		\$5,144				\$609,450		\$6,800	\$602,650
Dried fruits—										
Total pounds.....	66,934	6,600				60,334	50,021,233	286,000	397,350	49,337,883
Total value.....	\$1,740	\$100				\$1,640	\$2,603,626	\$14,645	\$19,461	\$2,569,529
Apples—										
Pounds.....	6,600	6,600					3,124,470		37,250	3,087,220
Value.....	\$100	\$100					\$158,003		\$2,110	\$155,893
Apricots—										
Pounds.....							5,310,217			5,310,217
Value.....							\$442,544			\$442,544
Pears—										
Pounds.....							601,506			601,506
Value.....							\$42,279			\$42,279
Peaches—										
Pounds.....							5,502,390			5,502,390
Value.....							\$301,495			\$301,495
Prunes—										
Pounds.....	60,334					60,334	24,748,429	286,000	360,100	24,102,329
Value.....	\$1,640					\$1,640	\$939,037	\$14,645	\$17,351	\$907,041
Raisins—										
Pounds.....							10,784,221			10,784,221
Value.....							\$720,268			\$720,268

<sup>1</sup> Includes establishments distributed as follows: Idaho, 2; New Mexico, 1.

Table 12 shows the quantity and value of fruits and vegetables prepared by fruit and vegetable canning factories as such, and also the quantity and value reported as a subsidiary product in establishments engaged primarily in the canning and preserving of fish and oysters. The values reported do not include the amounts returned for all other products, and therefore,

the totals given in Table 12 do not agree with the total products elsewhere given in this report, or with those of the general report, on this industry as presented in Manufactures, Parts I and II. Further, many establishments classified under "food preparations" and "pickles, preserves, and sauces" are engaged in the canning and preserving of fruits and vegetables, and it

was impossible to ascertain the total quantity and value of fruits and vegetables canned by such establishments. It will be observed that the quantity and value of some varieties of fruits and vegetables do not appear in Table 12. This is due to the fact that it was impossible to secure the quantity and value of each, as they were not separately reported. They are therefore, as heretofore explained, included under "all other products" in Table 11. Nevertheless, the totals given in Table 12 may be taken as fairly representing the quantities and value of fruits and vegetables canned during the census year.

Table 12 shows that the value of canned and preserved fruits and vegetables was \$45,379,548. The total number of pounds of canned vegetables was 1,172,467,073, valued at \$29,368,158; canned fruit, 302,127,819 pounds, valued at \$11,589,885; and dried fruit, 81,314,406 pounds, valued at \$4,421,505. It appears that the Middle states led in this industry and reported \$19,550,313 as the value of canned and preserved fruits and vegetables, or 43.1 per cent of the total value. The Pacific states ranked second, with \$12,408,385 as the value of products, or 27.3 per cent of the total value. The Central states ranked third, with a product of \$9,715,994, or 21.4 per cent of the total value. The New England, Southern, and Western states followed in the order named.

In the total number of pounds of canned vegetables Maryland easily led, reporting 307,247,293 pounds, or 26.2 per cent of the total number. The other 4 leading states in the order named, with the number of pounds reported by each, were: New York, 135,432,524; Indiana, 91,566,684; Illinois, 80,214,384; and California, 62,553,760. The total number of pounds of canned and preserved vegetables reported by these 5 states

was 677,014,645, or over 50 per cent of the total number of pounds reported for the entire country.

In the canning of the different varieties of fruits California ranked first with 162,190,382 pounds, or 53.7 per cent of the total. The other 5 leading states, ranked according to the number of pounds, were: Maryland, 56,432,556; New York, 41,241,240; Michigan, 9,603,980; Delaware, 5,486,704, and New Jersey, 3,224,512. The total number of pounds of canned fruits returned by these 6 states was 278,179,375, or 92.1 per cent of the entire number of pounds reported for the country.

Naturally climatic and other physiographic conditions cause a tendency to sectionalism in this industry. The states which stood preeminent in the several varieties of canned and preserved foods as shown by Table 12, in the order of their importance, were as follows: tomatoes, Maryland, New Jersey, Indiana, California, Delaware, and Ohio; corn, New York, Illinois, Iowa, Maryland, and Maine; pease, New York, Maryland, Wisconsin, Indiana, and Delaware; beans, Maryland, New York, Illinois, Ohio, and Indiana; pumpkins, New York, Indiana, and Illinois; pears, California, New York, and Delaware; peaches, California, Maryland, Michigan, and Delaware; apples, New York, Maryland, Michigan, California, Maine, and Ohio; small fruits, as blackberries, strawberries, and raspberries, California, Maryland, and New York.

The drying of fruit seems to be confined principally to California and New York, those 2 states reporting 70,880,780 pounds, or 87.2 per cent of the total number reported.

The principal details of the statistics for the canning and preserving of fruits and vegetables as carried on in cities of over 20,000 population are shown in Table 13.

TABLE 13.—FRUITS AND VEGETABLES, CANNING AND PRESERVING: STATISTICS OF CITIES OF 20,000 POPULATION OR OVER, 1900.

CITIES.	Rank by value of products.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Wages.			
Total .....		107	\$9,529,513	508	\$611,654	10,189	\$2,569,859	\$1,170,459	\$15,422,289	\$21,788,123
Baltimore, Md.....	1	23	2,862,467	148	172,326	4,390	905,397	309,985	6,432,415	8,477,178
San Francisco, Cal.....	2	10	856,900	51	70,656	1,538	433,107	102,137	2,932,802	2,932,802
Chicago, Ill.....	3	6	866,100	36	56,661	311	105,972	181,007	1,230,981	1,765,129
New York, N. Y.....	4	6	1,732,932	27	46,880	379	118,033	31,448	545,957	830,865
Indianapolis, Ind.....	5	3	241,260	70	69,520	300	65,331	56,300	435,550	724,968
Boston, Mass.....	6	4	32,700	8	7,100	110	31,706	6,925	350,323	428,110
Los Angeles, Cal.....	7	3	148,000	5	6,600	322	76,500	14,706	297,023	428,000
Portland, Me.....	8	3	122,935	3	3,681	55	20,544	6,550	72,590	128,219
All other cities <sup>1</sup> .....		49	3,166,219	160	178,130	2,814	812,519	400,141	3,919,257	5,928,852

<sup>1</sup> Includes establishments distributed as follows: Atlanta, Ga., 1; Auburn, N. Y., 1; Austin, Tex., 1; Birmingham, Ala., 1; Buffalo, N. Y., 1; Burlington, Iowa, 1; Canton, Ohio, 2; Cedar Rapids, Iowa, 1; Cincinnati, Ohio, 1; Columbus, Ohio, 1; Davenport, Iowa, 1; Dayton, Ohio, 1; Denver, Colo., 1; Detroit, Mich., 1; Elgin, Ill., 1; Evansville, Ind., 1; Grand Rapids, Mich., 1; Hamilton, Ohio, 1; Jersey City, N. J., 1; Kalamazoo, Mich., 1; Leavenworth, Kans., 1; Muncie, Ind., 1; Oakland, Cal., 1; Oshkosh, Wis., 1; Peoria, Ill., 1; Philadelphia, Pa., 1; Pittsburg, Pa., 1; Portland, Oreg., 2; Providence, R. I., 1; Pueblo, Colo., 1; Quincy, Ill., 1; Rochester, N. Y., 1; Rockford, Ill., 1; Sacramento, Cal., 1; St. Joseph, Mo., 2; St. Louis, Mo., 1; St. Paul, Minn., 1; San Jose, Cal., 2; Seattle, Wash., 2; Syracuse, N. Y., 1; Topeka, Kans., 1; West Hoboken, N. J., 1; Zanesville, Ohio, 1.

Table 13 indicates that of the total value of products, \$21,788,123, or 38.4 per cent, was reported for the cities named, and of this amount, \$8,477,178, or 15 per cent of the total for the United States, was returned for Baltimore, which, since the inception of the industry, has always been the principal city in the

fruit and vegetable canning and preserving industry. On the whole, the industry can hardly be said to be carried on chiefly in cities, as there seems to be a natural inclination toward the rural districts nearest the source of supply of the different varieties of fruits and vegetables.

## HISTORICAL AND DESCRIPTIVE.

Fruits and vegetables were the first goods canned successfully, the early processes being especially applicable to this class of goods, as they require a less degree of heat to preserve them than do fish and oysters. The method first used was to fill glass bottles to the necks with fruits, which in some cases were partly worked, and then loosely cork the bottle and place in tepid water. The temperature was then gradually increased to from 170° to 190° F. and maintained at that point for a period of from thirty to sixty minutes, when the bottles were sealed and cooled in a bath. This method was improved upon by Pierre Atoine Angilbert in the year 1823 in the following manner: The fruit having been placed in a tin can containing water, a lid with an aperture was fastened on and heat was applied. After the liquid had boiled a while the aperture was closed with a drop of solder. This method does not differ materially from that in use in American canneries at the present time.

Although fruits and vegetables were among the first articles canned in the United States, the industry was largely confined, during the period between 1820 and 1845, to the cities where fish and oyster canning was carried on. Little information is available regarding the canning of fruits and vegetables during this time, and it is to be presumed that it was not very extensive. Tomatoes and corn, the two vegetables which are most extensively canned to-day, were not put up during the period mentioned.

The art of hermetically sealing tomatoes in tin cans was first used by Harrison W. Crosby when he was acting as steward of Lafayette College, Easton, Pa., in 1847. The first methods used in putting up this article were crude and imperfect, but labor-saving machinery and economical methods have wrought great changes from time to time in this branch of the industry.

The canning of corn was begun simultaneously in 1839 by two canneries in Baltimore, Md., and Portland, Me., the latter being under the management of Mr. Isaac Winslow. Little information is available concerning the progress of the canning of this article in Baltimore, but the history of its progress in Maine appears to be more complete. Mr. Winslow met with little success until 1852, in which year he applied for a patent, which, however, was not granted until 1862. His method was substantially as follows:<sup>1</sup> The kernels of a superior quality of fresh green corn were removed from the cob by a knife and placed in hermetically sealed tin cans, which were then subjected to steam or boiling heat for about one and one-half hours, when the cans

were punctured and again sealed and boiled for two and one-half hours longer. A much greater degree of success followed the invention of steam retorts in 1874, by which a higher degree of temperature could be secured. The first cooking under the old system was done away with by the introduction of "cookers," which are steam retorts used to cook the corn before placing it in the cans. This method is in use at the present time.

Prior to 1846, canneries were in operation in New York, Boston, and Baltimore, and in Portland and Eastport, Me., and in Newark, N. J., the canneries in the latter place having prepared the fruits and vegetables for Dr. Kane's Arctic Expedition. After 1850 canneries began to develop rapidly under the stimulus of an increasing demand for the goods. By 1866 factories were in operation in most fruit and vegetable raising sections of the country. Canneries were established in the Middle West at Circleville, Ohio, in 1873, and at Indianapolis, Ind., a few years previously. The rapid development of fruit and vegetable culture in California and elsewhere on the Pacific coast led to the introduction of canning establishments as early as 1856.<sup>2</sup> At present this section takes the lead in the canning and preserving of small fruits. The fruits most extensively canned on the Pacific coast are plums, apricots, pears, peaches, and cherries, and the leading vegetables are tomatoes, asparagus, and pease.

Baltimore has been aptly called the "cradle of the canning industry." The state of Maryland not only leads in oyster canning, but is also among the first in the canning of tomatoes, corn, peaches, peas, lima beans, apples, pears, and pineapples.

Maine, in addition to being the leading state in sardine canning, is one of the leading corn-canning states, while New York leads in canning corn, apples, and pears, and also puts up peas and beans in large quantities. As stated elsewhere, climatic conditions largely determine the locality in which each variety of fruits or vegetables is canned.

The canning of fruits and vegetables has increased with greater rapidity during the past thirty years than have the other branches of the canning industry included in this report. This is in a measure due to the fact that it differs from oyster and fish canning in that it is not confined to as narrow limits as these latter, but may be carried on in the numerous fruit and vegetable raising sections of the country.

Table 14 shows the detailed statistics for the industry by states and territories as returned for 1900.

<sup>1</sup> Origin and Progress of the Canning Industry in Maine, F. O. Conant.

<sup>2</sup> San Francisco Trade Journal, December 20, 1901.

TABLE 14.—FRUITS AND VEGETABLES, CANNING AND

	United States.	Alabama.	Arkansas.	California.	Colorado.	Connecticut.
1 Number of establishments .....	1,808	3	34	136	7	5
2 Character of organization:						
3 Individual .....	919	3	18	52	2	1
4 Firm and limited partnership .....	505	14	27	27	5	4
5 Incorporated companies .....	365	2	50	7		
6 Miscellaneous .....	19					
7 Capital:						
8 Total .....	\$27,743,067	\$7,585	\$33,038	\$4,397,935	\$277,325	\$51,463
9 Land .....	\$2,702,470	\$4,110	\$2,680	\$1,132,110	\$28,500	\$2,450
10 Buildings .....	\$4,517,008	\$1,125	\$13,123	\$728,891	\$79,500	\$21,232
11 Machinery, tools, and implements .....	\$4,797,719	\$550	\$554,086	\$7,835	\$62,700	\$29,496
12 Cash and sundries .....	\$15,725,870	\$1,500	\$9,500	\$1,982,848	\$106,025	\$38,285
13 Salaried officials, clerks, etc.:	2,060	3	44	128	2	2
14 Total number .....	1,741	1	2	259	18	7
15 Total salaries .....	\$1,277,028	\$300	\$350	\$242,888	\$23,700	\$3,200
16 Officers of corporations—						
17 Number .....	338		1	39	8	4
18 Salaries .....	\$350,301		\$300	\$58,675	\$13,150	\$1,610
19 General superintendents, managers, clerks, etc.—						
20 Total number .....	1,493	1	1	220	10	3
21 Total salaries .....	\$926,727	\$300	\$50	\$183,713	\$10,550	\$1,650
22 Men—						
23 Number .....	1,258	1	1	182	10	3
24 Salaries .....	\$381,739	\$300	\$50	\$172,163	\$10,550	\$1,650
25 Women—						
26 Number .....	150			38		
27 Salaries .....	\$44,988			\$11,550		
28 Wage-earners, including pieceworkers, and total wages:						
29 Greatest number employed at any one time during the year .....	133,106	84	601	24,935	613	429
30 Least number employed at any one time during the year .....	45,106	45	504	5,952	266	61
31 Average number .....	86,401	16	136	7,486	206	100
32 Wages .....	\$8,050,793	\$2,380	\$21,942	\$1,987,649	\$62,661	\$24,967
33 Men, 16 years and over—						
34 Average number .....	13,542	9	50	1,819	66	35
35 Wages .....	\$4,122,104	\$1,760	\$10,079	\$702,428	\$37,855	\$12,203
36 Women, 16 years and over—						
37 Average number .....	19,699	4	72	5,252	116	64
38 Wages .....	\$3,600,243	\$400	\$10,495	\$1,233,861	\$19,466	\$12,014
39 Children, under 16 years—						
40 Average number .....	3,160	3	14	415	24	1
41 Wages .....	\$328,446	\$220	\$1,368	\$51,360	\$5,260	\$150
42 Average number of wage-earners, including pieceworkers, employed during each month:						
43 Men, 16 years and over—						
44 January .....	8,384			326	24	2
45 February .....	3,348			285	26	2
46 March .....	4,350			419	26	2
47 April .....	5,242			855	26	1
48 May .....	6,464			1,188	26	3
49 June .....	11,474	13		2,048	101	8
50 July .....	14,182	29	87	3,252	101	6
51 August .....	81,958	38	160	4,217	108	90
52 September .....	41,108	25	208	4,125	169	141
53 October .....	23,714		154	2,938	119	94
54 November .....	11,934		44	1,498	49	67
55 December .....	5,346			641	32	16
56 Women, 16 years and over—						
57 January .....	2,451			177	28	
58 February .....	1,958			106	28	
59 March .....	2,536			106	28	2
60 April .....	2,885			423	28	
61 May .....	5,981			1,473	28	
62 June .....	16,589	6		6,227	128	
63 July .....	26,895	16	51	13,496	128	
64 August .....	54,533	21	246	10,157	140	175
65 September .....	64,111	6	280	14,947	385	270
66 October .....	38,667	1	224	7,788	87	185
67 November .....	14,625	1	59	1,595	87	86
68 December .....	5,217			524	37	38
69 Children, under 16 years—						
70 January .....	370				1	
71 February .....	337				1	
72 March .....	435				1	
73 April .....	493				1	
74 May .....	801	5		6	1	
75 June .....	2,367	5		22	1	
76 July .....	4,560	8		295	51	3
77 August .....	10,831	12	57	1,257	51	3
78 September .....	11,331	10	56	1,649	50	
79 October .....	4,762		46	1,281	69	3
80 November .....	1,169			406	44	3
81 December .....	476			65	14	
82 Miscellaneous expenses:						
83 Total .....	\$2,423,673	\$135	\$952	\$412,787	\$14,598	\$1,985
84 Rent of works .....	\$164,169		\$35	\$26,708	\$530	
85 Taxes, not including internal revenue .....	\$110,139	\$45	\$213	\$18,311	\$1,694	\$200
86 Rent of offices, interest, insurance, and all sundry expenses not hitherto included .....	\$2,112,300	\$60	\$704	\$366,412	\$12,374	\$1,785
87 Contract work .....	\$36,565	\$30		\$1,306		
88 Materials used:						
89 Aggregate cost .....	\$37,524,297	\$3,418	\$50,954	\$9,102,400	\$223,454	\$81,887
90 Principal materials—						
91 Total cost .....	\$20,704,783	\$1,050	\$43,633	\$5,449,382	\$117,054	\$29,330
92 Purchased in raw state .....	\$16,429,113	\$1,050	\$43,533	\$3,797,656	\$115,200	\$29,330
93 Purchased in partially manufactured form .....	\$4,275,670			\$1,651,726	\$2,754	
94 Fuel .....	\$480,868	\$120	\$4,306	\$96,108	\$3,761	\$1,168
95 Rent of power and heat .....	\$10,358			\$610		
96 Mill supplies .....	\$96,651			\$5,189	\$632	\$300
97 All other materials .....	\$15,627,357	\$2,185	\$2,512	\$3,425,006	\$100,860	\$48,659
98 Freight .....	\$604,260	\$10	\$503	\$126,110	\$67	\$2,450



## CANNING AND PRESERVING.

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PRESERVING: BY STATES AND TERRITORIES, 1900.

Delaware.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachu- setts.	Michigan.	Minnesota.	
51	8	61	60	26	5	8	59	271	9	98	4	1
27	2	20	15	2		4	16	175	6	52	1	2
18	2	15	15	6	2	1	22	78	3	34	1	3
6	4	25	30	18	2	3	19	18		12	2	4
		1			1		2					5
\$966,660	\$24,801	\$1,551,977	\$1,205,494	\$1,027,321	\$30,300	\$95,600	\$865,825	\$4,459,660	\$48,375	\$308,668	\$43,650	6
\$31,080	\$1,851	\$72,077	\$104,151	\$37,900	\$4,200	\$6,000	\$42,845	\$378,143	\$625	\$91,603	\$1,800	7
\$148,388	\$5,700	\$221,647	\$284,009	\$190,900	\$10,702	\$18,150	\$132,498	\$480,586	\$900	\$204,315	\$10,000	8
\$141,164	\$5,500	\$369,810	\$225,005	\$311,869	\$8,766	\$34,400	\$230,928	\$633,234	\$19,900	\$140,649	\$11,300	9
\$646,078	\$11,750	\$888,443	\$592,329	\$486,652	\$6,632	\$37,050	\$459,559	\$3,017,697	\$26,950	\$456,101	\$20,550	10
72	5	51	46	15	2	7	99	844	12	122	3	11
29	4	99	155	46	11	12	102	231	9	70	2	12
\$14,278	\$3,650	\$101,515	\$112,174	\$27,305	\$3,254	\$5,842	\$50,850	\$213,080	\$7,600	\$45,279	\$1,600	13
1	2	20	37	14	1	7	14	23		15		14
\$150	\$3,000	\$23,120	\$20,980	\$12,000	\$100	\$3,750	\$11,600	\$52,850		\$7,685		15
28	2	79	118	32	10	5	88	208	9	55	2	16
\$14,128	\$650	\$78,395	\$91,244	\$15,305	\$3,154	\$2,090	\$39,354	\$160,230	\$7,600	\$37,594	\$1,600	17
28	2	77	86	29	10	4	83	198	9	47	2	18
\$14,128	\$650	\$77,845	\$84,906	\$14,610	\$3,154	\$2,010	\$37,493	\$156,274	\$7,600	\$34,445	\$1,600	19
		2	32	3		1	5	10		8		20
		\$550	\$6,338	\$695		\$80	\$1,861	\$3,956		\$3,149		21
5,909	468	5,578	8,718	3,867	512	874	5,050	22,907	261	4,014	285	22
2,257	187	1,986	2,187	1,609	131	358	1,885	12,341	135	1,908	139	23
1,437	81	1,444	2,002	699	116	231	904	7,505	189	1,165	45	24
\$226,149	\$10,545	\$392,036	\$386,457	\$184,710	\$17,148	\$36,903	\$208,609	\$1,379,131	\$39,945	\$240,102	\$8,523	25
527	26	815	824	321	51	89	487	2,980	57	378	17	26
\$113,751	\$5,260	\$278,626	\$219,239	\$114,630	\$10,124	\$19,248	\$144,508	\$744,516	\$21,660	\$121,412	\$6,670	27
750	38	582	1,068	266	51	105	316	3,712	79	565	26	28
\$100,119	\$4,410	\$108,182	\$156,473	\$54,575	\$5,564	\$14,094	\$49,385	\$559,310	\$17,700	\$95,054	\$1,590	29
160	17	47	110	112	14	37	101	813	8	222	2	30
\$12,279	\$875	\$5,828	\$10,745	\$15,505	\$1,460	\$3,561	\$9,616	\$75,305	\$525	\$28,636	\$263	31
60	14	248	109	43	1	15	137	1,310	49	93		32
72	14	259	115	39		10	158	1,201	47	98		33
120	14	273	197	129		10	180	1,698	51	95	4	34
137	14	363	287	77	11	15	226	1,731	58	94	4	35
246	2	416	384	99	20	20	217	2,020	57	97	4	36
494	19	407	916	164	42	90	138	2,536	52	316	4	37
323	70	502	915	215	35	138	192	2,378	62	273	10	38
1,667	80	2,691	2,313	606	183	274	984	7,121	60	447	63	39
1,774	45	2,857	2,810	1,722	170	280	2,739	7,678	59	1,000	100	40
1,161	14	994	1,347	395	126	189	560	4,459	63	1,075	10	41
219	12	433	342	259	27	23	273	2,236	64	693	6	42
62	12	331	156	103	2	10	89	1,343	59	257	2	43
17	3	199	87	7			91	962	68	112		44
17	3	194	84	7			94	619	66	112		45
29	3	190	88	39			111	1,132	60	114		46
23	3	206	84				92	1,094	74	114		47
57		197	109				85	2,485	75	112		48
318	20	202	615	43	10	75	39	3,756	84	483		49
112	154	495	626	65	3	208	64	3,976	82	488		50
2,769	173	1,710	4,010	1,153	230	353	594	9,754	100	694	111	51
3,211	80	1,848	4,747	1,263	225	348	1,385	10,788	91	1,633	171	52
2,204	3	1,069	1,958	361	110	258	704	6,689	79	1,655	18	53
207	3	412	269	212	34	18	412	2,237	85	1,020	18	54
37	3	267	134	36			122	1,054	83	297		55
				3			12	123		160		56
				3			12	87		160		57
				3			12	132		160		58
9				3			10	142		160		59
27				3			10	344		160		60
84	84	10	78	25	25	35		601		806		61
67	78	57	89	6	6	75	3	660	2	253		62
602	76	214	413	576	65	126	417	2,847	3	250	6	63
650	16	226	403	597	46	123	618	2,931	6	286	21	64
448		49	286	114	21	80	77	1,526	5	310		65
30		4	37	24	1		30	268	14	265		66
3			5	3			10	95	2	188		67
\$27,169	\$4,262	\$295,558	\$165,755	\$33,185	\$11,722	\$10,100	\$43,119	\$371,108	\$7,392	\$123,514	\$1,452	68
\$1,722	\$600	\$32,313	\$2,835	\$225	\$596		\$4,936	\$33,560	\$4,724	\$7,381	75	69
\$1,501	\$221	\$8,413	\$6,619	\$3,852	\$363	\$254	\$5,444	\$20,139	\$463	\$3,731	\$160	70
\$23,946	\$3,441	\$253,332	\$154,493	\$57,508	\$10,763	\$9,846	\$32,289	\$316,949	\$2,205	\$112,368	\$1,211	71
		\$1,500	\$1,808	\$1,600			\$500	\$460		\$34		72
\$1,083,142	\$67,192	\$2,447,194	\$1,526,088	\$767,231	\$68,465	\$75,846	\$762,102	\$3,786,518	\$384,600	\$1,154,698	\$17,929	73
\$478,586	\$17,406	\$1,367,171	\$608,358	\$294,244	\$20,681	\$25,110	\$389,984	\$5,019,865	\$325,137	\$30,078	\$9,310	74
\$429,948	\$14,606	\$1,075,569	\$534,854	\$256,424	\$20,681	\$25,110	\$342,208	\$4,028,376	\$281,324	\$440,052	\$3,785	75
\$48,638	\$2,800	\$291,602	\$73,504	\$37,820			\$47,776	\$990,989	\$43,813	\$190,026	\$525	76
\$12,859	\$493	\$18,295	\$20,782	\$11,357	\$1,599	\$1,565	\$10,573	\$50,894	\$3,394	\$22,642	\$549	77
\$35		\$5,800	\$25				\$7	\$475			\$40	78
\$3,496	\$130	\$4,371	\$2,892	\$6,195	\$444	\$55	\$2,351	\$20,138	\$212	\$1,595	\$119	79
\$567,527	\$41,130	\$1,022,060	\$357,677	\$447,504	\$45,172	\$47,465	\$350,524	\$3,593,237	\$53,325	\$462,470	\$5,786	80
\$20,639	\$8,033	\$29,497	\$36,354	\$7,931	\$569	\$1,150	\$8,595	\$102,409	\$2,532	\$37,913	\$2,125	81

TABLE 14.—FRUITS AND VEGETABLES, CANNING AND

		United States.	Alabama.	Arkansas.	California.	Colorado.	Connecticut.
82	Products:						
	Aggregate value .....	\$56,668,313	\$7,947	\$100,503	\$13,081,829	\$343,394	\$124,280
83	Canned vegetables—						
84	Total pounds .....	1,142,327,265	227,880	576,000	62,428,288	7,092,216	3,800,592
	Total value .....	\$28,734,598	\$4,248	\$15,000	\$2,274,037	\$247,083	\$101,048
85	Tomatoes—						
86	Pounds .....	626,438,753	227,880	576,000	57,208,720	3,393,336	3,783,312
	Value .....	\$13,666,560	\$4,248	\$15,000	\$2,068,997	\$94,105	\$100,544
87	Corn—						
88	Pounds .....	304,175,223				720,000	17,280
	Value .....	\$8,191,383				\$27,000	\$504
89	Pease—						
90	Pounds .....	122,008,669			3,492,480	1,440,000	
	Value .....	\$4,465,673			\$145,987	\$78,000	
91	Beans—						
92	Pounds .....	71,688,808			1,642,082	1,060,800	
	Value .....	\$2,025,123			\$56,797	\$36,160	
93	Pumpkins—						
94	Pounds .....	9,941,616			74,400	478,080	
	Value .....	\$202,404			\$11,860	\$11,818	
95	Sweet potatoes—						
96	Pounds .....	6,013,896			10,656		
	Value .....	\$124,245			\$396		
97	Succotash—						
98	Pounds .....	1,768,224					
	Value .....	\$53,960					
99	Okra—						
100	Pounds .....	202,076					
	Value .....	\$5,250					
101	Canned fruits—						
102	Total pounds .....	298,637,273	168,360		160,921,862	108,000	867,744
	Total value .....	\$11,311,092	\$3,699		\$7,340,059	\$3,750	\$22,217
103	Peaches—						
104	Pounds .....	104,353,640	135,720		65,064,696		
	Value .....	\$4,233,165	\$2,850		\$3,103,775		
105	Pears—						
106	Pounds .....	48,418,936			31,992,672		
	Value .....	\$2,188,201			\$1,610,900		
107	Apricots—						
108	Pounds .....	38,278,628			38,272,868		
	Value .....	\$1,583,252			\$1,582,927		
109	Apples—						
110	Pounds .....	46,494,898			1,820,266	108,000	867,744
	Value .....	\$1,125,119			\$71,427	\$3,750	\$22,217
111	Plums—						
112	Pounds .....	21,781,462			17,198,288		
	Value .....	\$730,562			\$596,484		
113	Strawberries—						
114	Pounds .....	11,059,628			1,218,744		
	Value .....	\$446,679			\$70,272		
115	Raspberries—						
116	Pounds .....	8,542,889			522,672		
	Value .....	\$344,598			\$41,756		
117	Cherries—						
118	Pounds .....	5,489,608			2,309,976		
	Value .....	\$307,788			\$155,813		
119	Blackberries—						
120	Pounds .....	9,217,584	32,640		2,461,680		
	Value .....	\$301,698	\$849		\$106,705		
121	Dried fruits—						
122	Total pounds .....	81,189,406		1,402,000	49,337,888		
	Total value .....	\$4,415,005		\$80,861	\$2,569,520		
123	Apples—						
124	Pounds .....	33,212,309		1,402,000	3,087,220		
	Value .....	\$1,906,642		\$80,861	\$155,893		
125	Prunes—						
126	Pounds .....	25,418,763			24,102,329		
	Value .....	\$970,927			\$907,041		
127	Raisins—						
128	Pounds .....	10,734,221			10,734,221		
	Value .....	\$720,268			\$720,268		
129	Apricots—						
130	Pounds .....	5,465,217			5,310,217		
	Value .....	\$455,394			\$442,544		
131	Peaches—						
132	Pounds .....	5,662,390			5,502,390		
	Value .....	\$312,495			\$301,495		
133	Pears—						
134	Pounds .....	701,506			601,506		
135	Value .....	\$49,279			\$42,279		
	Value of all other products .....	\$12,207,648		\$4,642	\$898,213	\$92,561	\$1,016
136	Comparison of products:						
137	Number of establishments reporting for both years .....	1,036	1	6	73	6	4
138	Value for census year .....	\$39,974,339	\$1,800	\$13,820	\$5,879,608	\$335,719	\$96,180
	Value for preceding business year .....	\$33,286,939	\$1,800	\$15,250	\$4,639,734	\$315,845	\$49,000
139	Power:						
140	Number of establishments reporting .....	822	1	1	33	6	5
	Total horsepower .....	27,172	15	40	953	253	161
	Owned—						
	Engines—						
141	Steam—						
142	Number .....	1,030	1	1	35	8	6
	Horsepower .....	25,336	15	40	888	208	161
143	Gas or gasoline—						
144	Number .....	46			5		
	Horsepower .....	405			48		
145	Water wheels—						
146	Number .....	9					
	Horsepower .....	132					
147	Electric motors—						
148	Number .....	14			4		
	Horsepower .....	266			35		
149	Other power—						
150	Number .....	4					
	Horsepower .....	110				1	
	Rented—					40	
151	Total horsepower .....	923			32	5	
152	Electric horsepower .....	244			17	5	
153	All other horsepower .....	679			16		
154	Furnished to other establishments, horsepower .....	17					

# CANNING AND PRESERVING.

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PRESERVING: BY STATES AND TERRITORIES, 1900—Continued.

Delaware.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachu- setts.	Michigan.	Minnesota.	
\$1,570,790	\$120,022	\$3,780,080	\$2,589,908	\$1,359,958	\$113,675	\$192,787	\$1,335,671	\$11,996,245	\$531,545	\$1,760,875	\$49,200	82
64,809,512	313,320	79,182,384	91,566,684	53,612,790	5,089,440	7,979,688	85,784,688	279,588,801	3,246,864	8,059,968	2,101,992	83
\$1,414,308	\$7,522	\$1,774,913	\$2,169,008	\$1,322,622	\$110,825	\$180,187	\$1,098,936	\$6,260,691	\$57,504	\$198,755	\$40,200	84
54,996,168	272,280	13,461,120	63,272,984	6,124,680	3,104,640	5,157,864	299,304	187,160,705	953,424	5,359,968	358,776	85
\$1,121,546	\$6,163	\$258,507	\$1,286,027	\$125,796	\$62,980	\$106,227	\$5,405	\$3,659,137	\$21,638	\$102,755	\$7,140	86
2,555,520	-----	50,985,408	9,943,440	45,394,222	1,312,800	1,584,000	\$4,100,112	40,750,032	206,688	-----	1,649,616	87
\$65,950	-----	\$1,189,700	\$270,205	\$1,146,075	\$35,812	\$30,600	\$1,038,316	\$1,070,096	\$6,466	-----	\$40,500	88
4,849,824	-----	1,965,840	10,089,380	1,080,000	120,000	768,000	98,400	27,150,792	41,952	2,640,000	-----	89
\$176,578	-----	\$60,500	\$310,172	\$32,250	\$4,000	\$29,000	\$3,325	\$957,436	\$1,000	\$92,000	-----	90
1,836,000	38,160	11,656,376	6,533,584	71,088	48,000	397,824	711,112	19,443,408	2,044,800	60,000	-----	91
\$49,244	\$1,275	\$251,438	\$270,670	\$1,851	\$1,100	\$12,960	\$83,635	\$470,314	\$28,400	\$4,000	-----	92
72,000	-----	1,113,640	1,746,336	849,824	504,000	72,000	294,886	346,320	-----	-----	98,600	93
\$990	-----	\$14,723	\$81,439	\$14,229	\$7,433	\$1,400	\$7,185	\$6,315	-----	-----	\$1,600	94
-----	-----	-----	-----	-----	-----	-----	-----	4,274,088	-----	-----	-----	95
-----	-----	-----	-----	-----	-----	-----	-----	\$85,020	-----	-----	-----	96
-----	-----	-----	30,960	92,976	-----	-----	281,424	383,616	-----	-----	-----	97
-----	-----	-----	\$430	\$2,421	-----	-----	\$11,070	\$10,243	-----	-----	-----	98
-----	2,880	-----	-----	-----	-----	-----	-----	79,340	-----	-----	-----	99
-----	\$84	-----	-----	-----	-----	-----	-----	\$2,130	-----	-----	-----	100
5,486,704	4,154,400	796,920	1,180,040	257,280	120,960	288,000	1,211,256	50,484,850	9,408	8,852,524	-----	101
\$128,093	\$111,875	\$23,775	\$21,397	\$7,000	\$2,850	\$7,200	\$30,479	\$1,422,908	\$755	\$273,682	-----	102
1,791,240	3,012,000	100,560	-----	-----	-----	288,000	-----	26,070,248	1,680	2,572,944	-----	103
\$41,282	\$83,475	\$2,300	-----	-----	-----	\$7,200	-----	\$758,919	\$140	\$102,540	-----	104
2,621,464	724,800	4,320	10,008	-----	-----	-----	-----	5,798,904	2,160	243,840	-----	105
\$62,361	\$20,200	\$200	\$255	-----	-----	-----	-----	\$151,012	\$167	\$12,636	-----	106
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	107
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	108
162,000	369,600	295,680	1,072,800	257,280	120,960	-----	1,211,256	6,186,720	1,920	2,975,136	-----	109
\$3,065	\$7,200	\$9,675	\$20,132	\$7,060	\$2,850	-----	\$30,479	\$137,884	\$40	\$66,260	-----	110
-----	-----	-----	1,800	-----	-----	-----	-----	20,830	-----	897,808	-----	111
-----	-----	-----	\$50	-----	-----	-----	-----	\$434	-----	\$26,771	-----	112
54,000	-----	76,440	-----	-----	-----	-----	-----	5,614,684	288	399,048	-----	113
\$1,925	-----	\$3,200	-----	-----	-----	-----	-----	\$173,008	\$18	\$20,068	-----	114
30,000	48,000	148,820	28,008	-----	-----	-----	-----	2,131,704	3,360	873,460	-----	115
\$1,500	\$1,000	\$5,400	\$622	-----	-----	-----	-----	\$71,190	\$400	\$34,083	-----	116
-----	-----	-----	-----	-----	-----	-----	-----	1,201,584	-----	68,016	-----	117
-----	-----	-----	-----	-----	-----	-----	-----	\$42,006	-----	\$4,166	-----	118
828,000	-----	171,600	17,424	-----	-----	-----	-----	3,460,176	-----	322,272	-----	119
\$17,960	-----	\$6,000	\$388	-----	-----	-----	-----	\$88,425	-----	\$12,008	-----	120
-----	-----	2,444,149	101,000	26,100	-----	90,000	-----	-----	-----	4,413,453	-----	121
-----	-----	\$144,250	\$5,080	\$1,125	-----	\$5,400	-----	-----	-----	\$243,285	-----	122
-----	-----	1,424,149	101,000	26,100	-----	90,000	-----	-----	-----	4,413,453	-----	123
-----	-----	\$83,150	\$5,080	\$1,125	-----	\$5,400	-----	-----	-----	\$243,285	-----	124
-----	-----	605,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	125
-----	-----	\$30,250	-----	-----	-----	-----	-----	-----	-----	-----	-----	126
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	127
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	128
-----	-----	155,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	129
-----	-----	\$12,850	-----	-----	-----	-----	-----	-----	-----	-----	-----	130
-----	-----	160,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	131
-----	-----	\$11,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	132
-----	-----	100,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	133
-----	-----	\$7,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	134
\$28,339	\$625	\$1,787,092	\$398,828	\$29,151	-----	-----	\$206,256	\$4,812,586	\$473,286	\$1,040,803	-----	135
37	4	35	37	19	5	5	46	120	7	62	2	136
\$1,190,807	\$65,582	\$2,996,422	\$2,258,826	\$1,187,778	\$113,675	\$108,287	\$1,146,309	\$9,899,920	\$505,945	\$1,544,118	\$89,880	137
\$1,010,585	\$11,000	\$2,625,423	\$1,941,254	\$1,003,620	\$75,121	\$85,325	\$1,062,747	\$8,043,981	\$848,975	\$1,156,638	\$34,000	138
48	5	30	42	23	5	6	48	117	7	25	4	139
1,736	93	1,082	1,899	1,428	178	193	681	4,551	96	750	60	140
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	141
69	5	33	48	33	6	8	47	175	8	29	4	142
1,470	93	881	1,818	1,422	178	193	673	4,257	96	713	60	143
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	144
3	-----	2	8	1	-----	-----	-----	6	-----	2	-----	145
6	-----	4	81	6	-----	-----	-----	24	-----	7	-----	146
-----	-----	-----	-----	-----	-----	-----	-----	3	-----	1	-----	147
-----	-----	-----	-----	-----	-----	-----	-----	30	-----	22	-----	148
-----	-----	-----	-----	-----	-----	-----	-----	4	-----	1	-----	149
-----	-----	-----	-----	-----	-----	-----	-----	160	-----	8	-----	150
260	-----	197	-----	-----	-----	-----	8	80	-----	-----	-----	151
260	-----	197	-----	-----	-----	-----	5	-----	-----	-----	-----	152
-----	-----	-----	-----	-----	-----	-----	8	80	-----	-----	-----	153
-----	-----	-----	-----	-----	-----	-----	-----	-----	15	-----	-----	154

TABLE 14.—FRUITS AND VEGETABLES, CANNING AND

	United States.	Alabama.	Arkansas.	California.	Colorado.	Connecticut.
Establishments classified by number of persons employed, not including proprietors and firm members:						
155 Total number of establishments	1,808	3	34	136	7	5
156 No employees	8			2		
157 Under 5	154			11		
158 5 to 20	521	1	25	82	1	
159 21 to 50	424	2	8	16	4	
160 51 to 100	308			21		4
161 101 to 250	282		1	14	2	1
162 251 to 500	76			22		
163 501 to 1,000	81			18		
164 Over 1,000	4					
	Missouri.	Nebraska.	New Hamp- shire.	New Jersey.	New York.	North Caro- lina.
1 Number of establishments	45	5	3	78	511	19
2 Character of organization:						
3 Individual	8		1	30	334	9
4 Firm and limited partnership	9	2	2	27	124	5
5 Incorporated companies	27	8		12	60	5
6 Miscellaneous	1			4	3	
7 Capital:						
8 Total	\$345,860	\$123,623	\$21,642	\$1,429,221	\$6,649,059	\$30,849
9 Land	\$22,117	\$6,800	\$150	\$111,805	\$355,910	\$3,035
10 Buildings	\$71,255	\$36,000	\$1,600	\$334,279	\$1,025,624	\$4,575
11 Machinery, tools, and implements	\$128,786	\$41,325	\$9,542	\$250,618	\$906,809	\$7,480
12 Cash and sundries	\$123,252	\$40,498	\$10,850	\$732,519	\$4,360,716	\$15,250
13 Proprietors and firm members	33	6	6	90	589	20
14 Salaried officials, clerks, etc.:						
15 Total number	74	9	1	63	261	2
16 Total salaries	\$23,007	\$6,400	\$800	\$33,830	\$201,025	\$300
17 Officers of corporations—						
18 Number	29			14	45	
19 Salaries	\$3,702			\$10,525	\$71,645	
20 General superintendents, managers, clerks, etc.—						
21 Total number	45	9	1	49	216	2
22 Total salaries	\$14,305	\$6,400	\$600	\$23,305	\$129,380	\$300
23 Men—						
24 Number	41	9	1	46	101	2
25 Salaries	\$13,970	\$6,400	\$600	\$22,760	\$118,461	800
26 Women—						
27 Number	4			3	25	
28 Salaries	\$335			\$545	\$10,919	
29 Wage-earners, including pieceworkers, and total wages:						
30 Greatest number employed at any one time during the year	3,598	733	91	8,355	16,421	372
31 Least number employed at any one time during the year	1,790	136	36	1,874	854	193
32 Average number	650	161	19	1,992	5,518	78
33 Wages	\$116,467	\$21,686	\$5,957	\$422,092	\$1,462,820	\$10,736
34 Men, 16 years and over—						
35 Average number	170	81	11	818	2,292	29
36 Wages	\$49,803	\$18,200	\$4,700	\$232,316	\$811,564	\$6,506
37 Women, 16 years and over—						
38 Average number	377	50	8	1,088	3,007	41
39 Wages	\$56,883	\$6,000	\$1,257	\$180,952	\$623,168	\$3,806
40 Children, under 16 years—						
41 Average number	103	30		86	219	8
42 Wages	\$9,781	\$2,486		\$8,824	\$28,088	\$425
43 Average number of wage-earners, including pieceworkers, employed dur- ing each month:						
44 Men, 16 years and over—						
45 January	21	10	3	193	428	8
46 February	20	5	3	253	446	5
47 March	20	10	3	269	476	15
48 April	21	13	3	282	520	17
49 May	34	23	3	315	602	59
50 June	35	28	3	385	2,141	46
51 July	55	40	3	687	2,494	59
52 August	679	340	3	1,651	3,003	80
53 September	631	331	43	2,765	6,585	33
54 October	368	100	25	1,755	5,472	17
55 November	129	41	27	688	3,864	4
56 December	22	25	12	267	1,377	4
57 Women, 16 years and over—						
58 January	8		5	19	480	3
59 February	9		5	18	407	3
60 March	6		5	25	436	
61 April	8		5	19	496	
62 May	99	20	5	78	712	60
63 June	97	25	5	488	2,447	90
64 July	69	28	8	385	3,376	111
65 August	1,670	195		8,093	4,437	134
66 September	1,592	197	19	4,587	8,890	59
67 October	783	116	19	3,038	7,044	12
68 November	178	16	20	1,155	5,333	3
69 December	11	7	5	152	2,030	
70 Children, under 16 years—						
71 January	1			2	19	
72 February	1			3	21	
73 March	1			3	23	
74 April	1			4	24	
75 May	1	10		4	34	10
76 June	1	35		46	188	10
77 July	80	42		44	410	30
78 August	473	165		186	409	33
79 September	459	85		404	296	15
80 October	186	20		244	940	2
81 November	31			81	183	
82 December	1			14	78	

## CANNING AND PRESERVING.

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PRESERVING: BY STATES AND TERRITORIES, 1900.

Delaware.	Georgia.	Illinois.	Indiana.	Iowa.	Kansas.	Kentucky.	Maine.	Maryland.	Massachu- setts.	Michigan.	Minnesota.		
51	8	61	60	26	5	8	59	271	9	98	4	155	
1	1	1					1	1				156	
3	3	2					1	2				157	
11	2	8	7	1		4	8	29	6	55	1	158	
15	1	18	13	2	2	1	10	64	1	25	2	159	
21		14	25	5	3	2	25	85	1	7	1	160	
8	1	15	6	4		1	12	12		9		161	
							2	5		1		162	
			2					1				163	
												164	
Ohio.	Oregon.	Pennsylvania.	South Carolina.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washing- ton.	West Vir- ginia.	Wisconsin.	All other states. <sup>1</sup>	
70	17	39	12	11	10	8	3	88	18	9	16	6	1
20	11	18	10	2	4	1		49	12	8	1	6	2
26	2	14	1	7	8	1	2	37	1		3		3
24	4	7	1	2	3	6	1	2	5	1	12		4
\$910, 670	\$121, 355	\$520, 206	\$23, 862	\$85, 824	\$58, 852	\$304, 258	\$68, 528	\$218, 533	\$78, 627	\$95, 260	\$650, 115	\$87, 055	6
\$65, 490	\$16, 080	\$88, 216	\$1, 525	\$880	\$1, 575	\$38, 645		\$22, 500	\$1, 394	\$11, 670	\$58, 108	\$9, 600	7
\$150, 973	\$29, 945	\$77, 355	\$2, 075	\$5, 880	\$14, 310	\$66, 173	\$13, 500	\$32, 260	\$11, 000	\$22, 390	\$112, 458	\$4, 750	8
\$200, 057	\$28, 650	\$101, 658	\$6, 718	\$9, 825	\$23, 100	\$57, 707	\$20, 316	\$47, 790	\$10, 177	\$23, 280	\$120, 684	\$6, 855	9
\$494, 150	\$48, 780	\$302, 977	\$13, 544	\$19, 239	\$14, 867	\$146, 783	\$34, 712	\$115, 983	\$56, 056	\$32, 970	\$358, 925	\$15, 860	10
88	15	48	13	19	8	8	6	130	13	8	8	5	11
103	9	35	6	16	5	20	4	25	4	4	42	1	12
\$58, 975	\$10, 350	\$25, 309	\$1, 080	\$2, 043	\$3, 430	\$8, 068	\$4, 100	\$3, 477	\$4, 250	\$1, 475	\$82, 732	\$200	13
18	6	10		6		6	2	1		2	13		14
\$19, 844	\$9, 500	\$8, 600		\$275		\$1, 949	\$2, 500	\$50		\$1, 200	\$6, 691		15
85	3	25	6	10	5	14	2	24	4	2	29	1	16
\$39, 131	\$850	\$16, 709	\$1, 080	\$1, 768	\$3, 480	\$6, 119	\$1, 600	\$3, 427	\$4, 250	\$275	\$26, 041	\$200	17
76	2	25	4	10	5	14	2	24	4	1	23	1	18
\$36, 257	\$400	\$16, 709	\$950	\$1, 768	\$3, 480	\$6, 119	\$1, 600	\$3, 427	\$4, 250	\$75	\$24, 635	\$200	19
9	1		2							1	6		20
\$2, 874	\$450		\$80							\$200	\$1, 406		21
6, 980	734	1, 609	229	485	548	816	487	3, 204	157	458	2, 575	154	22
2, 941	239	827	139	295	242	386	40	1, 952	109	281	776	55	23
1, 608	129	468	64	116	111	141	111	637	44	123	676	88	24
\$305, 393	\$18, 070	\$123, 179	\$7, 410	\$15, 216	\$26, 828	\$37, 565	\$21, 762	\$77, 576	\$12, 484	\$13, 108	\$117, 090	\$10, 097	25
581	32	211	15	24	22	62	64	196	15	55	303	10	26
\$158, 919	\$8, 995	\$81, 345	\$2, 625	\$4, 092	\$9, 157	\$26, 037	\$15, 140	\$83, 915	\$5, 839	\$7, 858	\$80, 180	\$5, 064	27
841	60	206	27	56	63	73	45	312	24	69	271	25	28
\$123, 826	\$6, 075	\$35, 833	\$2, 835	\$6, 589	\$14, 832	\$10, 172	\$6, 362	\$33, 577	\$5, 675	\$4, 220	\$30, 235	\$4, 655	29
186	37	51	22	36	26	6	2	129	5	14	102	3	30
\$22, 648	\$3, 000	\$6, 001	\$1, 950	\$3, 685	\$2, 839	\$1, 356	\$260	\$10, 084	\$970	\$1, 030	\$6, 695	\$378	31
87		100	8				21	12	16	12	88	11	32
88		96	3				21	12	16	12	86	11	33
103	8	122	3				21	12	8	12	45	11	34
121	3	128	3		5		21	16	4	8	127	11	35
135	18	128	13		15		21	33	6	8	151	11	36
310	46	193	6	11	29	17	21	49	7	8	430	12	37
662	26	204	39	50	74	24	21	193	6	14	984	10	38
2, 288	17	395	64	82	74	82	215	798	9	95	1, 021	12	39
2, 013	135	494	24	109	30	303	240	823	61	168	412	21	40
756	86	309	12	29	26	242	78	319	35	142	237	8	41
267	34	228	6	10	11	37	58	61	5	120	94	6	42
146	18	180	3			35	24	19	8	75	66		43
77		11	10				2		45		40		44
78		9	10				2		45		40		45
112		11	20				2		15		4		46
112		20	30				2		11		22		47
157	60	19	40		10		6	18	20	1	28	6	48
517	155	253	24	20	103	21	5	43	20	1	257	12	49
1, 061	80	285	29	139	218	33	5	807	15	23	718	8	50
2, 823	61	618	66	199	235	136	150	1, 298	15	122	948	39	51
2, 860	230	684	34	210	66	386	160	1, 422	24	225	672	110	52
1, 708	74	344	22	75	60	261	115	596	23	172	459	105	53
439	42	276	10	23	21	30	65	55	20	100	58	21	54
148	25	48	10		8	5	27	3	80	60	7	11	55
29			10						10				56
29			10						10				57
61			30						10				58
61			50						10				59
57	13	17	40		21			12	10			4	60
207	133	34	20	23	77			20	10		28	7	61
452	75	78	26	98	108			143		23	301	9	62
696	55	175	35	143	73	12	12	556		50	388	7	63
449	141	175	15	138	20	37	12	609	1	65	853	6	64
155	20	57	13	26	10	19		188	3	27	138	4	65
84	5	33	10	10				15			15		66
27	1	26	10										67

<sup>1</sup> Includes establishments distributed as follows: Florida, 2; Idaho, 2; New Mexico, 1; Rhode Island, 1.

## MANUFACTURES.

TABLE 14.—FRUITS AND VEGETABLES, CANNING AND

	Missouri.	Nebraska.	New Hamp- shire.	New Jersey.	New York.	North Caro- lina.
Miscellaneous expenses:						
68 Total.....						
69 Rent of works.....	\$23,399	\$10,325	\$270	\$33,418	\$495,478	\$414
70 Taxes, not including internal revenue.....	\$2,630		\$250	\$1,440	\$15,910	\$75
71 Rent of offices, interest, insurance, and all sundry expenses not hitherto included.....	\$1,526	\$500	\$20	\$6,493	\$17,503	\$146
72 Contract work.....	\$17,331	\$9,325		\$75,485	\$461,302	\$193
Materials used:	\$1,412				\$763	
73 Aggregate cost.....						
Principal materials—	\$559,651	\$130,573	\$21,111	\$1,401,101	\$5,592,462	\$44,494
74 Total cost.....						
75 Purchased in raw state.....	\$361,489	\$48,789	\$19,014	\$649,720	\$3,352,396	\$21,935
76 Purchased in partially manufactured form.....	\$130,789	\$30,320	\$11,802	\$606,206	\$2,986,579	\$20,151
77 Fuel.....	\$230,750	\$18,469	\$7,212	\$43,514	\$365,517	\$1,801
78 Rent of power and heat.....	\$7,117	\$1,965	\$1,167	\$17,380	\$138,468	\$797
79 Mill supplies.....	\$12			\$50	\$1,906	\$232
80 All other materials.....	\$1,624	\$1,177		\$5,715	\$22,854	\$190
81 Freight.....	\$185,279	\$77,649	\$921	\$686,228	\$1,939,626	\$20,462
Products:	\$4,130	\$993	\$9	\$12,008	\$87,212	\$773
82 Aggregate value.....						
Canned vegetables—	\$869,977	\$210,688	\$29,964	\$2,199,176	\$8,975,321	\$64,440
83 Total pounds.....						
84 Total value.....	26,628,096	7,429,488	744,144	84,423,137	135,432,524	1,797,840
Tomatoes—	\$535,307	\$193,286	\$18,603	\$1,858,489	\$4,410,251	\$19,709
85 Pounds.....						
86 Value.....	23,274,696	1,512,000		77,764,232	18,332,340	893,160
Corn—	\$460,264	\$31,800		\$1,668,855	\$433,112	\$19,292
87 Pounds.....						
88 Value.....	2,472,000	5,740,800	652,512		64,384,896	57,120
Peas—	\$60,050	\$157,890	\$16,313		\$1,925,496	\$1,485
89 Pounds.....						
90 Value.....				3,840,273	36,073,696	528,000
Beans—				\$96,255	\$1,473,912	\$22,000
91 Pounds.....						
92 Value.....		162,288		1,596,960	13,196,752	319,560
Pumpkins—		\$3,396		\$64,768	\$443,314	\$6,932
93 Pounds.....						
94 Value.....	881,400	14,400		182,520	1,793,368	
Sweet potatoes—	\$14,993	\$200		\$3,902	\$35,370	
95 Pounds.....						
96 Value.....				1,009,152	720,000	
Succotash—				\$23,829	\$15,000	
97 Pounds.....						
98 Value.....			91,632		887,616	
Okra—			\$2,290		\$27,506	
99 Pounds.....						
100 Value.....				30,000	53,856	
Canned fruit—				\$680	\$1,541	
101 Total pounds.....						
102 Total value.....	1,433,352	451,200	213,120	3,224,512	41,241,240	475,536
Peaches—	\$27,827	\$13,900	\$6,660	\$107,013	\$1,347,390	\$10,881
103 Pounds.....						
104 Value.....				62,400	2,096,112	328,536
Pears—				\$2,500	\$72,591	\$7,996
105 Pounds.....						
106 Value.....				1,760,496	4,178,592	
Apricots—				\$63,356	\$226,082	
107 Pounds.....						
108 Value.....					2,400	
Apples—					\$150	
109 Pounds.....						
110 Value.....	1,433,352	451,200	213,120	1,137,528	23,088,792	23,440
Plums—	\$27,827	\$13,900	\$6,660	\$25,945	\$560,048	\$692
111 Pounds.....						
112 Value.....					3,398,400	
Strawberries—					\$94,879	
113 Pounds.....						
114 Value.....				106,504	2,953,728	
Raspberries—				\$8,554	\$141,049	
115 Pounds.....						
116 Value.....				138,768	4,191,776	
Cherries—				\$4,785	\$103,494	
117 Pounds.....						
118 Value.....					1,017,952	
Blackberries—					\$71,881	
119 Pounds.....						
120 Value.....				18,816	313,488	118,560
Dried fruits—				\$873	\$17,216	\$2,193
121 Total pounds.....						
122 Total value.....	116,900	6,600	53,750		21,542,897	
Apples—	\$4,800	\$100	\$3,725		\$1,275,109	
123 Pounds.....						
124 Value.....	116,900	6,600	53,750		21,542,897	
Prunes—	\$4,800	\$100	\$3,725		\$1,275,109	
125 Pounds.....						
126 Value.....						
Raisins—						
127 Pounds.....						
128 Value.....						
Apricots—						
129 Pounds.....						
130 Value.....						
Peaches—						
131 Pounds.....						
132 Value.....						
Pears—						
133 Pounds.....						
134 Value.....						
135 Value of all other products.....	\$302,043	\$3,402	\$976	\$233,674	\$1,942,571	\$3,850
Comparison of products:						
136 Number of establishments reporting for both years.....	19	3	2	52	290	10
137 Value for census year.....	\$590,203	\$189,150	\$26,664	\$1,770,752	\$6,118,082	\$14,903
138 Value for preceding business year.....	\$594,749	\$117,000	\$23,314	\$1,511,680	\$5,443,779	\$9,376

## CANNING AND PRESERVING.

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PRESERVING: BY STATES AND TERRITORIES, 1900—Continued.

Ohio.	Oregon.	Pennsylvania.	South Carolina.	Tennessee.	Texas.	Utah.	Vermont.	Virginia.	Washington.	West Virginia.	Wisconsin.	All other states. <sup>1</sup>	
\$78,781	\$4,548	\$58,788	\$508	\$207	\$1,245	\$6,024	\$3,800	\$7,289	\$2,677	\$2,983	\$91,887	\$2,309	68
\$4,884	\$310	\$3,527		\$2	\$440	\$58	\$450	\$1,173	\$1,130	\$50	\$14,050	\$1,600	69
\$5,486	\$318	\$1,409	\$185	\$63	\$124	\$488	\$210	\$813	\$302	\$157	\$2,324	\$223	70
\$68,461	\$3,016	\$53,700	\$318	\$122	\$681	\$5,478	\$2,730	\$5,203	\$1,245	\$2,776	\$48,513	\$386	71
		\$152									\$27,000		72
\$1,197,269	\$79,290	\$499,353	\$15,169	\$37,598	\$85,275	\$211,279	\$83,361	\$342,689	\$24,781	\$39,328	\$543,496	\$13,399	73
\$502,614	\$40,242	\$277,840	\$5,923	\$13,559	\$42,678	\$81,485	\$53,756	\$134,118	\$15,622	\$12,526	\$239,441	\$4,807	74
\$431,413	\$33,481	\$193,581	\$5,433	\$13,559	\$38,614	\$73,271	\$36,465	\$116,519	\$13,822	\$12,526	\$225,489	\$4,307	75
\$71,201	\$6,761	\$84,259	\$490		\$4,064	\$8,214	\$17,291	\$17,599	\$1,800		\$13,952	\$500	76
\$18,318	\$1,888	\$6,965	\$290	\$636	\$1,007	\$4,027	\$1,200	\$5,162	\$1,464	\$1,417	\$15,645	\$480	77
\$670	\$125	\$50						\$25	\$90				78
\$8,629	\$206	\$1,613	\$30	\$162	\$110	\$391	\$240	\$1,222	\$55		\$9,157	\$15	79
\$656,596	\$36,099	\$207,082	\$8,398	\$22,716	\$41,255	\$124,992	\$27,858	\$194,116	\$6,950	\$22,819	\$239,434	\$7,797	80
\$21,442	\$730	\$5,903	\$528	\$525	\$225	\$334	\$307	\$3,046	\$600	\$2,934	\$39,819	\$300	81
\$1,941,398	\$141,498	\$801,250	\$28,565	\$72,007	\$151,104	\$300,349	\$166,184	\$535,900	\$63,141	\$66,886	\$1,007,765	\$34,041	82
76,362,754	\$24,000	20,390,240	401,064	2,682,480	2,211,312	12,552,336	5,745,120	27,332,771		1,882,152	30,338,424	688,776	83
\$1,769,432	\$14,300	\$516,468	\$8,785	\$51,216	\$57,713	\$271,488	\$184,584	\$499,355		\$36,355	\$973,954	\$19,421	84
40,968,068	110,400	9,549,896	369,696	2,617,200	1,662,576	12,300,048		26,484,344		1,805,640	2,526,696	606,600	85
\$814,044	\$2,700	\$201,304	\$8,090	\$49,996	\$39,629	\$263,363		\$474,305		\$34,133	\$52,383	\$17,075	86
24,354,854	14,400	7,063,008			359,376		5,649,120	520,467		20,832	3,589,920	76,800	87
\$642,161	\$405	\$187,834			\$10,760		\$162,084	\$13,160		\$648	\$90,163	\$2,100	88
2,127,792	141,600	1,993,632			36,000			136,800			23,584,208		89
\$70,564	\$8,630	\$82,776			\$1,800			\$6,080			\$807,408		90
7,987,776	57,600	1,596,864	31,368	65,280	153,360		96,000	205,160		55,680	615,600	5,376	91
\$199,615	\$2,555	\$41,740	\$695	\$1,220	\$5,534		\$2,500	\$5,195		\$1,574	\$23,000	\$186	92
924,264		186,840				252,288					72,000		93
\$37,048		\$2,814				\$3,125					\$1,000		94
													95
													96
													97
													98
								36,000					99
								\$615					100
2,691,821	2,585,760	1,476,312	130,248	621,600	1,855,440	631,245	57,600	1,524,792		639,240		16,944	101
\$74,253	\$100,550	\$89,721	\$2,980	\$19,250	\$74,241	\$23,281	\$1,600	\$30,752		\$18,339		\$1,765	102
399,960	72,000		83,952	252,000	1,549,680	91,488		349,440		24,120		6,864	103
\$10,940	\$2,550		\$1,655	\$10,000	\$60,775	\$3,362		\$7,300		\$500		\$515	104
048	530,400	45,000	1,152	96,000	111,600	182,880		108,000				6,000	105
\$27	\$22,000	\$2,450	\$25	\$3,500	\$3,046	\$6,994		\$1,650				\$750	106
						3,360							107
						\$175							108
1,171,416	405,600	1,172,112	50,976	273,600	74,160	212,640	57,600	657,816		618,564		3,600	109
\$27,892	\$13,300	\$22,371	\$1,150	\$5,750	\$2,020	\$5,537	\$1,600	\$11,603		\$17,775		\$450	110
	163,200					101,136							111
	\$6,800					\$5,144							112
340,992	168,000	86,400			36,000	4,800							113
\$11,245	\$9,500	\$5,040			\$2,550	\$250							114
171,077	124,800	124,800				6,144							115
\$6,348	\$6,600	\$7,100				\$320							116
	699,360					7,920		124,800					117
	\$30,300					\$412		\$3,120					118
607,728	422,400	48,000	3,168		34,000	20,880		284,736		1,586		480	119
\$17,801	\$15,000	\$2,760	\$100		\$5,250	\$1,087		\$7,019		\$64		\$50	120
269,500	397,350	570,490		13,000				53,000	286,000			60,334	121
\$13,215	\$19,461	\$28,104		\$650				\$3,435	\$14,645			\$1,640	122
269,500	37,250	570,490		13,000				53,000					123
\$13,215	\$2,110	\$28,104		\$650				\$3,485					124
	360,100								286,000			60,334	125
	\$17,351								\$14,645			\$1,640	126
													127
													128
													129
													130
													131
													132
													133
													134
\$34,498	\$1,157	\$216,957	\$16,850	\$391	\$19,150	\$5,580		\$2,358	\$48,495	\$12,192	\$33,811	\$11,215	135
41	9	26	7	5	4	5	3	54	13	7	11	6	136
\$1,505,991	\$32,103	\$612,265	\$5,800	\$33,071	\$38,904	\$175,530	\$166,184	\$329,471	\$40,336	\$29,929	\$776,284	\$34,041	137
\$1,289,817	\$103,130	\$566,390	\$5,290	\$29,575	\$75,875	\$162,204	\$115,133	\$305,421	\$51,855	\$27,300	\$559,158	\$30,590	138

<sup>1</sup> Includes establishments distributed as follows: Florida, 2; Idaho, 2; New Mexico, 1; Rhode Island, 1.



## MANUFACTURES.

TABLE 14.—FRUITS AND VEGETABLES, CANNING AND

	Missouri.	Nebraska.	New Hamp- shire.	New Jersey.	New York.	North Caro- lina.
Power:						
139 Number of establishments reporting .....	30	4	1	64	124	7
140 Total horsepower .....	613	127	150	1,959	4,682	307
Owned—						
Engines—						
Steam—						
141 Number .....	31	6	2	78	191	6
142 Horsepower .....	613	127	150	1,878	4,230	301
Gas or gasoline—						
143 Number .....				8	5	
144 Horsepower .....				81	39	
Water wheels—						
145 Number .....					5	
146 Horsepower .....					80	
Electric motors—						
147 Number .....					4	
148 Horsepower .....					55	
Other power—						
149 Number .....						
150 Horsepower .....						
Rented—						
151 Total horsepower .....					278	6
152 Electric horsepower .....					18	
153 All other horsepower .....					260	6
154 Furnished to other establishments, horsepower .....						
Establishments classified by number of persons employed, not including proprietors and firm members:						
155 Total number of establishments .....	45	5	3	73	511	19
156 No employees .....						2
157 Under 5 .....	1				118	1
158 5 to 20 .....	1	1	2	9	241	12
159 21 to 50 .....	11			5	72	1
160 51 to 100 .....	15		1	22	27	3
161 101 to 250 .....	17	4		33	37	
162 251 to 500 .....				4	13	
163 501 to 1,000 .....					2	
164 Over 1,000 .....					1	

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[illegible]

<sup>1</sup> Includes establishments distributed as follows: Florida, 2; Idaho, 2; New Mexico, 1; Rhode Island, 1.

## FISH, CANNING AND PRESERVING.

Table 15 is a comparative summary of the statistics for the establishments engaged in the canning and preserving of fish, as returned at the censuses of 1890 and 1900, with the percentages of increase for the decade.

TABLE 15.—FISH, CANNING AND PRESERVING: COMPARATIVE SUMMARY, 1890 AND 1900, WITH PER CENT OF INCREASE FOR THE DECADE.

	DATE OF CENSUS.		Per cent of increase.
	1900	1890	
Number of establishments .....	348	110	216.4
Capital .....	\$19,514,215	\$3,186,975	512.3
Salaried officials, clerks, etc., number .....	618	182	239.6
Salaries .....	\$585,160	\$120,258	386.6
Wage-earners, average number .....	13,410	5,020	167.1
Total wages .....	\$4,229,638	\$1,128,148	274.9
Men, 16 years and over .....	9,731	3,787	157.0
Wages .....	\$3,733,506	\$986,689	278.4
Women, 16 years and over .....	2,533	841	201.2
Wages .....	\$369,781	\$121,059	205.5
Children, under 16 years .....	1,146	392	192.4
Wages .....	\$126,351	\$20,395	519.5
Miscellaneous expenses .....	\$883,363	\$280,660	214.7
Cost of materials used .....	\$13,232,001	\$4,710,709	180.9
Value of products .....	\$22,253,749	\$6,972,268	219.2

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 24.)

The canning and preserving of fish existed as an industry as early as 1850, but it was usually carried on in connection with the canning and preserving of fruits and vegetables and oysters, and statistics for the industry do not appear separately until the census of 1890. At that time the number of establishments reporting canned fish as the principal product had grown to 110, with a capital of \$3,186,975, giving employment to 5,020 wage-earners, and paying for wages \$1,128,148; for materials, \$4,710,709. They reported \$6,972,268 as the value of products. From 1890 to 1900 the increase in every item was most marked. The increase in the number of establishments was 238, or more than the total number reported for 1890. The capital showed a most notable increase of \$16,327,240—that is, the capital in 1900 was more than six times that given for 1890. The average capital per establishment increased from \$28,972 to \$56,075—that is, the average capital in 1900 was nearly twice that reported in 1890. These figures indicate the internal growth and development of these establishments since 1890, as well as the expansion of the industry by the construction of new plants. In this last particular, the fish-canning industry differs from the other two industries included in this report. The total number of wage-earners increased 8,390—that is, there were nearly two and one-half times as many wage-earners in 1900 as in 1890. The wages have shown a comparatively larger increase. The relative proportion of wages and cost of materials to the value of products was about the same for the two periods.

In this branch of the canning industry, also, the individual form of organization appears to predominate. Of the total number of establishments 134, or 38.5 per cent, were conducted by individuals; 112, or 32.2 per cent, were operated by incorporated companies, and 102, or 29.3 per cent, by firms and limited partnerships.

Table 16 shows by states and territories, arranged geographically, the number of establishments from which returns were received in 1900, with the increase during the decade.

TABLE 16.—FISH, CANNING AND PRESERVING, COMPARATIVE SUMMARY: NUMBER OF ACTIVE ESTABLISHMENTS, 1890 AND 1900, AND THE INCREASE DURING THE DECADE, BY STATES AND TERRITORIES ARRANGED GEOGRAPHICALLY.

	1900	1890	Increase.
United States .....	348	110	238
New England states .....	179	64	115
Maine .....	117	35	82
New Hampshire .....	1	2	1
Massachusetts .....	61	29	32
Middle states .....	18	12	6
New York .....	9	2	7
New Jersey .....	1	2	11
Pennsylvania .....	1	5	14
Delaware .....	3	—	3
Maryland .....	3	—	3
District of Columbia .....	1	3	12
Southern states .....	18	1	17
Virginia .....	5	1	4
North Carolina .....	1	—	1
South Carolina .....	1	—	1
Mississippi .....	4	—	4
Louisiana .....	6	—	6
Texas .....	1	—	1
Central states .....	18	8	10
Ohio .....	3	5	12
Michigan .....	4	1	3
Illinois .....	4	—	4
Wisconsin .....	6	—	6
Minnesota .....	—	2	12
Missouri .....	1	—	1
Pacific states .....	79	25	54
Washington .....	36	7	29
Oregon .....	24	15	9
California .....	19	3	16
Outlying districts .....	36	( <sup>2</sup> )	36
Alaska .....	36	( <sup>2</sup> )	36

<sup>1</sup> Decrease.

<sup>2</sup> No statistics available for 1890.

Table 16 shows that the greatest development occurred in the New England states, where 64 establishments were reported in 1890 and 179 in 1900, an increase of 115, or 179.7 per cent. Of these states, Maine reported an increase of 234.3 per cent and Massachusetts 110.3 per cent.

The above table should be considered in connection with Table 17, which is a summary of the totals for the canning and preserving of fish as returned at the censuses of 1890 and 1900.

TABLE 17.—FISH, CANNING AND PRESERVING: COMPARATIVE SUMMARY, BY STATES AND TERRITORIES, 1890 AND 1900.

	Year.	United States.	Alaska. <sup>1</sup>	California.	Delaware. <sup>1</sup>	District of Columbia. <sup>2</sup>	Illinois. <sup>1</sup>	Louisiana. <sup>1</sup>	Maine. <sup>1</sup>	Maryland. <sup>1</sup>	Massachusetts.
Number of establishments.....	1900 1890	348 110	36 .....	19 3	3 .....	3 .....	4 .....	6 .....	117 35	3 .....	61 29
Capital:											
Total.....	1900 1890	\$19,514,215 \$3,186,975	\$3,203,228 .....	\$691,285 \$47,070	\$1,935 .....	\$5,580 .....	\$2,655 .....	\$186,089 .....	\$3,481,056 \$527,420	\$65,600 .....	\$1,734,227 \$741,301
Land.....	1900 1890	\$757,510 \$466,970	\$73,135 .....	\$51,000 \$3,250	\$400 .....	\$1,700 .....	\$475 .....	\$10,150 .....	\$137,855 \$23,550	\$7,500 .....	\$194,567 \$34,675
Buildings.....	1900 1890	\$3,914,853 \$407,340	\$971,094 .....	\$70,100 \$4,250	\$500 .....	\$800 .....	\$750 .....	\$35,121 .....	\$740,315 \$110,300	\$8,900 .....	\$206,559 \$60,500
Machinery, tools, and implements.....	1900 1890	\$5,164,046 \$487,420	\$1,849,264 .....	\$69,235 \$4,600	\$185 .....	\$230 .....	\$330 .....	\$33,538 .....	\$2,045,117 \$85,235	\$7,400 .....	\$256,508 \$27,755
Cash and sundries.....	1900 1890	\$9,677,806 \$1,705,245	\$309,735 .....	\$500,950 \$34,970	\$350 .....	\$2,800 .....	\$1,100 .....	\$107,880 .....	\$5,553,269 \$303,335	\$41,800 .....	\$1,076,543 \$613,471
Salaried officials, clerks, etc., number.....	1900 1890	618 182	64 .....	33 5	..... .....	3 .....	..... .....	8 .....	177 49	6 .....	122 29
Salaries.....	1900 1890	\$585,160 \$120,253	\$106,430 .....	\$49,710 \$2,815	..... .....	\$1,600 .....	..... .....	\$9,500 .....	\$139,497 \$23,837	\$2,880 .....	\$103,131 \$25,794
Wage-earners, average number.....	1900 1890	13,410 5,020	2,062 .....	376 74	..... .....	5 .....	5 .....	236 .....	5,567 2,342	442 .....	1,328 603
Total wages.....	1900 1890	\$4,229,638 \$1,128,143	\$1,242,642 .....	\$153,888 \$12,439	..... .....	\$1,546 .....	\$2,642 .....	\$44,710 .....	\$1,184,850 \$447,806	\$63,500 .....	\$475,123 \$236,318
Men, 16 years and over.....	1900 1890	9,731 3,787	2,091 .....	279 58	..... .....	5 .....	5 .....	45 .....	2,395 1,351	207 .....	1,194 448
Wages.....	1900 1890	\$3,733,506 \$986,689	\$1,242,237 .....	\$136,422 \$10,779	..... .....	\$1,546 .....	\$2,642 .....	\$22,450 .....	\$833,157 \$349,130	\$36,900 .....	\$449,781 \$204,250
Women, 16 years and over.....	1900 1890	2,533 841	1 .....	73 16	..... .....	..... .....	..... .....	161 .....	1,746 635	179 .....	134 155
Wages.....	1900 1890	\$369,781 \$121,059	\$405 .....	\$19,680 \$1,660	..... .....	..... .....	..... .....	\$21,260 .....	\$245,302 \$30,951	\$22,600 .....	\$25,342 \$32,068
Children, under 16 years.....	1900 1890	1,146 392	..... .....	24 .....	..... .....	..... .....	..... .....	30 .....	926 356	56 .....	..... .....
Wages.....	1900 1890	\$126,351 \$20,395	..... .....	\$2,786 .....	..... .....	..... .....	..... .....	\$1,000 .....	\$106,391 \$17,675	\$4,000 .....	..... .....
Miscellaneous expenses.....	1900 1890	\$383,333 \$280,660	\$150,854 .....	\$23,370 \$1,966	\$39 .....	\$391 .....	\$526 .....	\$6,408 .....	\$97,859 \$94,712	\$11,020 .....	\$118,058 \$36,917
Cost of materials used.....	1900 1890	\$13,232,001 \$4,710,709	\$1,587,883 .....	\$449,718 \$20,475	\$6,238 .....	\$7,006 .....	\$3,195 .....	\$67,583 .....	\$2,573,036 \$900,674	\$154,605 .....	\$3,471,112 \$2,031,863
Value of products.....	1900 1890	\$22,253,749 \$6,972,268	\$3,821,136 .....	\$366,432 \$44,120	\$8,473 .....	\$11,302 .....	\$3,900 .....	\$144,379 .....	\$4,779,733 \$1,660,831	\$248,100 .....	\$4,619,362 \$2,537,088

	Year.	Michi- gan. <sup>4</sup>	Missis- sippi. <sup>1</sup>	New York. <sup>4</sup>	Ohio.	Oregon.	Pennsyl- vania. <sup>2</sup>	Virginia. <sup>4</sup>	Washing- ton.	Wiscon- sin. <sup>1</sup>	All other states.
Number of establishments.....	1900 1890	4 .....	4 .....	9 .....	3 5	24 15	..... 5	5 .....	36 7	6 .....	68 48
Capital:											
Total.....	1900 1890	\$6,800 .....	\$122,580 .....	\$100,564 .....	\$56,068 \$18,404	\$2,558,642 \$1,365,800	..... \$37,250	\$10,325 .....	\$2,222,726 \$320,790	\$4,590 .....	\$65,245 \$123,410
Land.....	1900 1890	\$700 .....	\$4,362 .....	\$17,021 .....	\$200 \$300	\$127,522 \$372,000	..... \$3,800	\$200 .....	\$118,288 \$14,945	\$1,125 .....	\$18,520 \$12,350
Buildings.....	1900 1890	\$1,850 .....	\$9,003 .....	\$25,553 .....	\$1,025 \$1,125	\$1,539,129 \$220,000	..... \$11,000	\$2,700 .....	\$284,804 \$53,615	\$1,150 .....	\$16,300 \$5,750
Machinery, tools, and implements.....	1900 1890	\$250 .....	\$12,628 .....	\$10,005 .....	\$42,943 \$3,000	\$363,795 \$275,050	..... \$5,800	\$1,825 .....	\$457,473 \$46,800	\$315 .....	\$12,075 \$39,450
Cash and sundries.....	1900 1890	\$4,000 .....	\$96,587 .....	\$47,985 .....	\$11,900 \$13,979	\$528,196 \$493,750	..... \$17,150	\$5,600 .....	\$1,362,161 \$205,430	\$1,500 .....	\$22,750 \$65,380
Salaried officials, clerks, etc., number.....	1900 1890	..... .....	9 .....	7 .....	5 6	58 51	..... 8	6 .....	116 15	..... .....	7 16
Salaries.....	1900 1890	..... .....	\$7,600 .....	\$6,520 .....	\$4,160 \$3,910	\$56,125 \$29,362	..... \$5,570	\$550 .....	\$93,117 \$3,655	..... .....	\$5,940 \$18,710
Wage-earners, average number.....	1900 1890	19 .....	231 .....	66 .....	51 17	636 1,473	..... 22	18 .....	2,190 316	8 .....	150 163
Total wages.....	1900 1890	\$7,961 .....	\$41,028 .....	\$20,842 .....	\$21,600 \$5,280	\$219,744 \$300,824	..... \$12,520	\$4,545 .....	\$711,214 \$69,820	\$1,010 .....	\$29,339 \$47,590
Men, 16 years and over.....	1900 1890	18 .....	71 .....	39 .....	51 6	620 1,467	..... 22	11 .....	2,086 306	2 .....	117 124
Wages.....	1900 1890	\$7,886 .....	\$20,353 .....	\$18,424 .....	\$21,600 \$3,500	\$217,750 \$300,624	..... \$12,520	\$2,995 .....	\$693,480 \$62,820	\$720 .....	\$26,709 \$41,470

<sup>1</sup> None reported in 1890.<sup>2</sup> Reported under head of other states in 1900.<sup>3</sup> Includes proprietors and firm members with their salaries, number only reported in 1900, but not included in this table. (See Table 24.)<sup>4</sup> Includes establishments distributed as follows: District of Columbia, 1; Missouri, 1; New Hampshire, 1; New Jersey, 1; North Carolina, 1; Pennsylvania, 1; South Carolina, 1; Texas, 1.<sup>5</sup> Includes establishments distributed as follows: Michigan, 1; Minnesota, 2; New Jersey, 2; New York, 2; Virginia, 1.

TABLE 17.—FISH, CANNING AND PRESERVING: COMPARATIVE SUMMARY, BY STATES AND TERRITORIES, 1890 AND 1900—Continued.

	Year.	Michi- gan. <sup>3</sup>	Missis- sippi. <sup>1</sup>	New York. <sup>3</sup>	Ohio.	Oregon.	Pennsyl- vania. <sup>2</sup>	Virginia. <sup>3</sup>	Washing- ton.	Wiscon- sin. <sup>1</sup>	All other states.
Women, 16 years and over .....	1900 1890	.....	98	27	3	11	.....	6	78	.....	21 32
Wages .....	1900 1890	.....	\$14,125	\$2,418	.....	\$1,494	.....	\$1,325	\$13,780	.....	\$2,100 \$5,700
Children under 16 years.....	1900 1890	1	62	.....	8	5 6	.....	1	31 10	1	9 12
Wages .....	1900 1890	\$75	\$6,550	.....	\$1,100	\$500 \$200	.....	\$225	\$4,004 \$1,000	\$290	\$530 \$420
Miscellaneous expenses .....	1900 1890	\$1,318	\$17,997	\$11,741	\$2,610 \$1,364	\$147,858 \$92,972	..... \$5,175	\$496	\$235,353 \$33,801	\$1,005	\$6,801 \$13,422
Cost of materials used.....	1900 1890	\$52,949	\$190,441	\$134,211	\$70,406 \$21,388	\$1,132,218 \$1,066,127	..... \$91,885	\$13,239	\$3,086,865 \$346,532	\$28,142	\$154,560 \$224,769
Value of products .....	1900 1890	\$65,077	\$337,939	\$197,869	\$251,040 \$42,759	\$1,788,809 \$1,643,324	..... \$126,370	\$24,700	\$4,831,038 \$525,000	\$35,792	\$224,970 \$381,424

<sup>1</sup> None reported in 1890.<sup>2</sup> Reported under head of other states in 1900.<sup>3</sup> Reported under head of other states in 1890.

Table 17 is interesting in that it shows concisely the status of the industry in each state in 1890 and 1900, and hence the growth and development in each state since 1890. In that year the canning and preserving of fish was carried on in 13 states by 110 establishments, and in 1900 the number had increased to 348, distributed among 24 states and territories. In order to avoid disclosing the operations of individual establishments, states having less than three establishments were grouped under the heading "all other states." Nearly every state and territory showed a marked increase in the number of establishments, capital, and value of products, with the exceptions of the District of Columbia, Ohio, and Pennsylvania. The former reported 3 establishments in 1890, the latter 5, but in 1900 no establishments were returned by either. Ohio, although reporting a decrease in the number of establishments since 1890, showed a notable increase in both the capital and the value of products. There is in this industry, as in the canning and preserving of fruits and vegetables, a tendency to centralize in points nearest the sources of the supply of material, and the states and territories located nearest the fish supply led in the number of establishments, capital, and value of products both in 1890 and in 1900, and have also shown

the most marked increase and development during the decade. These states and territories, ranked according to the value of products for the census year, were as follows: Washington, \$4,831,038; Maine, \$4,779,733; Massachusetts, \$4,619,362; Alaska, \$3,821,136; Oregon, \$1,788,809; California, \$866,432. The total value of products of these 5 states was \$20,706,510, or over 90 per cent of the total value of products of the industry. The number of establishments reported by these states and territories was 293, or 84.2 per cent of the total number, and the capital was returned as \$18,891,164, as compared with \$19,514,215 for the entire country—that is, the capital for these states and territories formed 96.8 per cent of the total capital. Of the remaining states, Louisiana and Mississippi have become engaged in the industry since 1890 and showed most gratifying returns.

The summary of establishments engaged in the canning and preserving of fish, classified according to the number of employees (not including proprietors and firm members), is shown in Table 18. In this connection, attention is here directed to the fact that the data contained in this table were computed from the greatest number employed at any one time during the year. This should be taken into consideration in making deductions.

TABLE 18.—FISH, CANNING AND PRESERVING: ESTABLISHMENTS CLASSIFIED BY NUMBER OF EMPLOYEES (NOT INCLUDING PROPRIETORS AND FIRM MEMBERS), BY STATES AND TERRITORIES ARRANGED GEOGRAPHICALLY, 1900.

STATES.	Total number of estab- lish- ments.	NUMBER OF ESTABLISHMENTS REPORTING—							
		No em- ployees.	Under 5.	5 to 20.	21 to 50.	51 to 100.	101 to 250.	251 to 500.	501 to 1,000.
United States .....	348	20	43	103	69	36	60	11	6
New England states.....	179	3	26	69	40	17	17	3	4
Maine.....	117	2	15	44	27	10	12	3	4
New Hampshire.....	1	1	.....	.....	.....	.....	.....	.....	.....
Massachusetts.....	61	.....	11	25	13	7	5	.....	.....

TABLE 18.—FISH, CANNING AND PRESERVING: ESTABLISHMENTS CLASSIFIED BY NUMBER OF EMPLOYEES (NOT INCLUDING PROPRIETORS AND FIRM MEMBERS), BY STATES AND TERRITORIES ARRANGED GEOGRAPHICALLY, 1900—Continued.

STATES.	Total number of establishments.	NUMBER OF ESTABLISHMENTS REPORTING—							
		No employees.	Under 5.	5 to 20.	21 to 50.	51 to 100.	101 to 250.	251 to 500.	501 to 1,000.
Middle states.....	18	4	4	7		1	1	1	
New York.....	9		4	4		1			
New Jersey.....	1			1					
Pennsylvania.....	1	1							
Delaware.....	3	3							
Maryland.....	3			1			1	1	
District of Columbia.....	1			1					
Southern states.....	18		1	6	3	1	7		
Virginia.....	5			3	2				
North Carolina.....	1						1		
South Carolina.....	1				1				
Mississippi.....	4			1			3		
Louisiana.....	6		1	2			3		
Texas.....	1					1			
Central states.....	18	7	6	3	1		1		
Ohio.....	3	2					1		
Michigan.....	4		1	2	1				
Illinois.....	4	1	3						
Wisconsin.....	6	4	2						
Missouri.....	1			1					
Pacific states.....	79	6	6	12	23	13	15	2	2
Washington.....	36		2	6	11	6	8	1	2
Oregon.....	24		1	3	10	5	4	1	
California.....	19	6	3	3	2	2	3		
Outlying districts.....	36			6	2	4	19	5	
Alaska.....	36			6	2	4	19	5	

Table 18 shows that the largest number of establishments employed from 5 to 20, and 6 establishments, 4 of which were located in Maine and 2 in Washington, gave employment to over 500. Maine, with her sardine factories, and Washington and Alaska, with their salmon canneries, reported the largest number of establishments, with the greatest number of employees. The largest number of establishments in Maine was reported for the group from 5 to 20, for Massachusetts the same, for Washington 21 to 50, and for Alaska 101 to 250. It appears that the establishments located in the New England states employed the greatest number, while the Pacific states ranked second and Alaska third. In 20 small establishments no employees were reported, presumably all the work being done by the owners.

Table 19 presents a comparative summary of the statistics of capital for 1890 and 1900, with the percentages of the total and the increase for the several items.

TABLE 19.—FISH, CANNING AND PRESERVING: STATISTICS OF CAPITAL, 1890 AND 1900.

	1900		1890		Percent of increase.
	Amount.	Per cent of total.	Amount.	Per cent of total.	
Total.....	\$19,514,215	100.0	\$3,186,975	100.0	512.3
Land.....	757,510	3.9	466,970	14.6	62.2
Buildings.....	3,914,853	20.1	467,340	14.7	737.7
Machinery, tools, and implements.....	5,164,046	26.4	487,420	15.3	959.5
Cash and sundries.....	9,677,806	49.6	1,765,245	55.4	448.2

Every item of capital except the value of land showed a most notable increase, and even the value of land showed an increase of 62.2 per cent. The item, cash and sundries, including cash on hand, bills receivable, unsettled ledger accounts, raw materials, stock in process of manufacture, finished products on hand, and other sundries, formed the principal item of capital in both years, but constituted a relatively larger per cent of the total in 1890 than in 1900. This follows from the nature of the industry, which does not necessitate the use of intricate machinery and mechanical appurtenances or costly structures for housing the same. The value of machinery, tools, and implements formed the second largest item in both years, and not only exhibited the most striking increase of all of the items of capital, but constituted a relatively larger per cent of the total than in 1890. This is a noteworthy fact and is significant of the increasing use of machinery especially adapted for the different processes employed in the canning and preserving of fish. The value of land, although showing an increase, formed a much smaller per cent of the total than in 1890.

As the several items of miscellaneous expenses for 1890 can not be shown separately, a detailed comparison with those reported for 1900 can not be made. The expenses of this nature in this industry do not call for special comment, but the several subdivisions for 1900 are shown in Table 24.

The cost of materials used, with the proportion each formed of the total, for 1900, is given in Table 20.

As shown in Table 20 the total cost of materials for 1900 was \$13,232,001, of which the amount reported for principal materials formed 97.1 per cent. The

materials purchased in the raw state, including the several varieties of fish, and also the cost of fruits and vegetables, which were canned in connection with the fish industry, amounted to \$6,512,438, or 49.2 per cent of the total cost. The amount reported as the cost of materials purchased in partially manufactured form was \$6,343,635, or 47.9 per cent of the total. This item includes the cost of cans, solder, boxes, etc., and such other materials reported under "all other materials" as were required in the preparation of the product. It also includes mill supplies which, together with all other materials, are shown separately in Table 24. The amount paid for fuel and rent of power and heat was insignificant. The cost of freight should only be considered in connection with the cost of the principal materials, as many establishments buy their materials delivered, and it was impossible in every instance to segregate the amount chargeable to freight.

TABLE 20.—FISH, CANNING AND PRESERVING: COST OF MATERIALS USED, 1900.

	Amount.	Per cent of total.
Total .....	\$13,232,001	100.00
Principal materials <sup>1</sup> .....	12,856,078	97.1
Fuel .....	175,835	1.3
Rent of power and heat .....	6,805	.1
Freight .....	193,628	1.5

<sup>1</sup> Includes mill supplies and all other materials, which are shown separately in Table 24.

Table 21 shows the value of products, by states, for 1900.

TABLE 21.—FISH, CANNING AND PRESERVING: VALUE OF PRODUCTS, BY STATES AND TERRITORIES, ARRANGED GEOGRAPHICALLY, 1900.

STATES AND TERRITORIES.	VALUE.		
	Total products.	Fish.	All other products.
United States .....	\$22,258,749	\$20,808,709	\$1,445,040
New England states .....	9,400,565	9,147,420	253,145
Maine .....	4,779,733	4,753,071	26,662
All other states <sup>1</sup> .....	4,620,832	4,394,349	226,483
Middle states .....	484,842	446,365	38,477
New York .....	197,869	175,392	22,477
Delaware .....	8,473	8,473	.....
Maryland .....	248,100	232,100	16,000
All other states <sup>2</sup> .....	30,400	30,400	.....

<sup>1</sup> Includes establishments distributed as follows: New Hampshire, 1; Massachusetts, 61.

<sup>2</sup> Includes establishments distributed as follows: New Jersey, 1; Pennsylvania, 1; District of Columbia, 1.

TABLE 21.—FISH, CANNING AND PRESERVING: VALUE OF PRODUCTS, BY STATES AND TERRITORIES, ARRANGED GEOGRAPHICALLY, 1900—Continued.

STATES AND TERRITORIES.	VALUE.		
	Total products.	Fish.	All other products.
Southern states .....	\$550,118	\$380,972	\$169,146
Virginia .....	24,700	24,700	.....
Mississippi .....	337,939	211,001	126,938
Louisiana .....	144,379	108,121	36,258
All other states <sup>1</sup> .....	43,100	37,150	6,950
Central states .....	510,809	188,144	322,665
Ohio .....	251,040	79,140	171,900
Michigan .....	65,077	64,877	200
Wisconsin .....	35,792	35,227	565
All other states <sup>2</sup> .....	158,900	8,900	150,000
Pacific states .....	7,486,279	6,824,672	661,607
Washington .....	4,831,038	4,281,962	549,076
Oregon .....	1,788,809	1,746,073	42,736
California .....	866,432	796,637	69,795
Outlying districts .....	3,821,136	3,821,136	.....
Alaska .....	3,821,136	3,821,136	.....

<sup>1</sup> Includes establishments distributed as follows: North Carolina, 1; South Carolina, 1; Texas, 1.

<sup>2</sup> Includes establishments distributed as follows: Illinois, 4; Missouri, 1.

Table 21 is designed to show the relative proportion of the value of all other products canned to the value of preserved fish. Of the total value of products, \$20,808,659, or 93.5 per cent, was given as the value of canned and preserved fish, and \$1,445,090, or 6.5 per cent, as the value of "all other products." The latter item includes the value of fresh fish handled in bulk by establishments engaged in the canning and preserving of fish, and as it was impracticable to separate the amounts directly chargeable to this branch of the industry, the totals were included under "all other products." It will be noticed that in some states this item reaches goodly proportions while in others it is insignificant.

The tables which have thus far been shown give an incomplete showing of the fish canning and preserving industry for the reason that, as has been explained, establishments are classified according to the predominating product, and in many instances the canning and preserving of fish is carried on in connection with some other branch of the canning industry, and the totals have not been included in the above tables. It is possible, however, to show the total quantity and value of fish canned and preserved during the census year as reported by establishments of any character. This is done in Table 22.



TABLE 22.—FISH, CANNING AND PRESERVING: QUANTITY AND VALUE OF PRODUCTS.

		UNITED STATES.	NEW ENGLAND STATES.			MIDDLE STATES.				
			Total.	Maine.	All other states. <sup>1</sup>	Total.	New York.	Delaware.	Maryland.	All other states. <sup>2</sup>
1	Aggregate value .....	\$20,856,057	\$9,179,616	\$4,756,271	\$4,423,345	\$446,365	\$175,392	\$8,473	\$232,100	\$30,400
	Canned fish—									
2	Total pounds .....	172,856,178	50,854,524	48,451,808	2,402,716	2,817,467	166,896		2,650,571	
3	Total value .....	\$14,639,127	\$4,584,849	\$4,812,884	\$272,465	\$255,125	\$23,025		\$232,100	
4	Salmon—									
5	Pounds .....	114,645,144	314,310	303,750	10,560					
6	Value .....	\$9,287,162	\$17,180	\$16,200	\$980					
7	Sardines—									
8	Pounds .....	44,951,244	44,562,536	44,420,236	142,300					
9	Value .....	\$4,212,351	\$4,133,491	\$4,049,784	\$83,707					
10	Clams—									
11	Pounds .....	4,456,718	3,216,670	3,136,270	80,400	566,896	166,896		400,000	
12	Value .....	\$345,774	\$216,254	\$210,401	\$5,853	\$63,025	\$23,025		\$40,000	
13	Oysters—									
14	Pounds .....	4,104,818				1,920,000			1,920,000	
15	Value .....	\$266,018				\$100,000			\$100,000	
16	Mackerel—									
17	Pounds .....	2,155,820	2,155,820	34,464	2,121,356					
18	Value .....	\$180,213	\$180,213	\$2,488	\$177,725					
19	Shrimps—									
20	Pounds .....	1,126,139	7,200		7,200					
21	Value .....	\$147,862	\$800		\$800					
22	Crabs—									
23	Pounds .....	656,055				330,571			330,571	
24	Value .....	\$142,480				\$92,100			\$92,100	
25	Other varieties—									
26	Pounds .....	760,240	597,988	557,088	40,900					
27	Value .....	\$57,317	\$36,911	\$33,511	\$3,400					
28	Smoked fish—									
29	Total pounds .....	21,723,426	13,877,788	6,765,196	6,612,592	2,668,250	2,309,600	133,550		239,100
30	Total value .....	\$986,003	\$491,812	\$150,310	\$341,502	\$129,095	\$101,082	\$6,833		\$21,100
31	Herring—									
32	Pounds .....	13,147,789	9,919,714	6,422,476	3,497,238	1,937,050	1,694,000	135,550		107,500
33	Value .....	\$353,252	\$255,001	\$136,310	\$118,691	\$28,083	\$17,040	\$8,133		\$1,910
34	Halibut—									
35	Pounds .....	3,621,462	1,862,462		1,862,462	2,000				2,000
36	Value .....	\$271,032	\$156,432		\$156,432	200				\$200
37	Salmon—									
38	Pounds .....	1,975,647	25,392		25,392	116,500	97,000			19,500
39	Value .....	\$136,331	\$4,059		\$4,059	\$17,800	\$13,900			\$3,900
40	Sturgeon—									
41	Pounds .....	514,900				480,800	454,000			26,800
42	Value .....	\$77,879				\$72,770	\$66,110			\$6,660
43	Finnan haddie—									
44	Pounds .....	1,360,500	1,307,500	80,000	1,227,500	53,000		1,000		52,000
45	Value .....	\$75,860	\$71,120	\$3,800	\$62,320	\$4,240		\$600		\$3,640
46	Other varieties—									
47	Pounds .....	1,103,128	262,720	262,720		78,900	64,600	2,000		12,300
48	Value .....	\$72,149	\$5,200	\$5,200		\$6,002	4,082	\$100		\$1,820
49	Salted fish—									
50	Total pounds .....	125,669,131	99,169,822	17,845,321	81,324,501	1,375,614	1,167,814	31,800		176,000
51	Total value .....	\$5,260,927	\$4,102,955	\$293,577	\$3,809,378	\$62,145	\$51,285	\$1,640		\$9,220
52	Mackerel—									
53	Pounds .....	10,468,813	10,262,099		10,262,099	146,214	111,214			35,000
54	Value .....	\$602,008	\$644,523		\$644,523	\$10,485	\$7,785			\$2,700
55	Herring—									
56	Pounds .....	15,933,426	10,696,995	3,549,045	7,147,950	1,106,600	1,046,600			60,000
57	Value .....	\$394,020	\$238,176	\$73,029	\$165,147	\$44,300	\$42,500			\$1,800
58	Cod—									
59	Pounds .....	65,418,710	57,036,427	8,535,000	48,501,427	52,000				52,000
60	Value .....	\$3,108,645	\$2,625,006	\$80,454	\$2,544,552	\$3,120				\$3,120
61	Haddock—									
62	Pounds .....	6,927,919	6,844,919	681,050	6,163,869					
63	Value .....	\$197,300	\$195,520	\$12,552	\$182,868					
64	Other varieties—									
65	Pounds .....	26,930,763	14,329,882	5,080,226	9,249,156	70,800	10,000	31,800		29,000
66	Value .....	\$893,994	\$399,780	\$127,442	\$272,288	\$4,240	\$1,000	\$1,640		\$1,600

<sup>1</sup>Includes establishments distributed as follows: Massachusetts, 61; New Hampshire, 1.<sup>2</sup>Includes establishments distributed as follows: New Jersey, 1; District of Columbia, 1; Pennsylvania, 1.

# CANNING AND PRESERVING.

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BY STATES AND TERRITORIES ARRANGED GEOGRAPHICALLY, 1900.

SOUTHERN STATES.					CENTRAL STATES.					PACIFIC STATES.				OUTLYING DISTRICT.
Total.	Virginia.	Mississippi.	Louisiana.	All other states. <sup>1</sup>	Total.	Ohio.	Michigan.	Illinois.	Wisconsin.	Total.	Washington.	Oregon.	California.	Alaska.
\$426,124	\$69,902	\$211,001	\$108,121	\$37,100	\$188,144	\$79,140	\$64,877	\$8,900	\$35,227	\$6,824,672	\$4,281,962	\$1,746,073	\$796,637	\$3,821,136
8,638,647	344,448	2,375,190	616,417	302,592						63,638,988	43,195,262	16,469,602	3,869,124	52,011,552
\$389,614	\$50,202	\$211,001	\$91,211	\$37,100						\$5,800,901	\$3,762,169	\$1,697,064	\$341,668	\$3,608,738
										62,888,482	42,969,114	15,915,852	3,454,016	51,992,352
										\$5,662,144	\$3,745,967	\$1,655,329	\$200,868	\$3,607,838
										388,708			388,708	
										\$78,860			\$78,860	
213,600	36,000			177,600						440,352	221,952	192,000	26,400	19,200
\$23,600	\$5,000			\$23,600						\$36,995	\$15,045	\$20,000	\$1,950	\$900
1,822,568		1,822,568								362,250		362,250		
\$144,283		\$144,283								\$21,785		\$21,785		
1,118,939		589,782	514,165	64,992										
\$147,012		\$62,707	\$79,805	\$4,500										
321,288	308,448	12,840								4,196	4,196			
\$49,213	\$45,202	\$4,011								\$1,167	\$1,167			
162,262			102,252	60,000										
\$20,406			\$11,406	\$9,000										
					1,501,588	146,500	834,169	52,019	468,900	4,175,800	3,700,800	250,000	225,000	
					\$120,104	\$13,100	\$64,877	\$6,900	\$35,227	\$244,992	\$225,992	\$10,000	\$9,000	
					697,425	100,000	597,425			593,600	593,600			
					\$52,668	\$7,000	\$45,668			\$17,500	\$17,500			
										1,757,000	1,757,000			
										\$114,400	\$114,400			
					11,855			11,855		1,822,400	1,347,400	250,000	225,000	
					\$1,700			\$1,700		\$112,772	\$93,772	\$10,000	\$9,000	
					31,300	22,500	1,300	7,500		2,800	2,800			
					\$4,789	\$3,500	\$169	\$1,120		\$320	\$320			
					761,608	24,000	235,444	33,164	468,900					
					\$80,947	\$2,600	\$19,040	\$4,080	\$35,227					
1,405,200	1,310,000		95,200		2,246,571	2,218,000		28,571		15,782,824	8,303,160	335,828	7,144,336	5,689,100
\$36,610	\$19,700		\$16,910		\$68,040	\$66,040		\$2,000		\$778,779	\$293,801	\$39,009	\$445,969	\$212,398
50,000			50,000											
\$7,000			\$7,000											
1,275,000	1,275,000				2,028,571	2,000,000		28,571		826,260	736,260		90,000	
\$19,000	\$19,000				\$62,000	\$60,000		\$2,000		\$30,544	\$15,344		\$15,200	
										7,642,788	954,400		6,688,888	687,500
										\$452,919	\$45,445		\$407,474	\$27,500
										30,000	30,000			
35,000	35,000				18,000	18,000				\$600	\$600			
\$700	\$700				\$540	\$540								
45,200			45,200		200,000	200,000				7,283,781	6,582,600	335,828	365,958	5,001,600
\$9,910			\$9,910		\$5,600	\$5,500				\$294,716	\$232,412	\$39,009	\$23,295	\$184,898

<sup>1</sup> Includes establishments distributed as follows: North Carolina, 1; South Carolina, 1; Texas, 1.

The figures in Table 22 include the quantity and value of fish canned in fish-canning establishments as such, and also the quantity and value reported as a subsidiary product in establishments engaged primarily in the canning and preserving of oysters, or in the canning and preserving of fruits and vegetables. The values reported do not include the amounts reported as the value of all other products, and therefore the totals given in Table 22 do not agree with the total products given elsewhere in this report, or with those of the report on this industry as presented in the general report on Manufactures, Parts I and II. In addition to those included under "other varieties" there are some varieties of fish, known to be canned or preserved, which do not appear in Table 22. This is accounted for by the fact that it was impossible to ascertain the quantity and value of each, as they were not separately reported. Accordingly they were included under "all other products" in Table 21.

Table 22 shows that the total value of fish canned, smoked, and salted during the census year was \$20,836,057. The total number of pounds of canned fish was 172,856,178, valued at \$14,589,127; of smoked fish, 21,723,426 pounds, valued at \$986,003; and of salted fish, 125,669,131 pounds, valued at \$5,260,927. Attention is here directed to the fact that the values

given are those fixed at the factory. In making deductions relative to the average value per pound this should be borne in mind.

It appears that the New England states led in this industry, reporting \$9,179,616 as the value of the fish products, or 44 per cent of the total value. The Pacific states ranked second, reporting \$6,824,672 as the value of prepared fish, or 32.7 per cent of the total value. Alaska ranked third, with \$3,821,136. The Middle and Central states followed in the order given.

In the total number of pounds of canned fish, Alaska ranked first, reporting 52,011,552 pounds, or 30.1 per cent of the total number; Maine ranked second, with 48,451,808 pounds; Washington third, with 43,195,262 pounds; Oregon fourth, with 16,469,602 pounds, and California fifth, with 3,869,124 pounds. The total number of pounds of canned fish reported by these 5 states was 163,997,348, or 94.9 per cent of the total number of pounds reported for the entire country.

The smoking and salting of fish, although carried on extensively in the Pacific states, is principally confined to the states on the Atlantic coast.

The principal details of the statistics for the canning and preserving of fish as carried on in cities of over 20,000 population are shown in Table 23.

TABLE 23.—FISH, CANNING AND PRESERVING: STATISTICS OF CITIES OF 20,000 POPULATION OR OVER, 1900.

CITIES.	Rank by value of products.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Total wages.			
Total .....		108	\$2,658,878	196	\$184,150	1,977	\$740,315	\$192,687	\$4,847,813	\$6,857,803
Gloucester, Mass .....	1	88	1,479,647	85	68,106	1,154	398,703	100,769	2,845,657	3,746,326
Seattle, Wash .....	2	7	556,620	38	25,380	259	106,384	32,501	748,602	1,037,174
Boston, Mass .....	3	13	200,080	82	31,494	96	49,156	13,151	558,645	725,785
San Francisco, Cal .....	4	12	132,385	13	24,420	128	58,518	18,817	190,927	384,969
New York, N. Y .....	5	7	51,915	4	2,620	23	13,074	9,327	96,145	140,985
Tacoma, Wash .....	6	5	26,725	2	1,400	27	11,690	1,600	48,590	74,375
Portland, Me .....	7	5	19,290	.....	.....	14	6,180	906	27,881	39,975
Chelsea, Mass .....	8	3	5,125	.....	.....	4	2,128	784	22,136	31,895
Milwaukee, Wis .....	9	5	2,640	.....	.....	1	290	452	16,172	20,667
Chicago, Ill .....	10	4	2,655	.....	.....	5	2,642	526	8,195	8,904
All other cities <sup>1</sup> .....		11	405,946	27	30,780	271	97,600	18,814	299,857	610,752

<sup>1</sup>Includes establishments distributed as follows: Buffalo, N. Y., 1; Cleveland, Ohio, 1; District of Columbia, 1; Los Angeles, Cal., 1; New Britain, Conn., 1; New Orleans, La., 2; Philadelphia, Pa., 1; Portland, Oreg., 1; St. Louis, Mo., 1; Wilmington, Del., 1.

It appears from Table 23 that of the total value of products, \$6,857,803, or 32.9 per cent, was reported for the cities named, and of this amount \$3,746,326, or 18 per cent of the total for the United States, was returned for Gloucester. In this connection attention should be directed to the fact that in general the Eastern cities included in Table 23 are not only engaged in canning, but also in the salting and smoking of almost every variety of fish that is native of the surrounding waters. Many large establishments also handle fresh fish in large quantities, and as it was impossible to separate

the amounts directly chargeable to the manufacturing branch of the business, the value of fresh fish handled is included in the total value of products. This is especially true of Gloucester, and should be taken into consideration in making comparisons and deductions. The Western cities named are engaged almost exclusively in the canning of salmon caught in the waters of the Columbia river and its tributaries. The industry has its center in the city of Astoria, Oreg., but, inasmuch as it has less than 20,000 population, separate statistics are not shown for that city.

## HISTORICAL AND DESCRIPTIVE.

No food supply is so subject to rapid putrefaction as fishery products, and for their preservation all the generally known processes are employed. The canning of various kinds of fish has always been an important branch of the canning industry. Even before the processes of Soddington and Appert were known the people of Holland put up salmon in tin cans in the following manner: The head of the fish was severed immediately after caught, and the fish was then hung up by the tail to permit the blood to flow from it. The viscera were then removed, and the fish, after being carefully washed, was boiled in a brine of white salt. Before being completely cooked, however, it was taken out of the brine, cooled, smoked for a day or two by exposure to juniper, and then placed in tin cans liberally supplied with butter freshly salted and melted. In winter, olive oil was used instead of butter. The cans were then covered and soldered.<sup>1</sup>

After the introduction of the Appert process, and the substitution of tin cans for glass, fish canning was successfully and extensively carried on at Aberdeen, Scotland; Sligo, Ireland; and various other points in Europe. About the year 1845, the canning of sardines was successfully established on the coast of France, and up to the present time the industry in that country has had an uninterrupted and remarkable growth.

Prior to 1843, the canning of fish in the United States was very limited, but in that year the firm of Treat, Noble & Holliday, with the assistance of Mr. Charles Mitchell, a native of Scotland who had mastered the methods used in the canneries of Aberdeen, successfully began the canning of lobsters and mackerel at Eastport, Maine. Chiefly through the efforts of Mr. U. S. Treat they succeeded in introducing their goods, and with a ready market at their command the enterprise proved a success. The business after 1849, rapidly increased, and in 1860 canneries engaged in putting up lobsters, mackerel, and fruits and vegetables were found in many of the coast cities of Maine. The supply of lobsters on the coast of Maine rapidly decreased, and a prejudice also existed against the canneries, resulting in the enactment of stringent laws restricting the time of operation of canneries and canning of short lobsters. This caused a rapid decrease in the number of factories engaged in lobster canning, and in the year 1895 the last establishment engaged exclusively in the canning of lobsters suspended operations. During the census year, as indicated in Table 22, there were no lobsters reported as canned.

Salmon canning, one of the most important branches of the fish-canning industry, was carried on to a limited extent in Europe and the United States, prior to 1864. In that year the industry was started on the Pacific coast

at Washington, Yolo county, Cal., on the Sacramento River, by Messrs. Hapgood, Hume & Co. Their success can be attributed to the fact that a member of the firm had previously mastered the process of canning as practiced on the eastern coast, and consequently the goods packed found a ready market. With the increasing demands for the product, an establishment was built on the Columbia River, at Eagle Cliff, in 1866. The industry developed rapidly and reached its maximum production in 1883. The constant fishing for salmon along the river seriously affected the possible supply, but the exhaustion of these fisheries, threatened in the early years of the decade, was averted by more rigid laws against improvident fishing and also by the artificial propagation of fish.<sup>2</sup> The waters of the streams and rivers of Alaska were found to possess an unlimited supply of salmon, and in 1878 canneries were located at Klawak and Old Sitka, the latter cannery being removed to Cook Inlet in 1882. In the following year there were 5 canneries located in Alaska, and six years later, 37 were in operation, with an output of 714,196 cases. The great production of these canneries in 1890 and 1891 glutted the markets, with a considerable loss to the owners of the canneries. This led to a combination of the firms engaged in this business to limit the yearly output of each salmon cannery. This plan has been successfully adopted, and the average output each year is now regulated to meet the probable consumption.

Since the beginning of the industry, in 1864, the methods in the process of canning have been greatly improved. The original appliances and devices used were very crude and involved considerable labor and expense in operation. The improvements made have mainly been in lessening the period of cooking, permitting the escape of heated air in the cans, softening the bones of the small fish, and in the filling, capping, labeling, and boxing of the cans.

Salmon canneries are generally located at the water's edge or partly projecting over the water. The fish are received by the Chinese, who have practically a monopoly on the labor performed in salmon canneries, weighed, and thrown from the scales upon a floor where they are washed and treated to an ice-cold water bath to keep them fresh and cool. They are then taken to the dressing tables, where the head, fins, and tail are severed. After this they are passed to another operator, who removes the viscera and thoroughly scrapes the carcass inside and out. The waste if not used for oil or fertilizer is thrown back into the water. The fish is then subjected to another washing and at the same time the scales are removed. It is now placed in a second tank of clear water for its final washing and cleaning. By a mechanical device, operated either by hand or machin-

<sup>1</sup>Treatise on fishing for herring, etc., published in 1800, at Dublin.

<sup>2</sup>United States Fish Commission Bulletin, 1898, pages 22-31.

ery, the fish is cut transversely in sections of the exact length of the cans to be filled. The fish is then ready for the fillers' table, where it is placed in cans either by machinery or by hand, after which the cans are topped and soldered together. After the cans are tested for defects they are sent to the "bathroom" for their first cooking. Here they are heated in retorts made of heavy plank well bolted to sustain the steam pressure, or in retorts made of iron or steel plate. It is necessary to cook not only the fish thoroughly but also the bones in order to make them crumble to pieces. After the first cooking, the cans are tested by the process known as "blowing" or "renting," which consists of making a small perforation in each can to permit the escape of the steam, which if allowed to remain would ruin the can. The can is then placed in another retort for its second or final cooking, after which it is subjected to a lye bath to remove the grease and dirt. Fresh water is then poured on the can to remove the lye. When once cooled the cans are lacquered, and after being labeled and cased they are ready for the market.<sup>1</sup>

The sardine canning of Maine is next in importance to the salmon canning of the Pacific coast. The sardine is a general term applied to various small-sized fishes, varying in length from 5 to 10 inches. They are found in various parts of the world, the best known being the young of the pilchard, which are plentiful along the coast of France, and the young of the sea herring, found along the coast of Maine. The canning of the sardine was begun at Nantes, France, in 1834, and although attempts had been made to put up herring along the coast of Maine as early as 1867, it was not a decided success until 1875. For the first five years the industry was confined within narrow limits, but by 1880 the in-

<sup>1</sup> United States Fish Commission Bulletin, 1893, pages 22-31.

dustry was augmented by the establishment of canneries at Eastport, Robinson, Lubec, Jonesport, East Lamoine, and Camden, Maine. This industry during its early days at Eastport and Lubec, outranked all other branches of business in importance, furnishing employment for a majority of the inhabitants.

The process used in putting up the sardine is an exceedingly complicated one, and the methods employed in different places are quite at variance. Wherein the treatment of the sardine differs from that accorded the salmon is the use of oil in putting up the former. The fish is fried in oil and then placed in a can with a solution of oil. The oil used in the French sardine canneries is either olive oil or peanut oil, while cottonseed oil is the most extensively used in Maine. The sardine is also put up in mustard, spices, and tomato sauce.

In addition to the fishes named, eels, herring, menhaden, smelt, sturgeon, halibut, Spanish mackerel, and several other varieties are canned in the principal canneries.

Canned marine products are very aptly divided into five general classes, viz: First, plain boiled, steamed, or otherwise cooked; second, preserved in oil; third, preserved with vinegar, sauces, spices, jellies, etc.; fourth, cooked with vegetables; fifth, preserved by some other process, but placed in cans for convenience. In the first class, salmon, mackerel, halibut, lobsters, clams, etc., are included, while sardines make up the second class. Herring put up as "brook trout," eels, sturgeon, etc., comprise the third division, and the fourth class is made up of fish chowder, clam chowder, codfish balls, etc. The last class includes fishes prepared by smoking and salting, and then canned for convenience.<sup>2</sup>

Table 24 shows the detailed statistics, by states and territories, for the industry as returned for 1900.

<sup>2</sup> United States Fish Commission Bulletin, 1898, page 511.

## MANUFACTURES.

TABLE 24.—FISH, CANNING AND PRESERVING.

	United States.	Alaska.	California.	Delaware.	Illinois.	Louisiana.
1 Number of establishments.....	348	36	19	3	4	6
2 Character of organization:						
3 Individual.....	134	4	2	2	4	1
4 Firm and limited partnership.....	102	1	9			4
5 Incorporated company.....	112	31	8	1		1
6 Capital:						
7 Total.....	\$19,514,215	\$3,203,228	\$691,285	\$1,935	\$2,655	\$186,689
8 Land.....	\$757,510	\$73,135	\$51,000	\$400	\$475	\$10,150
9 Buildings.....	\$3,914,853	\$971,094	\$70,100	\$500	\$750	\$35,121
10 Machinery, tools, and implements.....	\$5,164,046	\$1,840,264	\$69,235	\$185	\$380	\$33,533
11 Cash and sundries.....	\$9,677,806	\$309,735	\$500,950	\$850	\$1,100	\$107,880
12 Proprietors and firm members.....	886	7	33	5	4	12
13 Salaried officials, clerks, etc.:						
14 Total number.....	618	64	33			8
15 Total salaries.....	\$585,160	\$106,430	\$49,710			\$9,500
16 Officers of corporations—						
17 Number.....	72	6	11			
18 Salaries.....	\$115,030	\$18,240	\$27,000			
19 General superintendents, managers, clerks, etc.—						
20 Total number.....	546	58	22			8
21 Total salaries.....	\$470,130	\$88,190	\$22,710			\$9,500
22 Men—						
23 Number.....	486	58	20			8
24 Salaries.....	\$450,956	\$88,190	\$21,670			\$9,500
25 Women—						
26 Number.....	60		2			
27 Salaries.....	\$19,174		\$1,040			
28 Wage-earners, including pieceworkers, and total wages:						
29 Greatest number employed at any one time during the year.....	26,984	4,931	737		6	536
30 Least number employed at any one time during the year.....	17,674	3,981	272		3	237
31 Average number.....	13,410	2,092	376		5	236
32 Wages.....	\$4,229,938	\$1,242,642	\$158,888		\$2,642	\$44,710
33 Men, 16 years and over—						
34 Average number.....	9,731	2,091	279		5	45
35 Wages.....	\$3,733,606	\$1,242,237	\$136,422		\$2,642	\$22,450
36 Women, 16 years and over—						
37 Average number.....	2,533	1	73			161
38 Wages.....	\$369,731	\$405	\$19,680			\$21,260
39 Children, under 16 years—						
40 Average number.....	1,146		24			30
41 Wages.....	\$126,351		\$2,786			\$1,000
42 Average number of wage-earners, including pieceworkers, employed during each month—						
43 Men, 16 years and over—						
44 January.....	2,240	7	118		6	46
45 February.....	3,147	801	118		6	46
46 March.....	6,625	3,678	168		6	71
47 April.....	9,113	3,974	291		5	71
48 May.....	14,770	4,603	317		4	64
49 June.....	15,321	4,805	315		4	29
50 July.....	16,360	4,605	343		4	30
51 August.....	14,579	2,201	507		3	36
52 September.....	12,155	419	447		5	46
53 October.....	10,879		332		5	37
54 November.....	8,580		195		5	27
55 December.....	3,001		194		5	27
56 Women, 16 years and over:						
57 January.....	591		28			140
58 February.....	586		28			140
59 March.....	981		28			365
60 April.....	1,186		46			365
61 May.....	3,749		90			250
62 June.....	3,611		114			25
63 July.....	3,803		127			140
64 August.....	3,999	10	155			140
65 September.....	4,136	2	181			240
66 October.....	3,610		73			110
67 November.....	3,303		29			10
68 December.....	581		29			10
69 Children, under 16 years:						
70 January.....	104		10			
71 February.....	94		10			
72 March.....	339		10			100
73 April.....	413		24			85
74 May.....	1,776		27			75
75 June.....	1,706		38			
76 July.....	1,855		32			
77 August.....	1,852		57			
78 September.....	1,985		47			50
79 October.....	1,776		12			50
80 November.....	1,538		10			
81 December.....	155		10			
82 Miscellaneous expenses:						
83 Total.....	\$883,363	\$150,854	\$23,370	\$89	\$526	\$6,408
84 Rent of works.....	\$45,178		\$6,626	\$64	\$110	
85 Taxes, not including internal revenue.....	\$91,645	\$31,314	\$1,885	\$14	\$13	\$2,239
86 Rent of offices, interest, insurance, and all sundry expenses not hitherto included.....	\$665,904	\$118,540	\$14,709	\$11	\$403	\$4,169
87 Contract work.....	\$73,236	\$1,000	\$150			
88 Materials used:						
89 Aggregate cost.....	\$13,232,001	\$1,587,883	\$449,718	\$6,238	\$3,195	\$67,583
90 Principal materials—						
91 Total.....	\$7,730,325		\$406,764	\$5,984	\$2,650	\$41,888
92 Purchased in raw state.....	\$6,512,438		\$330,775	\$3,984	\$1,750	\$37,283
93 Purchased in partially manufactured form.....	\$1,217,887		\$69,989	\$2,000	\$900	\$4,600
94 Fuel.....	\$175,935	\$38,150	\$7,800	\$104	\$245	\$2,215
95 Rent of power and heat.....	\$6,365					
96 Mill supplies.....	\$24,085	\$6,003	\$395			\$300
97 All other materials.....	\$5,101,663	\$1,453,730	\$93,354	\$85	\$300	\$22,955
98 Freight.....	\$193,628	\$83,000	\$925	\$65		\$225

# CANNING AND PRESERVING.

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BY STATES AND TERRITORIES, 1900.

Maine.	Maryland.	Massachu- setts.	Michigan.	Mississippi.	New York.	Ohio.	Oregon.	Virginia.	Washington.	Wisconsin.	All other states. <sup>1</sup>	
117	3	61	4	4	9	3	24	5	86	6	8	1
59	3	27	2	1	3	5	5	2	12	5	5	2
38	3	27	2	1	5	2	2	3	8	1	2	3
25	7	7	3	3	1	1	17	16	16	1	1	4
\$3,481,056	\$65,600	\$1,734,227	\$6,800	\$122,580	\$100,564	\$56,068	\$2,558,642	\$10,325	\$2,222,726	\$4,590	\$65,245	5
\$137,355	\$7,500	\$194,557	\$700	\$4,302	\$17,021	\$200	\$127,522	\$200	\$118,288	\$1,125	\$13,520	6
\$740,315	\$8,900	\$206,559	\$1,850	\$9,003	\$25,553	\$1,025	\$1,539,129	\$2,700	\$284,804	\$1,150	\$16,300	7
\$2,045,117	\$7,400	\$256,568	\$250	\$12,628	\$10,005	\$42,943	\$363,795	\$1,825	\$457,473	\$815	\$12,675	8
\$5,558,269	\$41,800	\$1,076,543	\$4,000	\$96,587	\$47,985	\$11,900	\$528,196	\$5,600	\$1,362,161	\$1,500	\$22,750	9
135	8	85	6	1	15	3	10	9	36	7	10	10
177	6	122	9	7	5	58	6	116	116	7	11	11
\$139,497	\$2,880	\$108,131	7,600	\$6,520	\$4,160	\$56,125	\$550	\$93,117	\$5,940	12	12	12
15	7	11,500	4,000	3,900	1,800	11	14	14	14	13	13	13
\$20,800	\$11,500	\$4,000	\$3,900	\$1,800	\$13,370	\$13,370	\$13,370	\$13,370	\$13,370	\$13,370	\$13,370	14
102	6	115	5	4	4	47	6	102	78,697	7	15	15
\$118,697	\$2,880	\$91,631	\$3,600	\$2,620	\$2,360	\$42,755	\$550	\$78,697	\$5,940	16	16	16
129	6	100	5	4	3	45	6	98	\$76,957	4	17	17
\$111,181	\$2,880	\$85,223	\$3,600	\$2,620	\$2,000	\$42,205	\$550	\$76,957	\$4,380	18	18	18
33	15	15	1	62	1	2	4	8	1,560	19	19	19
\$7,516	\$6,408	\$6,408	\$75	\$6,550	\$360	\$550	\$1,740	\$1,560	\$1,560	20	20	20
10,481	598	1,908	55	490	105	111	1,646	101	4,960	8	316	21
8,878	540	885	14	170	100	12	1,521	84	1,521	3	217	22
5,567	442	1,328	19	231	66	51	636	18	2,190	3	150	23
\$1,184,850	\$68,500	\$475,123	\$7,961	\$41,023	\$20,842	\$21,600	\$219,744	\$4,545	\$711,214	\$1,010	\$20,389	24
2,895	207	1,194	18	71	39	51	620	11	2,086	2	117	25
\$833,157	\$36,900	\$449,781	\$7,886	\$20,353	\$18,424	\$21,600	\$217,750	\$2,995	\$693,480	\$720	\$26,709	26
1,740	179	134	98	27	11	6	73	24	\$2,100	27	27	27
\$245,302	\$22,600	\$25,342	\$14,125	\$2,418	\$1,494	\$1,825	\$13,730	\$2,100	\$2,100	28	28	28
926	56	1	62	1	5	1	81	9	\$530	29	29	29
\$106,391	\$4,000	\$75	\$6,550	\$360	\$550	\$1,740	\$1,560	\$1,560	\$1,560	30	30	30
172	195	979	32	75	30	25	45	2	458	2	55	31
150	195	1,127	36	75	30	25	45	2	452	2	39	32
251	195	1,130	13	65	30	54	83	3	829	2	48	33
343	195	1,074	13	70	29	59	734	63	2,148	2	42	34
4,611	211	1,179	12	45	48	59	768	50	2,609	2	188	35
4,809	236	1,166	13	25	50	58	769	10	2,843	2	187	36
4,671	236	1,247	13	70	50	50	774	2	4,080	2	179	37
4,743	236	1,284	14	110	50	45	1,216	2	3,954	2	178	38
5,022	195	1,310	15	100	48	50	1,073	2	3,281	2	193	39
4,960	195	1,892	19	90	48	50	1,129	2	2,421	2	199	40
4,582	195	1,806	19	70	30	110	761	2	1,226	2	52	41
426	198	1,132	15	63	29	25	49	2	784	2	52	42
91	137	128	44	2	2	2	19	2	19	2	43	43
57	137	139	44	2	2	2	19	2	19	2	20	44
196	137	131	104	2	2	2	11	2	11	2	7	45
263	137	104	139	2	2	2	4	33	86	2	7	46
2,838	187	115	55	52	52	12	12	25	89	2	36	47
2,789	287	127	55	52	52	12	12	20	94	2	36	48
2,828	279	127	70	52	52	12	12	185	185	2	43	49
2,860	233	132	141	52	52	26	26	156	156	2	38	50
3,038	145	165	181	52	52	37	37	115	115	2	40	51
2,998	143	179	171	52	52	16	16	45	45	2	28	52
2,808	137	166	84	2	2	15	15	42	42	2	20	53
183	137	112	84	2	2	19	19	5	5	2	54	54
10	50	23	23	23	23	23	23	23	23	1	10	55
10	50	23	23	23	23	23	23	23	23	1	10	56
80	50	2	2	98	1	1	14	6	26	1	5	57
92	50	2	2	108	1	1	14	6	26	1	5	58
1,521	50	2	2	50	1	1	14	6	26	1	4	59
1,569	75	2	2	25	1	1	14	6	26	1	10	60
1,586	75	30	85	30	1	1	14	6	26	1	40	61
1,611	69	125	74	43	1	1	14	6	26	1	10	62
1,651	50	2	2	63	1	1	14	6	26	1	4	63
1,554	50	2	2	43	1	1	14	6	26	1	10	64
1,406	50	2	2	63	1	1	14	6	26	1	3	65
21	50	2	2	63	1	1	14	6	26	1	8	66
\$97,859	\$11,020	\$118,058	\$1,318	\$17,997	\$11,741	\$2,610	\$147,858	\$496	\$285,353	\$1,005	\$6,801	67
\$3,777	\$21,296	\$100	\$150	\$150	\$1,100	\$1,400	\$3,376	\$90	\$6,989	\$25	\$75	68
\$11,585	\$770	\$13,642	\$51	\$412	\$1,056	\$110	\$7,502	\$6	\$20,019	\$19	\$408	69
\$82,322	\$10,250	\$82,320	\$1,077	\$17,435	\$9,585	\$1,100	\$76,015	\$400	\$242,689	\$961	\$6,318	70
\$175	\$800	\$800	\$90	\$90	\$90	\$90	\$60,965	\$60,965	\$15,056	\$15,056	\$15,056	71
\$2,578,636	\$154,605	\$3,471,112	\$52,949	\$190,441	\$134,211	\$70,406	\$1,182,218	\$13,239	\$3,086,865	\$28,142	\$154,500	72
\$807,806	\$88,700	\$3,077,215	\$48,032	\$128,281	\$105,778	\$50,396	\$844,940	\$9,447	\$1,955,720	\$27,654	\$129,070	73
\$532,187	\$88,700	\$2,356,054	\$46,913	\$128,281	\$101,733	\$5,200	\$776,284	\$7,272	\$1,939,893	\$27,544	\$128,580	74
\$275,619	\$721,161	\$1,119	\$1,119	\$1,119	\$4,045	\$46,196	\$88,656	\$2,175	\$21,827	\$110	\$490	75
\$64,719	\$3,235	\$8,007	\$677	\$1,580	\$1,525	\$510	\$13,095	\$300	\$30,817	\$346	\$2,450	76
\$1,201	\$2,284	\$2,284	\$2,284	\$2,284	\$2,284	\$2,284	\$2,284	\$2,284	\$2,284	\$2,284	\$2,284	77
\$5,976	\$600	\$232	\$10	\$1,719	\$75	\$75	\$1,127	\$140	\$7,178	\$140	\$330	78
\$1,676,862	\$62,050	\$372,799	\$3,430	\$58,861	\$23,973	\$19,500	\$304,536	\$2,932	\$1,056,394	\$142	\$7,630	79
\$22,072	\$20	\$10,575	\$800	\$2,660	\$2,660	\$2,660	\$17,920	\$600	\$34,076	\$34,076	\$15,030	80

<sup>1</sup>Includes establishments distributed as follows: District of Columbia, 1; Missouri, 1; New Hampshire, 1; New Jersey, 1; North Carolina, 1; Pennsylvania, 1; South Carolina, 1; Texas, 1.



TABLE 24.—FISH, CANNING AND PRESERVING:

		United States.	Alaska.	California.	Delaware.	Illinois.	Louisiana.
1	Products:						
2	Aggregate value.....	\$22,253,749	\$3,821,136	\$866,432	\$8,473	\$8,900	\$144,379
3	Canned fish—						
4	Total pounds.....	171,941,626	52,011,552	3,869,124			616,417
5	Total value.....	\$14,574,741	\$3,608,738	\$341,668			\$91,211
6	Salmon—						
7	Pounds.....	114,645,144	51,992,352	3,454,016			
8	Value.....	\$9,287,162	\$3,607,838	\$260,858			
9	Sardines—						
10	Pounds.....	44,951,244		388,708			
11	Value.....	\$4,212,351		\$78,860			
12	Clams—						
13	Pounds.....	4,416,584	19,200	26,400			
14	Value.....	\$342,574	\$900	\$1,950			
15	Oysters—						
16	Pounds.....	4,104,818					
17	Value.....	\$266,018					
18	Mackerel—						
19	Pounds.....	1,589,900					
20	Value.....	\$164,179					
21	Shrimps—						
22	Pounds.....	1,126,139					514,165
23	Value.....	\$147,862					\$79,805
24	Crabs—						
25	Pounds.....	347,607					
26	Value.....	\$97,278					
27	Other varieties—						
28	Pounds.....	760,240					102,252
29	Value.....	\$57,317					\$11,406
30	Smoked fish—						
31	Total pounds.....	21,252,066		225,000	138,550	52,019	
32	Total value.....	\$978,041		\$9,000	\$6,833	\$6,900	
33	Herring—						
34	Pounds.....	12,676,429			135,550		
35	Value.....	\$340,290			\$6,133		
36	Halibut—						
37	Pounds.....	3,621,462					
38	Value.....	\$271,032					
39	Salmon—						
40	Pounds.....	1,975,647		225,000		11,855	
41	Value.....	\$136,331		\$9,000		\$1,700	
42	Sturgeon—						
43	Pounds.....	514,900				7,500	
44	Value.....	\$77,879				\$1,120	
45	Finnan haddie—						
46	Pounds.....	1,360,500			1,000		
47	Value.....	\$75,360			\$600		
48	Other varieties—						
49	Pounds.....	1,103,128			2,000	33,164	
50	Value.....	\$72,149			\$100	\$4,080	
51	Salted fish—						
52	Total pounds.....	125,669,131	5,689,100	7,144,336	31,800	28,571	95,200
53	Total value.....	\$5,260,927	\$212,398	\$445,960	\$1,640	\$2,000	\$16,910
54	Cod—						
55	Pounds.....	65,418,710	687,500	6,688,383			
56	Value.....	\$3,108,545	\$27,500	\$407,474			
57	Mackerel—						
58	Pounds.....	10,458,313					50,000
59	Value.....	\$662,008					\$7,000
60	Herring—						
61	Pounds.....	15,933,426		90,000		28,571	
62	Value.....	\$394,020		\$15,200		\$2,000	
63	Haddock—						
64	Pounds.....	6,927,919					
65	Value.....	\$197,360					
66	Other varieties—						
67	Pounds.....	26,930,763	5,001,600	365,953	31,800		45,200
68	Value.....	\$898,994	\$184,898	\$23,295	\$1,640		\$9,910
69	All other products, value.....	\$1,445,040		\$69,795			\$36,238
70	Comparison of products:						
71	Number of establishments reporting for both years.....	213	7	15	1	4	1
72	Value for census year.....	\$12,331,458	\$300,416	\$304,242	\$6,833	\$8,900	\$97,800
73	Value for preceding business year.....	\$10,185,844	\$621,300	\$574,789	\$6,150	\$7,080	\$81,000
74	Power:						
75	Number reporting power.....	144	26	7			3
76	Total horsepower.....	4,806	577	98			77
77	Owned—						
78	Engines—						
79	Steam—						
80	Number.....	281	81	9			6
81	Horsepower.....	3,954	577	78			72
82	Gas or gasoline—						
83	Number.....	12		2			
84	Horsepower.....	132		25			
85	Water wheels—						
86	Number.....	1					
87	Horsepower.....	1					
88	Electric motors—						
89	Number.....	7					1
90	Horsepower.....	82					6
91	Furnished to other establishments—						
92	Horsepower.....	3					
93	Rented—						
94	Horsepower.....	137					
95	Establishments classified by number of employees:						
96	Total number of establishments.....	348	36	19	3	4	6
97	No employees.....	20		6	3	1	
98	Under 5.....	43		3		3	1
99	5 to 20.....	103	6	3			2
100	21 to 50.....	69	2	2			
101	51 to 100.....	36	4	2			
102	101 to 250.....	60	19	3			3
103	251 to 500.....	11	5				
104	501 to 1,000.....	6					

## CANNING AND PRESERVING.

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BY STATES AND TERRITORIES, 1900—Continued.

Maine.	Maryland.	Massachu- setts.	Michigan.	Mississippi.	New York.	Ohio.	Oregon.	Virginia.	Washington.	Wisconsin.	All other states. <sup>1</sup>	
\$4,779,783	\$248,100	\$4,619,362	\$65,077	\$337,939	\$197,869	\$251,040	\$1,788,809	\$24,700	\$4,831,088	\$35,702	\$224,970	1
48,411,624	2,650,571	1,886,796		2,375,190	166,896		16,469,602	36,000	48,195,282		302,592	2
\$4,309,184	\$232,100	\$266,431		\$211,001	\$23,025		\$1,697,064	\$5,000	\$3,762,169		\$37,150	3
303,750		10,560					15,915,352		42,969,114			4
\$16,200		\$980					\$1,655,829		\$3,745,957			5
												6
44,420,236		142,300										7
\$4,049,784		\$83,707										8
3,096,086	400,000	80,400			166,896		192,000	36,000	221,952		177,600	9
\$207,201	\$40,600	\$5,853			\$23,025		\$20,000	\$5,000	\$15,045		\$23,600	10
	1,920,000			1,822,568			362,250					11
	\$100,000			\$144,283			\$21,735					12
34,464		1,555,486										13
\$2,488		\$161,691										14
		7,200		539,782							64,992	15
		\$800		\$62,707							\$4,550	16
	330,571			12,840					4,196			17
	\$92,100			\$4,011					\$1,167			18
557,088		40,900									60,000	19
\$33,511		\$3,400									\$9,000	20
6,765,196		6,141,232	834,169		2,309,600	146,500	250,000		3,700,800	463,900	220,100	21
\$150,310		\$328,540	\$94,877		\$101,082	\$13,100	\$10,000		\$225,992	\$35,227	\$21,180	22
6,422,476		3,025,878	597,425		1,694,000	100,000			593,600		107,500	23
\$136,310		\$105,729	\$45,668		\$17,040	\$7,000			\$17,500		\$4,910	24
		1,862,462							1,757,000		2,000	25
		\$156,432							\$114,400		\$200	26
		25,392			97,000		250,000		1,347,400		19,500	27
		\$4,059			\$13,900		\$10,000		\$93,772		\$3,900	28
			1,300		454,000				2,800		26,800	29
			\$169		\$66,110	22,500			\$320		\$6,060	30
80,000		1,227,500									52,000	31
\$8,800		\$62,320									\$3,640	32
262,720			235,444		64,600	24,000				463,900	12,300	33
\$5,200			\$19,040		\$4,082	\$2,600				\$35,227	\$1,870	34
17,845,321		81,240,501			1,167,814	2,218,000	335,328	1,310,000	8,303,160		260,000	35
\$293,577		\$3,807,908			\$51,285	\$66,040	\$39,009	\$19,700	\$293,801		\$10,690	36
8,535,000		48,501,427							954,400		52,000	37
\$80,454		\$2,544,552							\$45,445		\$3,120	38
		10,262,099			111,214						35,000	39
		\$644,523			\$7,785						\$2,700	40
3,549,045		7,147,950			1,046,600	2,000,000		1,275,000	736,260		60,000	41
\$73,029		\$165,147			\$42,500	\$60,000		\$19,000	\$15,344		\$1,800	42
681,050		6,163,869				18,000		35,000	30,000			43
\$12,652		\$182,868				\$540		\$700	\$600			44
5,080,226		9,165,156			10,000	200,000	335,328		6,582,500		113,000	45
\$127,442		\$270,818			\$1,000	\$5,500	\$39,009		\$232,412		\$3,070	46
\$20,662	\$16,000	\$226,483	\$200	\$126,938	\$22,477	\$171,900	\$42,736		\$549,076	\$565	\$155,950	47
68	1	51	1	4	8	3	15	3	24	6	6	48
\$1,208,104	\$2,100	\$4,474,351	\$2,168	\$337,939	\$196,469	\$251,040	\$794,152	\$19,000	\$3,094,077	\$35,792	\$198,070	49
\$959,493	\$2,100	\$3,931,912	\$1,900	\$223,433	\$181,005	\$245,800	\$375,782	\$19,000	\$2,254,100	\$26,900	\$175,100	50
41	1	10	1	3	2	2	18		28		4	51
1,421	220	127	3	99	10		\$12		1,258		104	52
88	3	3		4	1		26		60		5	53
1,354	220	80		99	2		262		1,111		104	54
2		1	1				2		4			55
15		7	3				40		42			56
									1			57
									1			58
3							2		1			59
52							10		15			60
		3										61
		40			8				89			62
117	3	61	4	4	9	8	24	5	36	6	8	63
2			1			2			2	4	2	64
15		11	3		4		1		2			65
44	1	25	2	1	4		3	8	6		3	66
27		13	1		1		10	2	11		1	67
10		7					5		6		1	68
12	1	5		3		1	4		8		1	69
3	1						1		1			70
4									2			

<sup>1</sup>Includes establishments distributed as follows: District of Columbia, 1; Missouri, 1; New Hampshire, 1; New Jersey, 1; North Carolina, 1; Pennsylvania, 1; South Carolina, 1; Texas, 1.

## OYSTERS, CANNING AND PRESERVING.

Table 25 is a comparative summary of the statistics for the establishments engaged in the canning and preserving of oysters as returned at the censuses of 1890 and 1900, with the percentages of increase for the decade.

TABLE 25.—OYSTERS, CANNING AND PRESERVING: COMPARATIVE SUMMARY, 1890 AND 1900, WITH PER CENT OF INCREASE FOR THE DECADE.

	1900	1890	Per cent of increase.
Number of establishments .....	39	16	143.8
Capital .....	\$1,240,696	\$1,106,962	12.1
Salaries .....	119	161	95.1
Wage-earners, average number .....	\$112,879	\$69,891	61.5
Total wages .....	2,779	3,453	219.5
Men, 16 years and over .....	\$630,016	\$642,610	22.0
Wages .....	1,355	1,482	28.6
Women, 16 years and over .....	\$419,032	\$303,778	37.9
Wages .....	1,123	1,702	234.0
Children, under 16 years .....	\$175,865	\$316,080	244.4
Wages .....	301	269	12.0
Miscellaneous expenses .....	\$35,119	\$22,752	54.4
Cost of materials used .....	\$93,707	\$80,199	16.8
Value of products .....	\$2,608,757	\$2,088,867	24.9
	\$3,670,134	\$3,260,766	12.6

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 34.)

<sup>2</sup> Decrease.

Although the canning and preserving of oysters existed as an industry as early as 1850, it was usually carried on in connection with the canning and preserving of fish, and as the statistics were included under this classification they do not appear separately until the census of 1890. In that year the number of establishments engaged primarily in this industry had increased to 16, and the capital to \$1,106,962. They reported 3,453 wage-earners, \$642,610 paid for wages, \$2,088,867 for materials, and \$3,260,766 as the value of products. Between 1890 and 1900 the increase in the number of establishments was more than the total number reported for 1890, while the capital and value of products showed a normal increase. Thus the average capital, per establishment, has decreased from \$69,185 to \$31,813—that is, the average capital in 1900 was less than one-half that reported for 1890. This is probably accounted for in a great measure by the fact that some of the largest establishments have become engaged in the canning and preserving of fruits and vegetables or fish, and have made oyster canning subsidiary to these. The table further indicates that a number of small establishments have engaged in the industry during the decade. The total number of wage-earners has decreased 674, or 19.5 per cent, and the wages have also decreased, but they show a relatively smaller decrease than is shown in the number of wage-earners. The number of children employed, however, and their wages, have exhibited a substantial decrease. The apparent decrease in the number of wage-earners is due, as has been explained before, to the difference in the method of computing adopted for the two censuses. An examination of the schedules for different states shows that the establishments engaged in canning and preserving oysters were in operation eight months during the census year, but many large plants continued in operation during the

summer months canning and preserving fruits and vegetables. The operations of these large establishments during the summer months, increased the average time of employment for the wage-earners employed in this industry to nine and one-half months. Reduced to the basis of 1890 the average number of employees in 1900, for the "industrial year" of eight months, was 3,510, which is greater than the average reported for 1890. The relative proportion of the cost of materials to the value of products has slightly increased since 1890.

In the canning and preserving of oysters, as in the other two branches of the canning industry included in this report, the individual form of organization predominates. Of the total number of establishments, 20, or 51.3 per cent, were conducted by individuals; 11, or 28.2 per cent were operated by firms and limited partnerships; and the remaining 8, or 20.5 per cent by incorporated companies.

Table 26 shows, by states arranged geographically, the number of establishments from which returns were received in 1900, with the increase during the decade.

TABLE 26.—OYSTERS, CANNING AND PRESERVING: COMPARATIVE SUMMARY, NUMBER OF ACTIVE ESTABLISHMENTS, 1890 AND 1900, AND INCREASE DURING THE DECADE, BY STATES, ARRANGED GEOGRAPHICALLY.

	1900	1890	Increase.
United States .....	39	16	23
Middle states .....	17	8	9
Delaware .....	1	.....	1
Maryland .....	16	8	8
Southern states .....	18	7	11
Virginia .....	1	1	.....
North Carolina .....	1	.....	1
South Carolina .....	1	.....	1
Georgia .....	1	.....	1
Florida .....	6	1	5
Kentucky .....	1	1	.....
Alabama .....	1	1	.....
Mississippi .....	4	8	1
Louisiana .....	3	.....	3
Central states .....	1	1	.....
Michigan .....	.....	1	1
Iowa .....	1	.....	1
Pacific states .....	3	.....	3
Washington .....	3	.....	3

<sup>1</sup> Decrease.

It appears that the greatest increase occurred in the Southern states, which group reported 7 establishments in 1890 and 18 in 1900, an increase of 11, or 157.1 per cent. Of the states of this group, Florida showed the greatest development, reporting an increase of 5. The number in the Middle states increased from 8 to 17, an increase of 9. The greatest increase in this group was shown by Maryland, which reported an increase of 8, or an even 100 per cent.

The above table should be considered in connection with Table 27, which is a summary of the totals for the canning and preserving of oysters as returned at the census of 1890 and 1900.

TABLE 27.—OYSTERS, CANNING AND PRESERVING: COMPARATIVE SUMMARY BY STATES, 1890 AND 1900.

	Year.	United States.	Florida.	Louisiana.	Maryland.	Mississippi.	Washington.	All other states.
Number of establishments.....	1900 1890	39 16	( <sup>a</sup> ) 6	8	16 8	4 3	3	27 15
Capital:								
Total.....	1900 1890	\$1,240,696 \$1,106,902	\$78,895 ( <sup>a</sup> )	\$64,250	\$799,005 \$953,232	\$205,549 \$182,940	\$9,800	\$83,197 \$20,790
Land.....	1900 1890	\$95,000 \$234,200	\$16,000 ( <sup>a</sup> )	\$4,900	\$51,650 \$229,000	\$17,500 \$4,000		\$4,950 \$1,200
Buildings.....	1900 1890	\$238,718 \$180,750	\$10,820 ( <sup>a</sup> )	\$31,200	\$135,793 \$148,000	\$42,000 \$32,000		\$18,900 \$750
Machinery, tools, and implements.....	1900 1890	\$151,717 \$89,300	\$18,975 ( <sup>a</sup> )	\$8,700	\$77,748 \$68,000	\$31,000 \$18,000	\$5,800	\$9,994 \$3,800
Cash and sundries.....	1900 1890	\$755,266 \$602,712	\$83,100 ( <sup>a</sup> )	\$19,450	\$533,814 \$508,232	\$115,049 \$78,940	\$4,500	\$49,353 \$15,540
Salaried officials, clerks, etc., number.....	1900 1890	119 61	( <sup>a</sup> ) 8	9	79 46	7 7	2	14 8
Salaries.....	1900 1890	\$112,879 \$69,891	\$7,001 ( <sup>a</sup> )	\$6,540	\$81,048 \$59,060	\$9,300 \$6,625	\$1,400	\$7,590 \$4,206
Wage-earners, average number.....	1900 1890	2,779 3,453	148 ( <sup>a</sup> )	97	1,444 2,834	419 391	24	647 228
Total wages.....	1900 1890	\$630,016 \$942,010	\$32,392 ( <sup>a</sup> )	\$33,915	\$379,591 \$559,040	\$81,954 \$63,800	\$12,070	\$90,094 \$20,270
Men, 16 years and over.....	1900 1890	1,855 1,482	( <sup>a</sup> ) 44	81	712 1,161	113 171	22	883 150
Wages.....	1900 1890	\$419,032 \$303,778	\$12,957 ( <sup>a</sup> )	\$32,165	\$247,117 \$255,380	\$47,254 \$35,300	\$11,550	\$67,989 \$18,098
Women, 16 years and over.....	1900 1890	1,123 1,702	( <sup>a</sup> ) 80	7	618 1,523	219 125	2	197 54
Wages.....	1900 1890	\$175,865 \$316,080	\$16,300 ( <sup>a</sup> )	\$1,000	\$114,000 \$294,460	\$26,100 \$16,200	\$520	\$17,945 \$5,420
Children, under 16 years.....	1900 1890	801 269	( <sup>a</sup> ) 24	9	114 150	87 95		67 24
Wages.....	1900 1890	\$35,119 \$22,752	\$3,135 ( <sup>a</sup> )	\$750	\$18,474 \$9,200	\$8,600 \$11,800		\$4,160 \$1,752
Miscellaneous expenses.....	1900 1890	\$93,707 \$80,190	\$5,881 ( <sup>a</sup> )	\$3,123	\$70,100 \$43,801	\$8,518 \$33,450	\$1,249	\$4,636 \$3,448
Cost of materials used.....	1900 1890	\$2,608,757 \$2,088,887	\$48,029 ( <sup>a</sup> )	\$109,205	\$1,771,377 \$1,877,353	\$427,490 \$153,957	\$38,061	\$214,595 \$57,557
Value of products.....	1900 1890	\$3,670,134 \$3,200,766	\$100,543 ( <sup>a</sup> )	\$165,458	\$2,417,331 \$2,834,400	\$569,000 \$384,250	\$65,980	\$351,822 \$92,116

<sup>1</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 34).

<sup>2</sup> Includes establishments distributed as follows: Alabama, 1; Delaware, 1; Georgia, 1; Iowa, 1; North Carolina, 1; South Carolina, 1; Virginia, 1.

<sup>3</sup> Included under all other states in 1890.

<sup>4</sup> Includes establishments distributed as follows: Alabama, 1; Florida, 1; Kentucky, 1; Michigan, 1; Virginia, 1.

Table 27 gives a concise résumé of the industry for 1890 and 1900 and indicates the growth and development in each state during the decade. In 1890 the canning and preserving of oysters was carried on by 16 establishments distributed among 7 states, whereas in 1900 there were 39 establishments reported by 12 states, the number of establishments having increased 23, and the number of states engaged in the industry, 8. The same arrangement as has been explained before was pursued in order not to divulge the operations of individual establishments, and states reporting fewer than 3 establishments were reported under "all other states." The states generally reported a substantial increase in the number of establishments, capital, and value of products. Maryland, however, although showing twice as many establishments in 1900 as in 1890, showed a considerable decrease in both the capital and value of products, owing to the fact that a number of small establishments have engaged in the industry since 1890, while several of the larger factories on the other hand had become interested principally in the canning and pre-

serving of fruits and vegetables, and were so classified by this office, according to the rule adopted to classify according to the predominating product. As in the case of the other industries treated in this report, the canning of oysters is localized in points nearest the supply of oysters. Maryland, which is in close proximity to the famous oyster beds, notwithstanding the apparent decrease which is above accounted for, led in both years in the number of establishments, in capital, and in the value of products. The value of products for the census year for this state was \$2,417,331, or 65.9 per cent of the total value of products of this industry. Mississippi, Louisiana, and Florida, which were supplied by the oyster beds of the Gulf of Mexico, followed Maryland in the order named.

The summary, by states, of the establishments engaged in the canning and preserving of oysters, classified according to the number of employees (not including proprietors and firm members), is shown in Table 28. In this connection attention is here directed to the fact that the data contained in this table were computed

from the greatest number employed at any one time during the year. This should be taken into consideration in making deductions.

TABLE 28.—OYSTERS, CANNING AND PRESERVING: ESTABLISHMENTS CLASSIFIED BY NUMBER OF EMPLOYEES (NOT INCLUDING PROPRIETORS AND FIRM MEMBERS), BY STATES ARRANGED GEOGRAPHICALLY, 1900.

STATES.	Total number of establishments.	NUMBER OF ESTABLISHMENTS EMPLOYING—					
		5 to 20.	21 to 50.	51 to 100.	101 to 250.	251 to 500.	501 to 1,000.
United States.....	39	6	9	9	9	4	2
Middle states.....	17	2	5	4	2	2	2
Delaware.....	1			1			
Maryland.....	16	2	5	3	2	2	2
Southern states.....	18		4	5	7	2	
Virginia.....	1		1				
North Carolina.....	1				1		
South Carolina.....	1			1			
Georgia.....	1					1	
Florida.....	6		2	1	3		
Alabama.....	1				1		
Mississippi.....	4			1	2	1	
Louisiana.....	3		1	2			
Central states.....	1	1					
Iowa.....	1	1					
Pacific states.....	3	3					
Washington.....	3	3					

As indicated by Table 28, the classes of establishments employing 21 to 50, 51 to 100, and 101 to 250, each reported 9 establishments, while 6 establishments were reported in group 5 to 20, 4 in the group 251 to 500, and only 2 in the group 501 to 1,000. The Middle states reported the largest number of establishments employing from 21 to 50, but the Southern states returned the largest number for the groups 51 to 100, and 101 to 250. All of the establishments located in the Central and Pacific states were small ones, employing from 5 to 20. Maryland was the only state having establishments employing over 500, but in this state the largest number of establishments employed from 21 to 50. Florida reported 3 establishments employing over 100, and Maryland and Mississippi each reported 2 in this class.

Table 29 presents a comparative summary of the statistics of capital for 1890 and 1900, with the percentages of the total and of the increase for the several items.

TABLE 29.—OYSTERS, CANNING AND PRESERVING: STATISTICS OF CAPITAL, 1890 AND 1900.

	1900		1890		Per cent of increase.
	Amount.	Per cent of total.	Amount.	Per cent of total.	
Total.....	\$1,240,696	100.0	\$1,106,962	100.0	12.1
Land.....	95,000	7.7	284,200	21.2	159.4
Buildings.....	238,718	19.2	180,750	16.3	32.1
Machinery, tools, and implements.....	151,717	12.2	89,800	8.1	69.9
Cash and sundries.....	755,268	60.9	602,712	54.4	25.3

<sup>1</sup> Decrease.

The item cash and sundries, including cash on hand, bills receivable, unsettled ledger accounts, raw materials, stock in process of manufacture, finished products on hand, and other sundries, formed the principal item of capital in both years. This is but natural in an industry which neither requires large and expensive buildings especially adapted for the purpose, nor necessitates the use of costly and complicated machinery and mechanical appliances in the preparation of its product. This item also formed a relatively larger per cent of the total capital in 1900 than in 1890. The value of land, which formed the second largest item in 1890, actually decreased to \$95,000, or 59.4 per cent, and formed but 7.7 per cent of the total as compared with 21.2 per cent in 1890.

As the several items of miscellaneous expenses for 1890 can not be shown separately, a detailed comparison with those reported for 1900 is impossible. The expenses of this nature in the oyster-canning industry do not call for special comment, but the several subdivisions for 1900 may be found in Table 34.

The cost of materials used with the proportion each formed of the total, for 1900, is given in Table 30.

TABLE 30.—OYSTERS, CANNING AND PRESERVING: COST OF MATERIALS USED, 1900.

	Amount.	Per cent of total.
Total.....	\$2,608,757	100.0
Principal materials <sup>1</sup> .....	2,571,027	98.5
Fuel.....	25,090	1.0
Rent of power and heat.....	60	( <sup>2</sup> )
Freight.....	12,580	0.5

<sup>1</sup> Includes raw materials, mill supplies, and all other materials. These are shown separately in Table 34.

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

Of the total cost of materials the amount reported for principal materials formed 98.5 per cent. This included the materials purchased both in the raw state and in partially manufactured form. Those purchased in the raw state, including oysters and fish, amounted to \$1,792,725, or 68.7 per cent of the total cost of materials. The remainder of principal materials, amounting to \$778,302, includes mill supplies and "all other materials," the cost of cans, solder, and such other materials as were necessary to prepare the product for the market, which amounted to \$768,927, or 29.5 per cent of the total. These items are shown separately in Table 24. It is a significant fact that the cost of fuel formed only 1 per cent of the total cost of materials. The cost of freight is an insignificant item in this industry, but it should be considered only in connection with the cost of materials, as the latter in many cases are bought delivered, and manufacturers find it impossible to report separately the amount directly chargeable to freight.

Table 31 shows the value of products by states for 1900.

TABLE 31.—OYSTERS, CANNING AND PRESERVING: VALUE OF PRODUCTS, BY STATES, ARRANGED GEOGRAPHICALLY, 1900.

STATES.	VALUE.		
	Total products.	Oysters, etc.	All other products.
United States.....	\$3,670,134	\$1,649,480	\$2,020,654
Middle states.....	2,417,331	570,478	1,846,853
Maryland.....	2,417,331	570,478	1,846,853
Southern states.....	1,186,823	1,049,547	137,276
Florida.....	100,548	97,743	2,800
Mississippi.....	569,000	569,000	.....
Louisiana.....	165,458	94,702	70,756
All other states <sup>1</sup> .....	351,822	288,102	63,720
Pacific states.....	65,980	29,455	36,525
Washington.....	65,980	29,455	36,525

<sup>1</sup>Includes establishments distributed as follows: Alabama, 1; Delaware, 1; Georgia, 1; Iowa, 1; North Carolina, 1; South Carolina, 1; and Virginia, 1.

Table 31 is of interest as showing some curious facts regarding the industry. It will be noticed that of the total value of products, \$1,649,480, or 44.9 per cent, was reported as the value of oysters, while \$2,020,654, or 55.1 per cent, was given as the value of all other products. In 2 states, Maryland and Washington, the value of all other products exceeded the value of oysters. This is especially true of Maryland, which reported 76.4 per cent of the value of products under "all other products." The value of all other products for the industry includes the value of fish canned and preserved in connection with oysters; but it is the correlation of fishing industry with the canning and preserving of fish and oysters that is chiefly responsible for the apparent inconsistency. Over 75 per cent of the value of other products represents the value of fresh oysters which are handled in bulk in large quantities by several large oyster-canning houses. As it was impossible to separate the amounts directly chargeable to the manufacturing branch of the business, the value of fresh oysters has been included in the total value of products.

The tables which have thus far been shown give an incomplete statistical picture of the oyster canning and preserving industry for the reason that, as pointed out above, establishments are classified according to the predominating product. In many instances, the canning and preserving of oysters is carried on in connection with some other branch of the canning industry, and the totals have not been included in the above tables. It is possible, however, to show the total quantity and value of oysters canned and preserved during the census year as reported by establishments of any character. This is done in Table 32.

TABLE 32.—OYSTERS, CANNING AND PRESERVING: QUANTITY AND VALUE OF PRODUCTS, BY STATES, ARRANGED GEOGRAPHICALLY, 1900.

STATES.	Pounds.	Value.	PER CENT OF TOTAL.	
			Pounds.	Value.
United States.....	33,356,677	\$2,380,711	100.0	100.0
Middle states.....	17,295,216	1,249,478	51.9	52.5
Maryland.....	17,295,216	1,249,478	51.9	52.5

TABLE 32.—OYSTERS, CANNING AND PRESERVING: QUANTITY AND VALUE OF PRODUCTS, BY STATES, ARRANGED GEOGRAPHICALLY, 1900—Continued.

STATES.	Pounds.	Value.	PER CENT OF TOTAL.	
			Pounds.	Value.
Southern states.....	16,011,961	\$1,114,698	48.0	\$46.8
Florida.....	1,504,416	95,793	4.5	4.0
Mississippi.....	7,900,472	639,603	23.7	26.9
Louisiana.....	1,272,750	71,625	3.8	3.0
Other states <sup>1</sup> .....	5,334,323	307,677	16.0	12.9
Pacific states.....	49,500	16,535	.1	.7
Washington.....	49,500	16,535	.1	.7

<sup>1</sup>Includes establishments distributed as follows: Alabama, 1; Georgia, 1; Iowa, 1; North Carolina, 1; and South Carolina, 1.

Table 32 shows the quantity and value of oysters canned and preserved in oyster-canning establishments as such and also the quantity and value reported as a subsidiary product in establishments engaged primarily in the canning and preserving of fish and fruits and vegetables. The values reported do not include the amounts reported as the value of all other products, therefore the totals given in Table 32 do not agree with the total products given elsewhere in this report, or with those of the report on this industry as presented in the general report on Manufactures, Parts I and II. This should be taken into consideration if comparisons are made with the figures reported in Table 31, as the totals given in the latter table include the value of "all other products"—the value of shrimps, crabs, and other fish canned. Furthermore, there are in Baltimore several large establishments engaged in handling fresh oysters in bulk in connection with the canning business, and, as it was impossible to segregate the amounts directly chargeable to the manufacturing part of the business, the value of raw oysters sold is included under the heading "all other products."

Table 32 indicates that there were 33,356,677 pounds of oysters canned during the census year, valued at \$2,380,711, an average value of \$.071 per pound. It should be noticed that the average value is that fixed at the factory and is obtained from the totals of the whole number of establishments reporting, and that it therefore does not represent the actual value in any particular locality. Quite naturally, Maryland, the home of the famous "cove oyster," took first rank in this industry, and the quantity and value of oysters canned in that state formed over 50 per cent of the totals for the country. Mississippi followed Maryland with a product about half as large, or approximately 25 per cent of the total for the United States. Florida and Louisiana followed Mississippi in the order named, the combined totals for these states constituting nearly 9 per cent of the total. The oysters canned in Mississippi, Florida, and Louisiana are received from the Gulf of Mexico. The industry is also carried on to a limited extent in Washington and Oregon.

The principal details of the statistics for the canning of oysters as carried on in cities of over 20,000 population are shown in Table 33.

TABLE 33.—OYSTERS, CANNING AND PRESERVING: STATISTICS OF CITIES OF 20,000 POPULATION OR OVER, 1900.

CITIES.	Rank by value of products.	Number of establishments.	Capital.	SALARIED OFFICIALS, CLERKS, ETC.		WAGE-EARNERS.		Miscellaneous expenses.	Cost of materials used.	Value of products.
				Number.	Salaries.	Average number.	Wages.			
Total .....		19	\$798, 446	81	\$82, 608	1, 442	\$389, 441	\$69, 570	\$1, 772, 094	\$2, 443, 948
Baltimore, Md. ....	1	15	784, 271	77	80, 248	1, 416	376, 591	67, 988	1, 724, 613	2, 361, 968
All other cities <sup>1</sup> .....		4	14, 175	4	2, 360	26	12, 850	1, 582	47, 581	78, 980

<sup>1</sup> Includes establishments distributed as follows: Des Moines, Iowa, 1; Seattle, Wash., 3.

It appears from Table 33 that of the total value of products, \$2,443,948, or 66.6 per cent, was reported for the cities named, and that of this amount \$2,364,968, or 64.4 per cent of the total for the United States, was re-

turned for Baltimore. With the exception of Baltimore, which since the inception of the industry has always been the home of oyster canning and preserving, the industry can not be said to be preeminently a city industry.

### HISTORICAL AND DESCRIPTIVE.

The oyster is a marine bivalve mollusk of the genus *Ostrea*, the most important species being the *Ostrea edulis*, the oyster commonly found in Europe, and the *Ostrea virginiana*, the common American oyster. They are usually found attached to a solid substance in the most brackish waters at the mouth of rivers or in the shallow waters along the seacoasts, in depths varying from 15 to 180 feet, according to the temperature of the water. Moving sand or muddy ground is not conducive to their growth, as they require some solid substance to which to attach themselves.

Oyster fishing has always been an important industry in European, Asiatic, and American waters. The oyster, however, in the oyster regions of Europe and Asia, is not found at the present time in natural reefs in its primitive condition, but is produced on areas of ground under individual ownership or protection, as the public reefs in those countries have been depleted. France and Great Britain lead all European countries in the production of the oyster, and its culture is carried on more extensively and successfully in France than anywhere in the world.

When the first settlements were made in America, oysters were found in lavish abundance all along the Atlantic coast from Maine to Florida, the principal beds being in Chesapeake Bay, Cape Cod, and Long Island Sound. Constant fishing, however, soon had its effect upon the more Northern fisheries, and by the year 1860 the natural beds of the North Atlantic coast were exhausted. Chesapeake Bay and the waters along the coast of Virginia still produce a good supply, and the young were transplanted from these sections to the more Northern beds, where they were fattened and prepared for market. Were it not for the supply of seed oysters secured from these southern waters, the states north of Connecticut would be in the same condition as the European countries in oyster culture. The public beds along the coasts of Connecticut, New York, New Jersey, and Delaware are so far depleted that the supply is very irregular and uncertain

and the oyster found is very small. In the Chesapeake Bay and Southern waters the public reefs are somewhat exhausted, the oysters are small, and many are transplanted to private grounds for maturing.<sup>1</sup> Oysters are found in the Gulf of Mexico, and also to a small extent along the Pacific coast. Seed oysters from the Atlantic coast have been planted on the Pacific coast, but with little success.<sup>2</sup>

The inception and growth of oyster canning has been practically simultaneous with the canning of fish. In the early days of the canning industry the two were often carried on under the same roof, and the canning of oysters as a distinct industry did not begin prior to 1850, although Thomas Kensett, the pioneer in this branch of canned goods, began in Baltimore as early as 1820. Kensett was followed by several others, and in the year 1850 the industry was established on a permanent footing.<sup>3</sup> Many New Englanders, attracted by the excellent fisheries of the place, located in Baltimore, and in time engaged in oyster canning. Oysters are canned at one or two Chesapeake ports, and at four or five cities on the northern coast of the Gulf of Mexico. The term "cove" is applied to oysters put up in tin cans, cooked, hermetically sealed, and kept for some time. The original "cove oysters" were found in coves on the west side of Chesapeake Bay, above the Potomac, and were famous for their size and quality.

Improvements in the methods of preserving have been as marked in oyster canning as in any other branch of the canning industry. Originally the oyster shells were opened by hand, but in 1858, Louis McMurray, of Baltimore, introduced the scalding of the oysters before they were "shucked," and this treatment greatly facilitated their removal from the shell. This method was replaced two years later by steaming, a process in which the oysters were put in baskets having a capacity of three pecks or more, and a large number of the baskets were placed

<sup>1</sup> Stevenson, Report on Industries of Maryland, 1894.

<sup>2</sup> Oyster Culture, by H. F. Moore.

<sup>3</sup> Fish Bulletin, 1899, page 516.



in a huge box, through which steam was passed. The modern method of "shucking" was inaugurated by Henry Evans in 1862. His process consists of placing the oysters in cars of iron framework, 6 to 8 feet long, and holding about 20 bushels of unshucked oysters, and the cars are run on a track from the wharf to a steam-tight box, ranging from 15 to 20 feet long, and fitted with appliances for admitting the steam at any desired pressure, and a door at each end of the box permitting the entry of the car, and then so arranged that the doors can be closed, thus making a practically air-tight compartment.<sup>1</sup> The steam is turned on for about fifteen minutes, the chest is then opened and the cars run into the shucking shed, where employees, each provided with a knife, are able to separate very easily the oysters from the shell. After they are steamed and "shucked" they are washed in cold water and sent to the "fillers' table." Here they are placed in cans, weighed, and hermetically sealed. The cans are then put into a cylindrical basket and lowered into the "process kettle," in which they are steamed to a sufficient degree to kill all germs of fermentation. After coming from the "process kettle," they are cooled in a large vat of cold water and then transferred to the labeling and packing department.<sup>2</sup> The total cost of handling a bushel of oysters in the Baltimore canneries has been estimated at

29 cents, while the average price during recent years of a bushel of oysters for the canning trade has been about 55 cents.<sup>3</sup>

The structure of the oysters on the Gulf of Mexico is such that it disintegrates and is shiny in appearance when canned in the manner of the more Northern oyster. In canning this variety, the following process was introduced in 1880 by Mr. J. T. Maybury: "To ten gallons of pure water, add one-half gallon of good commercial vinegar and one-tenth gill of a saturated aqueous solution of salicylic acid, to which mixture sufficient common salt is added to impart the requisite salty flavor to the oysters. The mixture is boiled a few minutes and poured over the oysters in the cans, which are at once sealed and placed in a steam bath, the temperature of which is 202° F. This temperature is gradually raised to 240° and maintained at that degree for about forty-five minutes. The cans are then vented, resealed, and steamed as before for about thirty minutes, after which they are ready to be labeled and packed."<sup>4</sup> By this process the fatty portion of the oyster is coagulated and the body made more dense and firm.

Table 34 shows the detailed statement, by states, of the industry for 1900.

<sup>1</sup> Letters Patent, No. 35511, June 10, 1862.  
Fish Bulletin, 1899, page 517.

<sup>3</sup> Fish Bulletin, 1899, page 517.

<sup>4</sup> Ibid, page 518.

TABLE 34.—OYSTERS, CANNING AND PRESERVING: BY STATES, 1900.

	United States.	Florida.	Louisiana.	Maryland.	Mississippi.	Washington.	All other states. <sup>1</sup>
Number of establishments.....	39	6	3	16	4	3	7
Character of organization:							
Individual.....	20	3	1	11	2	1	2
Firm and limited partnership.....	11	1	2	2	1	2	3
Incorporated company.....	8	2	—	3	1	—	2
Capital:							
Total.....	\$1,240,696	\$78,895	\$64,250	\$799,005	\$205,549	\$9,800	\$88,197
Land.....	\$95,000	\$16,000	\$4,900	\$51,650	\$17,500	—	\$4,950
Buildings.....	\$238,713	\$10,820	\$31,200	\$135,793	\$42,000	—	\$18,900
Machinery, tools, and implements.....	\$151,717	\$18,975	\$8,700	\$77,748	\$81,000	\$5,300	\$9,994
Cash and sundries.....	\$755,266	\$33,100	\$19,450	\$538,814	\$115,049	\$4,500	\$49,853
Proprietors and firm members.....	47	6	5	15	5	5	11
Salaried officials, clerks, etc.:							
Total number.....	119	8	9	79	7	2	14
Total salaries.....	\$112,879	\$7,001	\$6,540	\$81,048	\$9,300	\$1,400	\$7,590
Officers of corporations—							
Number.....	15	1	—	9	2	—	3
Salaries.....	\$34,850	\$1,000	—	\$26,350	\$5,100	—	\$2,400
General superintendents, managers, clerks, etc.—							
Total number.....	104	7	9	70	5	2	11
Total salaries.....	\$78,029	\$6,001	\$6,540	\$54,698	\$4,200	\$1,400	\$5,190
Men—							
Number.....	96	7	9	63	5	1	11
Salaries.....	\$74,967	\$6,001	\$6,540	\$52,136	\$4,200	\$900	\$5,190
Women—							
Number.....	8	—	—	7	—	1	—
Salaries.....	\$3,062	—	—	\$2,562	—	\$500	—
Wage-earners, including pieceworkers, and total wages:							
Greatest number employed at any one time during the year.....	5,122	521	180	2,603	875	40	903
Least number employed at any one time during the year.....	2,051	399	118	506	374	15	639
Average number.....	2,779	148	97	1,444	419	24	647
Wages.....	\$630,016	\$32,392	\$33,915	\$379,591	\$81,954	\$12,070	\$90,094
Men, 16 years and over—							
Average number.....	1,355	44	81	712	118	22	383
Wages.....	\$419,032	\$12,957	\$32,165	\$247,117	\$47,254	\$11,550	\$67,989
Women, 16 years and over—							
Average number.....	1,123	80	7	618	219	2	197
Wages.....	\$175,865	\$16,300	\$1,000	\$114,000	\$26,100	\$520	\$17,945
Children, under 16 years—							
Average number.....	301	24	9	114	87	—	67
Wages.....	\$35,119	\$3,135	\$750	\$18,474	\$8,600	—	\$4,160

<sup>1</sup> Includes establishments distributed as follows: Alabama, 1; Delaware, 1; Georgia, 1; Iowa, 1; North Carolina, 1; South Carolina, 1; Virginia, 1.



## MANUFACTURES.

TABLE 34.—OYSTERS, CANNING AND PRESERVING: BY STATES, 1900—Continued.

	United States.	Florida.	Louisiana.	Maryland.	Mississippi.	Washington.	All other states. <sup>1</sup>
Average number of wage-earners, including pieceworkers, employed during each month:							
Men, 16 years and over—							
January.....	1,632	98	110	642	205	32	545
February.....	1,599	88	110	621	205	30	545
March.....	1,629	90	110	651	205	28	545
April.....	1,298	86	114	384	205	19	490
May.....	835	5	25	472	19	12	302
June.....	736			650	14	12	60
July.....	582			500	10	12	60
August.....	709			625	10	12	62
September.....	1,348	14	116	838	22	15	343
October.....	1,868	12	130	1,003	155	28	540
November.....	2,002	58	180	1,082	155	32	545
December.....	2,022	80	130	1,076	155	86	545
Women, 16 years and over—							
January.....	1,001	175		199	350	2	275
February.....	966	165		174	350	2	275
March.....	1,494	178		690	350	2	274
April.....	1,097	142	4	355	350	2	244
May.....	799	50	20	557	6	2	164
June.....	1,021			963	6	2	50
July.....	601			545	6		50
August.....	1,208			1,150	6	2	50
September.....	1,348	5		1,080	81	2	180
October.....	1,402	5	20	735	375	2	265
November.....	1,266	105	20	489	375	2	275
December.....	1,273	139	20	464	373	2	275
Children under 16 years—							
January.....	273	68		5	120		80
February.....	273	68		5	120		80
March.....	341	65		75	120		81
April.....	317	36	5	75	120		81
May.....	218	2	25	130			61
June.....	280			200			30
July.....	180			150			30
August.....	230			200			30
September.....	311			200	50		61
October.....	460		30	170	175		85
November.....	400	10	25	105	170		90
December.....	379	39	25	55	170		90
Miscellaneous expenses:							
Total.....	\$93,707	\$5,881	\$3,123	\$70,100	\$8,518	\$1,249	\$4,836
Rent of works.....	\$8,615	\$705		\$5,770		\$610	\$1,530
Taxes, not including internal-revenue.....	\$7,649	\$201	\$463	\$4,870	\$768	\$41	\$1,306
Rent of offices, interest, insurance, and all sundry expenses not hitherto included.....	\$76,648	\$4,175	\$2,660	\$59,460	\$7,750	\$598	\$2,000
Contract work.....	\$800	\$800					
Material used:							
Total cost.....	\$2,608,757	\$48,029	\$109,205	\$1,771,877	\$427,490	\$38,061	\$214,595
Principal materials.....	\$1,792,725	\$18,507	\$101,295	\$1,228,548	\$266,000	\$34,762	\$143,613
Fuel.....	\$25,090	\$2,950	\$800	\$12,742	\$6,040	\$100	\$2,458
Rent of power and heat.....	\$60					\$60	
Mill supplies.....	\$9,375	\$710	\$3,510	\$3,325	\$1,700	\$20	\$110
All other materials.....	\$768,927	\$23,802	\$3,300	\$526,502	\$146,950	\$2,564	\$65,809
Freight.....	\$12,580	\$2,060	\$300	\$260	\$6,800	\$555	\$2,605
Products:							
Aggregate value.....	\$3,670,134	\$100,543	\$165,458	\$2,417,331	\$569,000	\$65,980	\$351,922
Total pounds.....	22,196,976	1,530,812	1,688,700	6,915,734	6,850,875	224,388	4,086,467
Total value.....	\$1,649,480	\$97,743	\$94,702	\$570,478	\$569,000	\$29,455	\$288,102
Oysters—							
Pounds.....	20,792,371	1,504,416	1,272,750	6,915,734	6,077,904	49,500	4,972,067
Value.....	\$1,636,693	\$95,793	\$71,625	\$570,478	\$495,320	\$16,535	\$285,942
Shrimps—							
Pounds.....	802,821		450		772,971	15,000	14,400
Value.....	\$78,115		\$25		\$73,680*	\$2,250	\$2,160
Crabs—							
Pounds.....	92,400					92,400	
Value.....	\$7,295					\$7,295	
Clams—							
Pounds.....	67,488					67,488	
Value.....	\$8,375					\$8,375	
Other varieties—							
Pounds.....	441,896	26,396	415,500				
Value.....	\$25,002	\$1,950	\$23,052				
Value of all other products.....	\$2,020,654	\$2,800	\$70,756	\$1,846,853		\$36,525	\$63,720
Comparison of products:							
Number of establishments reporting for both years.....	32	4	1	15	3	3	6
Value for census year.....	\$3,399,761	\$72,470	\$107,633	\$2,364,968	\$504,000	\$65,980	\$284,710
Value for preceding year.....	\$3,116,591	\$71,300	\$97,600	\$2,232,501	\$449,000	\$65,650	\$200,540
Power:							
Number of establishments reporting.....	20	4	2	6	4	2	2
Total horsepower.....	922	145	80	387	115	10	185
Owned—							
Engines—							
Steam—							
Number.....	42	4	2	24	7	2	3
Horsepower.....	920	145	80	387	115	8	185
Electric horsepower.....	2					2	
Establishments classified by number of persons employed:							
Total number of establishments.....	39	6	3	16	4	3	7
No employees.....							
Under 5.....							
5 to 20.....	6			2		3	1
21 to 50.....	9	2	1	5			1
51 to 100.....	9	1	2	3	1		2
101 to 250.....	9			2	2		2
251 to 500.....	4			2	1		1
501 to 1,000.....	2			2			

<sup>1</sup> Includes establishments distributed as follows: Alabama, 1; Delaware, 1; Georgia, 1; Iowa, 1; North Carolina, 1; South Carolina, 1; Virginia, 1.

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# OLEOMARGARINE.

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# OLEOMARGARINE.

By JOHN H. GARBER.

Table 1 shows the totals for the manufacture of oleomargarine as reported at the censuses of 1880 to 1900, inclusive, with the percentages of increase for each decade.

TABLE 1.—COMPARATIVE SUMMARY, 1880 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.			PER CENT OF INCREASE.	
	1900	1890	1880	1890 to 1900	1880 to 1890
Number of establishments.....	24	12	15	100.0	120.0
Capital.....	\$3,023,646	\$634,532	\$1,680,300	378.5	162.2
Salaries of officials, clerks, etc., number.....	394	64	( <sup>2</sup> )	615.6	.....
Salaries.....	\$412,012	\$91,752	( <sup>2</sup> )	349.0	.....
Wage-earners, average number.....	1,084	264	599	310.6	155.9
Total wages.....	\$534,444	\$154,138	\$212,952	246.7	127.6
Men, 16 years and over.....	1,007	252	561	299.6	155.1
Wages.....	\$511,238	\$150,918	( <sup>2</sup> )	238.8	.....
Women, 16 years and over.....	65	11	18	490.9	138.9
Wages.....	\$21,009	\$2,870	( <sup>2</sup> )	632.0	.....
Children, under 16 years.....	12	1	20	1,100.0	195.0
Wages.....	\$2,197	\$350	( <sup>2</sup> )	527.7	.....
Miscellaneous expenses.....	\$2,489,784	\$385,568	( <sup>2</sup> )	645.8	.....
Cost of materials used.....	\$7,039,501	\$2,175,264	\$5,486,141	251.2	160.3
Value of products.....	\$12,499,812	\$2,988,525	\$6,892,939	318.3	166.6

<sup>1</sup> Decrease.

<sup>2</sup> Not reported separately.

<sup>3</sup> Not reported.

While the industry was in existence prior to 1880, statistics concerning it first appear in the census reports for that year. From Table 1 it appears that there was a general decrease in the industry during the decade ending with 1890, followed by a large increase during the ten years ending with 1900. Oleomargarine is, however, frequently manufactured in connection with slaughtering and meat packing, and in such cases it is difficult to obtain data which relate exclusively to its production; it is possible that at prior censuses the statistics for oleomargarine so manufactured were not separately reported, and to this extent may fall short of representing the total for the industry. Of the 24 establishments reported for 1900, 8 manufactured oleomargarine in connection with slaughtering and meat packing.

Table 1 shows that from 1880 to 1890 the number of establishments decreased from 15 to 12; the capital from \$1,680,300 to \$634,532; and the products from \$6,892,939 to \$2,988,525. This large decrease is due, in part, to the fact that certain states—notably New York—enacted effective legislation antagonistic to the manufacture of oleomargarine, and the act of Congress of 1886 imposing a special yearly tax of \$600 on manufacturers forced a few small producers out of business. The census report for 1880<sup>1</sup> shows 5 establishments in

<sup>1</sup> Report of Manufactures at the Tenth Census, page 62.

New York, with \$645,500 capital and products valued at \$5,338,753; in 1890 none were reported. At the census of 1890 there had not been time for a readjustment and redistribution of the industry, and the figures of the Tenth Census afford, therefore, a better basis of comparison than do those of the Eleventh Census. It appears from Table 1 that during the twenty years there was a net gain of 9 in the number of establishments, while the capital increased from \$1,680,300 to \$3,023,646, and the value of products from \$6,892,939 to \$12,499,812. In 1880 the average number of wage-earners was 599, and the wages paid, \$212,952; by 1900 the number had increased to 1,084 and the wages to \$534,444. The amount paid for miscellaneous expenses was not reported in 1880; of the \$2,489,784 reported for this item in 1900, more than two million dollars were represented by the internal-revenue tax of 2 cents a pound.

The distribution by cities of the 24 establishments reported at the present census is as follows: Chicago, Ill., 6; Providence, R. I., 3; Indianapolis, Ind., 2; Washington, D. C., 2; Kansas City, Kans., 2; Kansas City, Mo., 1; Hammond, Ind., 1; East St. Louis, Ill., 1; Pittsburgh, Pa., 1; Louisville, Ky., 1; Columbus, Ohio, 1; Cleveland, Ohio, 1; Houston, Tex., 1; Camden, N. J., 1.

The corporate form of organization predominates in this industry, 17 establishments being operated by incorporated companies, 4 by individuals, and 3 by firms or

limited partnerships. Fifteen establishments were engaged in the manufacture of oleomargarine as a separate and independent business, 1 was more extensively engaged in manufacturing neutral lard for export, and the remaining 8 made the industry an adjunct to slaughtering and meat packing.

Table 2 presents a comparative statement of capital for 1890 and 1900, with the percentages of increase for the ten years.

TABLE 2.—COMPARATIVE SUMMARY, CAPITAL: 1890-1900.

ITEMS.	1900	1890	Per cent of increase.
Capital:			
Total .....	\$3,023,646	\$634,532	376.5
Land .....	200,868	32,234	523.2
Buildings .....	535,620	29,900	1,691.4
Machinery, tools, and imple-			
ments .....	482,477	73,800	558.2
Cash and sundries .....	1,804,681	499,098	261.6

The capital is shown by Table 2 to have increased from \$634,532 in 1890 to \$3,023,646 in 1900, a gain of 376.5 per cent. The largest item for each year was

that of cash and sundries, which includes cash on hand, bills receivable, unsettled ledger accounts, raw materials, stock in process of manufacture, finished products on hand, and other sundries. In 1900, \$1,804,681 was reported for this item, and in 1890, \$499,098, an increase of 261.6 per cent. In 1900 the value of the owned land and buildings, as reported by 13 establishments, was \$200,868 and \$535,620, respectively. The remaining 11 establishments paid \$16,800 for rent of land and buildings. The \$482,477 reported as invested in machinery, tools, and implements in 1900 represents the value of the equipment of all of the 24 plants, this part of the capital being owned by the manufacturer in every instance. The amount represents an average of \$20,103 for each factory. The smallest amount reported for this item of capital from any plant was \$500; the largest amount, \$105,000. The equipment is singularly free from delicate and complex machinery, and is therefore subject to comparatively little deterioration through use.

Table 3 shows the quantity and cost of the different materials used and the quantity and value of products as reported for the census year 1900.

TABLE 3.—MATERIALS AND PRODUCTS: 1900.

ITEMS.	Quantity.	Cost of materials.	Value of products.	ITEMS.	Quantity.	Cost of materials.	Value of products.
Materials:	<i>Pounds.</i>			Materials—continued:	<i>Pounds.</i>		
Total .....	114,748,633	\$7,639,501		Stearin and oleo stock .....	134,541	\$4,320	
Milk and cream .....	23,684,395	579,068		Fuel and rent of power and heat .....		49,855	
Oleo oil .....	33,724,621	2,744,235		Mill supplies .....		5,745	
Neutral lard .....	37,651,741	2,976,870		All other materials .....		501,107	
Cottonseed oil .....	11,818,921	667,790		Freight .....		50,792	
Butter .....	896,956	61,176		Products:			
Salt .....	6,962,238	58,887		Total .....	104,633,214		\$12,499,812
Color .....	204,418	32,078		Oleomargarine .....	104,633,214		12,291,257
Sugar .....	137,842	7,084		All other products .....			210,455
Glucose .....	32,965	494					

This table shows that there were used during the census year 114,748,633 pounds of material to produce 104,633,214 pounds of oleomargarine, indicating a loss of 10,115,419 pounds in the manufacturing process. While there is a slight shrinkage through evaporation and other natural causes, the principal loss is from the milk and cream, only part of which is absorbed or held by the oils in the churning process. Exclusive of milk and cream, the weight of ingredients was 91,064,238 pounds, or 13,568,976 pounds less than the quantity of oleomargarine produced. Except for slight shrinkage these materials return pound for pound in manufacturing, and it follows that the difference (13,568,976 pounds) represents the gain from 23,684,395 pounds of

milk and cream used. It is calculated that the solid ingredients—those giving out pound for pound in the churning process—will gain from 10 to 20 per cent in weight through the absorption of butter fats and other constituents of milk. The largest factory in point of output manufactured more than 15,000,000 pounds of oleomargarine; the smallest, less than 50,000 pounds.

Table 4 shows the annual production of oleomargarine in the United States from 1886 to 1900, inclusive, as shown in the Report of the Commissioner of Internal Revenue for the fiscal year ending June 30, 1900.<sup>1</sup>

<sup>1</sup> Report of the Commissioner of Internal Revenue, 1900, pages 191, 390-393.

TABLE 4.—QUANTITY OF OLEOMARGARINE PRODUCED AND AMOUNT OF INTERNAL REVENUE RECEIVED THEREFROM, 1886 TO 1900, INCLUSIVE.

FISCAL YEAR ENDING JUNE 30.	Quantity produced.	TAXES.				
		Total.	General tax, 2 cents per pound.	Special taxes.		
				Manufacturers, \$600.	Wholesalers, \$480.	Retailers, \$48.
On hand November 1, 1886.....	Pounds. 181,090					
1887 (from November 1, 1886).....	21,513,537	\$723,948	\$485,924	\$81,700	\$101,400	\$154,924
1888.....	84,325,527	804,140	658,355	17,150	70,876	123,259
1889.....	35,664,026	894,248	677,302	12,400	78,914	130,632
1890.....	32,324,032	786,292	619,206	11,700	55,318	100,068
1891.....	44,392,409	1,077,924	871,488	6,950	53,192	146,294
1892.....	48,364,155	1,266,826	945,675	10,400	106,086	204,215
1893.....	67,224,298	1,670,644	1,301,318	15,350	115,644	238,332
1894.....	69,622,246	1,723,480	1,328,653	11,250	107,394	276,278
1895.....	56,956,105	1,409,211	1,065,293	8,950	98,784	236,184
1896.....	50,853,234	1,219,432	952,475	15,725	72,264	178,968
1897.....	45,631,293	1,034,130	850,691	7,200	45,900	130,839
1898.....	57,516,136	1,315,781	1,107,775	7,600	44,272	156,134
1899.....	83,139,901	1,956,619	1,609,913	11,600	71,884	283,322
1900.....	107,045,028	2,543,785	2,085,273	18,450	97,919	345,143

From Table 4 it appears that 107,045,028 pounds were produced during the fiscal year ending June 30, 1900, which quantity differs from the 104,633,214 pounds reported to the Census Office and shown in Table 3. There was 1 establishment operating a portion of the census year that is not included in this report; a few establishments reported their output from their record of sales, which is not exactly identical with the amount manufactured, and the fiscal year does not correspond with the census year by one month. These facts explain the comparatively small discrepancy of less than two and one-half million pounds between the two tables.

The value of the 104,633,214 pounds of oleomargarine

was \$12,286,357, an average of 11.7 cents per pound. This amount represents the value at the factory, packed and ready for shipment, and includes the internal-revenue tax of 2 cents a pound, which must be paid on withdrawal for sale.

Table 5, prepared by the Treasury Department in response to a resolution of the House of Representatives, exhibits the quantity of oleomargarine shipped into each state for the fiscal year ending June 30, 1899.<sup>1</sup>

Table 6 shows the quantity, and destination value, of the oleo oil and oleomargarine exported during the fiscal year ending June 30, 1900.<sup>2</sup>

<sup>1</sup> Senate Report, No. 2043, 56th Congress, second session, page 90.

<sup>2</sup> Commerce and Navigation, 1900, Vol. II, pages 873-877.

TABLE 5.—QUANTITY OF OLEOMARGARINE SHIPPED INTO EACH STATE FOR FISCAL YEAR ENDING JUNE 30, 1899.

STATE OR TERRITORY.	Number of dealers.	Pounds.	Per cent of total.	STATE OR TERRITORY.	Number of dealers.	Pounds.	Per cent of total.
Alabama.....	21	226,053	(1) 0.3	Nebraska.....	73	1,024,985	1.3
Alaska.....	5	18,080		New Hampshire.....	19	455,588	0.6
Arkansas.....	35	380,389		New Jersey.....	296	5,875,975	7.4
Arizona.....	5	78,767		New Mexico.....	12	115,850	0.1
California.....		74,923		New York.....	14	222,788	0.3
Colorado.....	55	1,123,537	1.4	Nevada.....		625	(1) 0.1
Connecticut.....	5	134,255	0.2	North Carolina.....	9	110,244	
Delaware.....	48	40,475	0.1	North Dakota.....	18	7,710	(1) 11.1
District of Columbia.....	61	816,848	1.0	Ohio.....	1,005	8,830,969	
Florida.....	82	590,225	0.7	Oklahoma.....	10	117,393	0.1
Georgia.....	61	495,004	0.6	Oregon.....	3	41,250	0.1
Illinois.....	2,020	18,638,921	23.4	Pennsylvania.....	717	11,433,341	14.3
Idaho.....	3	58,224	0.1	Rhode Island.....	333	3,594,984	4.5
Indiana.....	306	8,923,228	4.9	South Carolina.....	24	258,159	0.3
Indian Territory.....	21	162,275	0.2	South Dakota.....	4	55,432	0.1
Iowa.....	3	79,922	0.1	Tennessee.....	83	714,640	0.9
Kansas.....	186	1,658,544	2.1	Texas.....	162	1,518,264	1.9
Kentucky.....	217	1,490,577	1.9	Utah.....		8,450	(1) 1.5
Louisiana.....	140	1,043,502	1.3	Vermont.....	1	2,990	
Maine.....	17	102,274	0.1	Virginia.....	121	1,159,400	
Maryland.....	53	1,791,950	2.2	Washington.....	5	68,345	0.1
Massachusetts.....	108	2,083,889	2.6	West Virginia.....	172	1,206,865	1.5
Michigan.....	109	2,092,521	2.6	Wisconsin.....	23	714,742	0.9
Minnesota.....	30	1,343,865	1.7	Wyoming.....	5	39,547	0.1
Missouri.....	231	3,133,313	3.9				
Mississippi.....	17	104,622	0.1				
Montana.....		446,022	0.6				
				Total.....		79,695,744	100.0

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

TABLE 6.—QUANTITY AND VALUE OF OLEO OIL AND OLEOMARGARINE EXPORTED DURING THE FISCAL YEAR ENDING JUNE 30, 1900.

COUNTRIES TO WHICH EXPORTED.	Oleo oil.		Oleomargarine.	
	Pounds. 146,789,681	Value. \$10,503,856	Pounds. 4,182,536	Value. \$109,683
Total .....				
Europe:				
Austria-Hungary .....	73,634	4,786		
Belgium .....	2,892,778	212,457	58,265	6,073
Denmark .....	8,628,948	675,053		
France .....	107,047	10,800		
Germany .....	26,780,986	2,104,818	448,769	37,049
Italy .....	250	15		
Malta, Gozo, etc .....			1,470	157
Netherlands .....	85,970,848	5,912,334		
Portugal .....			2,000	200
Sweden and Norway .....	13,500,332	960,047	17,990	1,400
Turkey in Europe .....	88,370	7,050		
United Kingdom .....	7,265,764	512,745	364,712	34,074
North America:				
Bermuda .....		201	32,015	3,786
British Honduras .....	1,050	152	7,880	1,097
Quebec, Ontario, Manitoba, etc .....	27,494	1,906	3,066	245
Newfoundland and Labrador .....	709,817	54,353	107,473	7,200
Honduras .....			260	31
Nicaragua .....			3,035	397
Mexico .....			9,194	993
Miquelon, Langley, etc .....			2,800	310
West Indies—				
British .....			1,466,638	146,959
Cuba .....			516,463	60,693
Danish .....			116,890	8,530
Dutch .....			41,605	3,280
French .....			157,200	13,501
Haiti .....			50,088	4,989
Porto Rico .....			219,140	22,776
Santo Domingo .....			9,784	906
South America:				
Brazil .....	4,652	391	100	18
Colombia .....			113,777	9,675
Ecuador .....			837	106
Guiana—				
British .....	3,000	270	133,236	11,638
Dutch .....			59,700	5,486
Asia:				
Chinese Empire .....			7,626	670
East Indies—British .....			2,300	328
Hongkong .....			1,560	194
Japan .....	6,049	656	41,809	4,412
Oceania:				
British Australasia .....	607,625	45,572		
Hawaii .....			113,396	11,800
Africa:				
British Africa .....			66,908	7,102
Portuguese Africa .....	2,500	250	50	8

From Table 6 it will be seen that about one-third of the oleomargarine exported went to the British West Indies; the next largest quantity was purchased by Cuba. The largest European purchasers were Germany and the United Kingdom. None of the oleo oil was consigned to the West Indies, but the Netherlands, Germany, Norway-Sweden, Denmark, and the United Kingdom received nearly all that was exported.

Table 7, based on commercial estimates, shows approximately the annual production of oleomargarine in European countries.

TABLE 7.—ANNUAL PRODUCTION OF OLEOMARGARINE IN EUROPEAN COUNTRIES.

COUNTRY.	Quantity produced.	Quantity imported.
United Kingdom .....	Pounds. 82,000,000	Pounds. 110,000,000
Denmark .....	35,000,000	4,500,000
Norway .....	22,000,000	
Sweden .....	22,000,000	
Germany .....	220,000,000	
Netherlands .....	123,000,000	
Belgium .....	20,000,000	

Table 7 indicates that Germany is the greatest producer of oleomargarine, with a product of 220,000,000 pounds, followed by the Netherlands with 123,000,000

pounds. According to the figures of this table, the United States, with an output of more than 100,000,000 pounds, ranks third in production.

#### HISTORICAL AND DESCRIPTIVE.

Oleomargarine was first manufactured in France. In 1869 the French war office, at the instance of Napoleon III, who was desirous of discovering a substitute for butter that would keep longer and also increase the dietary of the poor, offered a prize for the best substitute, which was won by M. Mège-Mouries, a Parisian chemist. After a series of observations and experiments, Mège-Mouries was persuaded that the butter fat contained in milk was absorbed from the animal tissues of the cow, and his attention was then directed to the discovery of a process that would separate from beef fat the oil similar to that in milk. The method finally devised by him for the manufacture of oleo oil (called then oleomargarine or oleomargarine oil) was to heat finely minced beef fat with water, carbonate of potash, and small fragments of fresh stomachs of sheep, to a temperature of about 115 degrees Fahrenheit. The influence of the heat, together with the pepsin contained in the sheep's stomach, separated the fat from the cellular tissue. This fatty matter was then

removed and when cool was subjected to hydraulic pressure sufficient to separate the stearin. The oleo oil was then churned with milk and water in the proportion of 10 pounds of oleo oil to 4 pounds of milk and 3 pints of water. The resulting compound was washed and declared ready for use.<sup>1</sup>

The industry was early introduced into the United States, but statistics of its manufacture prior to 1886 are unreliable. In that year Congress passed an act regulating its manufacture and imposing a tax of 2 cents a pound on the product. From that date more exact information is obtainable. In 1887 there were 21,513,537 pounds made, and the present report shows a product of nearly five times that amount.

In the manufacture of oleomargarine so much depends on the handling of the constituent oils and the manipulation of the temperatures by which they are surrounded throughout the different stages of the process, that equipment for live steam, ice water, and refrigeration is the indispensable requisite of every establishment. Aside from this, the equipment consists principally of the machinery of power, melting tanks, mixing tanks, milk receptacles, churns, and machine butter workers. The butter workers are such as are used in creameries throughout the United States. In some factories the churns are similar to those used in creameries, but oftener they are large, upright, jacketed caldrons in which the milk and color are mixed with the melted oils by a violent churning or stirring produced by revolving or rotating agitators inside. By the introduction of steam into the jacket the operator controls the temperature and the degree of liquefaction until the churning process is complete. By the same means any considerable quantity of oleomargarine is prevented from congealing on the side of the churn while the contents are being drawn off. The equipment is generally of American manufacture. Only 2 factories visited by the writer were supplied with foreign machinery, which was imported from the centers of oleomargarine manufacture in Europe.

The number and character of the ingredients of oleomargarine make them susceptible of almost an infinite number of combinations, and each manufacturer has his own working formula. So much depends on the handling of the oils and the regulation of temperatures surrounding them at each successive step, that different manufacturers using the same quality of ingredients in similar combination will secure vastly different results. A formula for each of three distinct grades of oleomargarine, of general manufacture, is given below to show the use of different ingredients and their variation in quantity.

<sup>1</sup>Appleton's Annual Cyclopædia, 1882; also Universal Cyclopædia, 1900, Vol. 2, page 253.

*Formula 1.—Cheap Grade.*

	Pounds.
Oleo oil.....	495
Neutral lard.....	265
Cottonseed oil.....	315
Milk.....	255
Salt.....	120
Color.....	1½
Total.....	1,451½

will produce from 1,265 to 1,300 pounds of oleomargarine.

*Formula 2.—Medium High Grade.*

	Pounds.
Oleo oil.....	315
Neutral lard.....	500
Cream.....	280
Milk.....	280
Salt.....	120
Color.....	1½
Total.....	1,496½

will produce from 1,050 to 1,080 pounds of oleomargarine.

*Formula 3.—High Grade.*

	Pounds.
Oleo oil.....	100
Neutral lard.....	130
Butter.....	95
Salt.....	32
Color.....	½
Total.....	357½

will produce about 352 pounds of oleomargarine.

Practically all the oleomargarine manufactured in the United States is made by the simple process of churning a melted mixture of oleo oil and neutral lard with milk, cream, or melted butter to give it the butter flavor, and coloring matter to give it any desired shade of yellow in semblance of butter. In the cheap grades cottonseed oil is often substituted for a portion of oleo oil and neutral lard, but never to the total exclusion of either. After the churning process the whole is salted and put upon the market in a variety of forms, as demanded by the various classes of consumers. The different forms in which it is packed for market are well shown by the following extract from a circular of information issued by one of the large manufacturers:

"Our Butterine is packed as follows:

"Solids in 10, 20, 25, 30, 40, 50, and 60 lb. tubs; also in 25, 28, and 50 lb. record packages (tin-lined).

1 lb. bricks in 10, 28, 30, 48, and 60 lb. cases: also 48 lb. tubs.

2 lb. bricks in 30, 48, and 54 lb. cases.

3 lb. bricks in 54 lb. cases.

5 lb. bricks in 50 lb. cases.

1 lb. rolls in 42, 56, and 62 lb. tubs; also in 10 and 50 lb. cases.

1 lb. country rolls in 37 and 50 lb. tubs and 50 lb. cases.

1 lb. long rolls in 42 and 62 lb. tubs.

1 lb. prints in 37 and 50 lb. tubs; also 50 and 60 lb. cases.

2 lb. rolls in 32, 52, and 62 lb. tubs; also 10 and 56 lb. cases.

2 lb. country rolls in 52 lb. tubs and 50 lb. cases.

1, 2, and 3 lb. rolls, assorted, in 62 lb. tubs.

3 lb. rolls in 54 lb. cases.

5 lb. rolls in 60 lb. cases.

9½ lb. rolls in 57 lb. cases."

Cottonseed oil is used as a partial substitute for oleo oil and neutral lard. It never fully replaces either, but is added to some combination of those two ingredients to cheapen the finished product. It is a liquid within the range of temperature to which butter is exposed, and its use is, therefore, limited to such a proportion in any formula as will not soften the product beyond the usual consistency of butter. Its use would doubtless increase largely were it not for the fact that no process has been discovered that will take away its characteristic flavor. To make a high-grade oleomargarine it is absolutely essential that all its constituent oils respond fully to the neutralizing treatment by which their characteristic odors and flavors are removed, so that they will take on the flavor of butter from the aromatic principles of the milk or cream with which they are churned. Cottonseed oil, when forming any considerable proportion of oleomargarine, betrays its presence, and those manufacturers making a specialty of high-class table products have discontinued its use altogether.

Oleo oil is obtained from beef fat by the processes of settling, crystallization, and pressure, which separate it from the stearin and the fiber. Its manufacture is more widely distributed than that of neutral lard, but is principally confined to the large packing houses, which supply their own oleomargarine departments and also the independent manufacturers and the export trade. By independent manufacturers is meant those who produce oleomargarine exclusively, in contradistinction to those who subordinate it to slaughtering and meat packing. None of the independent manufacturers make their own oleo oil.

After the animal is slaughtered the fat is removed and placed in a vat of warm water, where it is thoroughly washed to remove blood and adhering impurities. It is then chilled and hardened with a bath of ice water, after which it is finely comminuted by cutting machines and melted in steam-jacketed caldrons at a temperature of about 160 degrees Fahrenheit. Slowing revolving agitators keep the fat moving until the melting process is complete, when the whole is allowed to settle. The settling process is accelerated by the addition of salt, which is scattered over the entire surface of the liquid and settles the fiber or "scrap" to the bottom. After the first settling, the clear oil is carefully siphoned to a

second series of jacketed caldrons, usually on the floor below, where more salt is added, and the temperature controlled until a second settling is completed. This demembranized fat is now siphoned into mounted vats and allowed to stand from three to five days in a temperature favorable to the crystallization of the stearin, a part of which forms a crust over the top and the remainder settles to the bottom, leaving the clear oil between. It is a common phenomenon in the crystallization of various substances whose specific gravity is not greatly in excess of the mother liquid that, cooling first at the top, a portion of the substance which is being crystallized out forms a crust over the surface and the remaining portion is precipitated. When the vats have stood the required time the crust is broken into fine particles and the whole is given a thorough mechanical mixing which leaves it of a mushy consistency. It is then wheeled to a revolving table surrounded by skilled workmen who wrap the mixture into small packages with canvas cloths—each containing about 3 pounds—which are built into the presses. The oleo oil is then separated by great pressure, slowly and gradually applied, and flows from the presses into a large receiving tank on the floor below, from which it is piped to the oleomargarine department or is drawn into new oak tierces and allowed to harden in preparation for shipment to independent manufacturers or for export. Figure 1 shows two presses, one filled and the other in process of being filled.

All manufacturers of oleo oil follow substantially the method above described, but the system of grading and the character of the fat selected differ greatly. The number of grades manufactured is from three to five, and, when the market is active and prices are high, about all the fat taken in slaughtering, both from cattle and sheep, is worked into one grade or another. The oil made from sheep fat can not be neutralized, and retains the characteristic odor and flavor of the animal to such degree as to be unfit for the oleomargarine demanded in American markets. It is exported to Europe, where there is demand for cheaper oils. With the beef fats the character of the animal from which they are taken is the most potent factor in the selection. Some manufacturers work into their highest grade of oleo oil practically all the fat taken from a good steer, and make one or two lower grades from the fat of cows and "canners." Other manufacturers make their highest grade from the caul and other selected fats of the best beeves, using certain intestinal and other lower forms, together with that taken from poorer animals, in making from one to three lower grades. As previously indicated, the manufacture of oleo oil is more widely distributed than that of neutral lard, and, while it is largely confined to the big packing houses, considerable quantities are made in large cities, outside the centers of the packing industry, from fats collected in part from abattoirs and in part from retail butchers.



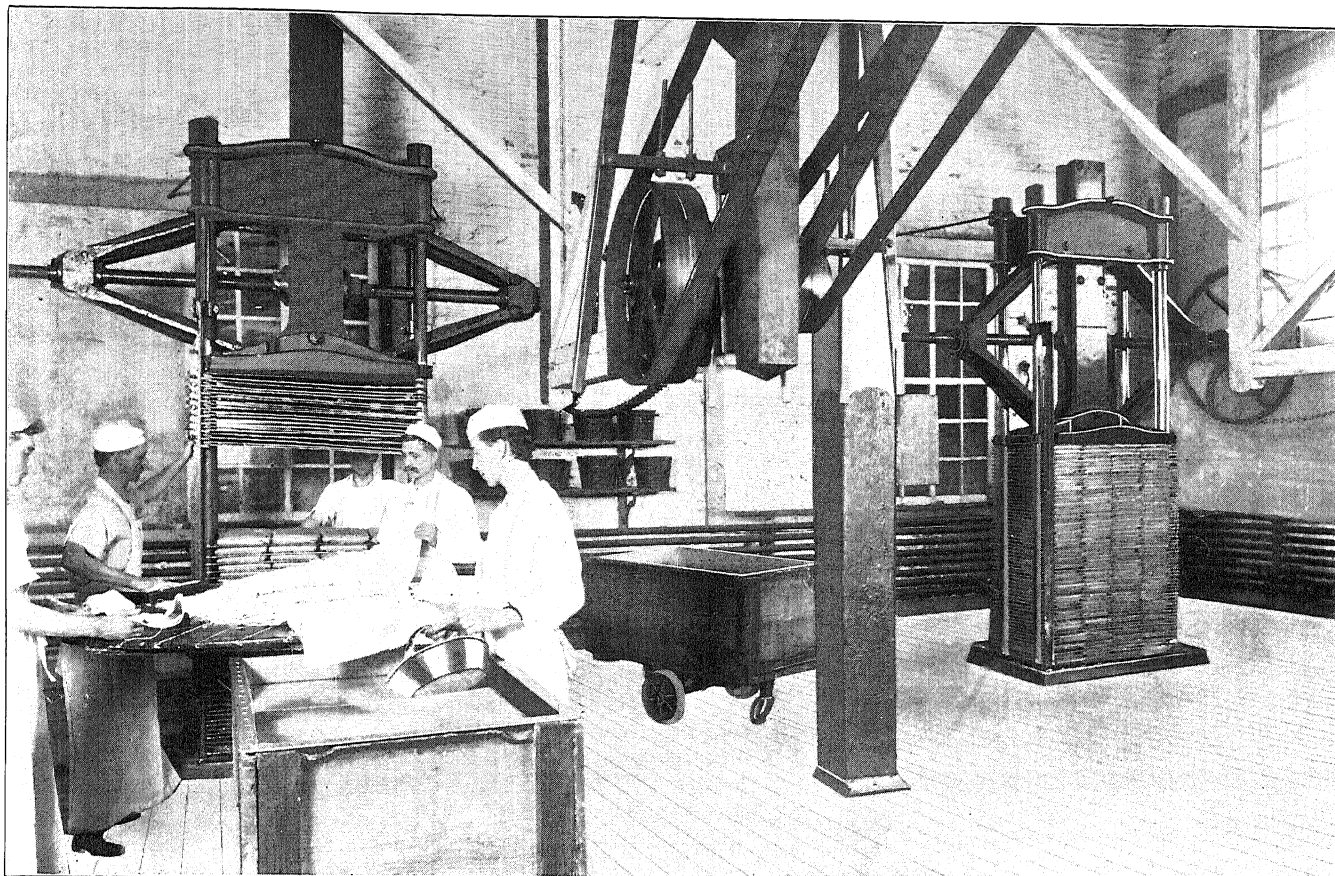


FIG. 1.—SEPARATING OLEO OIL FROM THE STEARIN OF THE FAT, BY PRESSURE.



FIG. 2.—CHURNING OLEOMARGARINE.

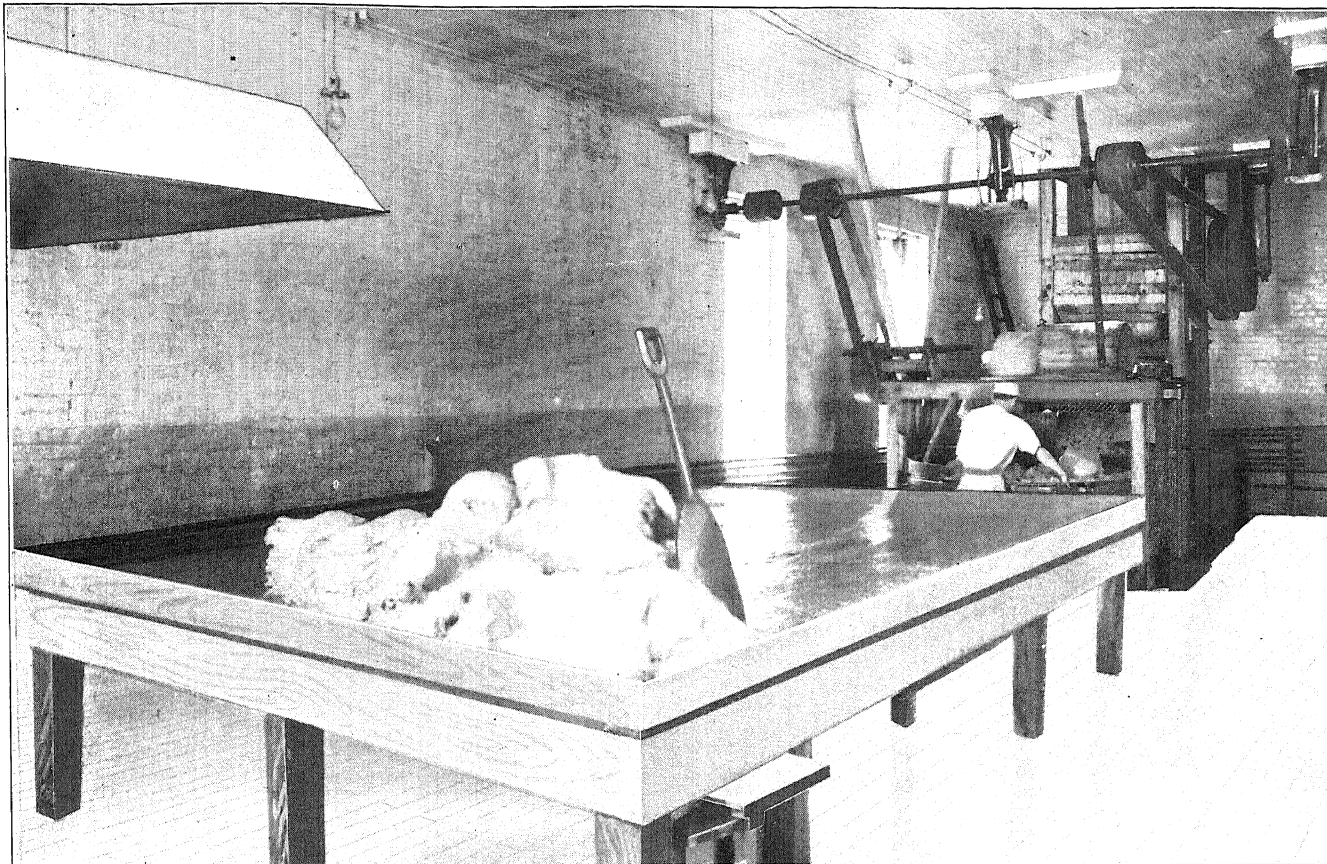


FIG. 3.—THE "WORKING" AND SALTING PROCESS AFTER CHURNING AND TEMPERING.

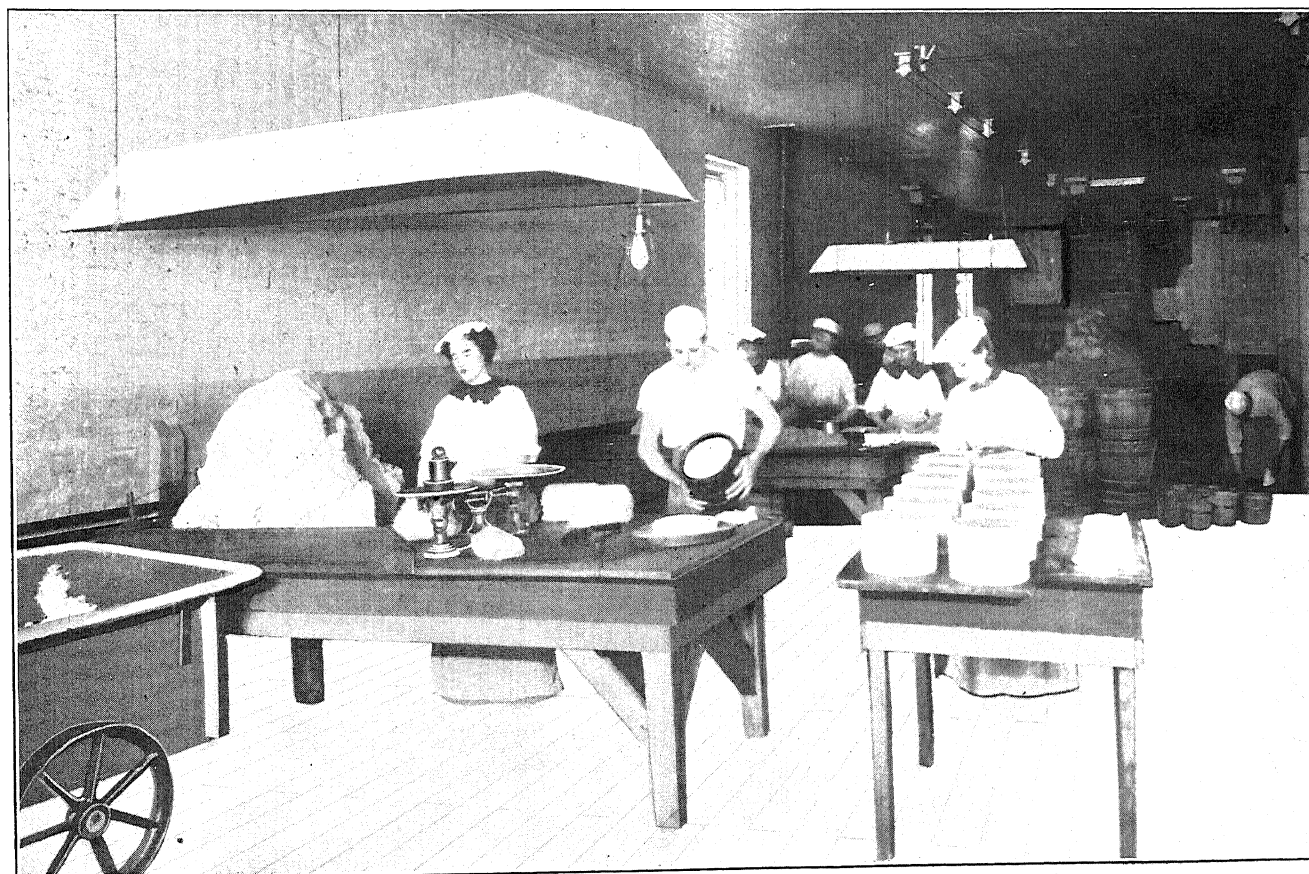


FIG. 4.—PACKING OLEOMARGARINE FOR MARKET.

The quantity of oleo oil obtained by the process described is, by weight, about 50 per cent of the fat treated. About 28 per cent is tallow and stearin and the remainder is lost in shrinkage. The quantity obtained from each beef is difficult of exact determination because it varies so greatly with the size and condition of the animal when slaughtered.

Compared with oleo oil, the manufacture of neutral lard is a simple process. Two grades are made—one from the leaf, the other from the back fat of the hog. Its manufacture is almost exclusively confined to large packing houses, but there are independent manufacturers of oleomargarine located near the packing centers who prefer to buy the fat as it is taken from the animal and work it into neutral by their own process. In the packing plants the leaf fat is taken from the animal immediately after killing, hung on mounted racks, and wheeled into refrigerators to remove as quickly as possible all animal heat. It is next chopped finely or reduced to pulp by machinery and melted in jacketed kettles exactly similar to those used for oleo oil. When the melting process is complete it is allowed to settle, the precipitation of the fiber being accelerated by the addition of salt, as in the case of oleo oil. After the settling process the clear oil is siphoned to a receiving tank, and what is not used in oleomargarine is tierced for shipment. A good quality of leaf fat will produce by careful handling about 90 per cent of its weight in neutral, and each animal will yield an average of eight or nine pounds. Comparatively little neutral is made from back fat. The amount used, however, depends much on the relative demand for neutral and ordinary lard products, as it is sometimes more advantageous to work fats into one form than another. The oil made from back fat retains more of the flavor peculiar to lard and, like the lower grades of oleo oil, is less free from stearin or other undesirable constituents. Some packing houses mix a small per cent of back fat with the "leaf" in making their highest grade of neutral, and oleomargarine manufacturers sometimes use both grades of the finished oil in combination. The difference in price between the two is usually slight, and neutral made exclusively from "leaf" is generally sought. Independent manufacturers of oleomargarine, who make their own neutral lard, give the fat a more extended treatment than that described as the process of the packers. In addition to the separation of the fiber by the process of settling, the clear oil is drawn into a large vat of salt water at a low temperature, where it is again chilled and hardened, and is allowed to remain for several hours. It is then placed on shelves to drain, and is again melted when ready for churning. This treatment carries the neutralizing process to a higher degree of perfection and improves the texture of the oil.

After a detailed description of the methods of manufacturing its principal ingredients, the manufacture of

oleomargarine itself may be described briefly. In those independent plants where both oleo oil and neutral lard are purchased for use, melting tanks are provided for each, in which they are melted separately, after being taken from the tierces in which they are shipped. They are then piped or pumped to a mixing tank mounted on weighing scales, where the exact proportions demanded by the working formula are ascertained. If cottonseed oil is required by the formula, a separate tank for it is usually provided. If butter is to be used instead of milk or cream, a separate melting tank is also provided for that. After the oils are melted and weighed into the mixing tank together, the mixture is piped or pumped into the churn, where it receives the milk and coloring matter. The whole mass is then churned together, as previously described. In the packing houses liquid oleo oil and neutral lard are piped from the oil room direct to the weighing tank. After churning, the liquid oleomargarine is allowed to flow into a vat of ice water, which chills and hardens it before crystallization can take place. It is next shoveled into mounted cars and wheeled to the "tempering room," where it stands for several hours, until sufficiently softened for the machine butter workers. After the salt has been worked through it, it is put up in marketable form and stored in refrigerators to await shipment. Figure 2 represents an actual scene in a churning room of a large factory. At the left of the picture is seen a quantity of oleomargarine which has just been taken from the chilling vat after churning, and is ready for the "tempering room." At the right the contents of a churn are being drawn off into the chilling vat. The pipe descending from the ceiling brings a stream of ice water from a reservoir above into immediate contact with the stream of liquid oleomargarine for the purpose of chilling it as quickly as possible. Figure 3 represents the working and salting process, and figure 4 a scene in the preparation of the finished product for market.

While there is substantial uniformity in the process of manufacture, there is great diversity in the grades and combinations of material used and, consequently, in the character of the finished article. The cheapest grades of oleomargarine found on the market are made from the lowest grades of oleo oil and neutral lard, to which is added the limit of cottonseed oil, and the whole is churned with skimmed milk or buttermilk, salted with common salt, and colored with the cheaper grades of coloring matter. These low-grade oils may be manufactured from "scrap" fat and made firm by the addition of more stearin or other similar substances so that a greater proportion of cottonseed oil can be added to the combination. Sometimes glycerin is added to give the product a glossy appearance, and sugar or glucose to sweeten or give texture. The highest grades are made from pure oleo oil and neutral lard of best qual-



ity, churned with whole milk, cream, or creamery butter, salted with Ashland salt, and colored with annatto or other coloring matter. The number of grades manufactured varies from two to six, but all large factories receive orders for special lots to be made in a prescribed way. One factory visited by the writer made only two grades—the higher from high-class oils churned with whole milk, the other from low-grade oils churned with the same. In this case the quality of the oleo oil and neutral was the only basis of grading the finished product. In another factory the lowest grade manufactured was a combination of the best oleo oil and neutral

churned with whole milk. Three higher or more expensive ones were made with the same oils, each depending for its rank on the amount of pure cream or creamery butter added in the churning process. A large proportion of the independent manufacturers are making a specialty of the higher grades, which include only the best oleo oil and neutral, the grade being determined from the quantity and character of the dairy product added.

Table 8 presents in detail the statistics for the industry, by states and territories, as collected by the Twelfth Census for the census year ending May 31, 1900.

TABLE 8.—OLEOMARGARINE MANUFACTURE, BY STATES AND TERRITORIES: 1900.

	United States.	Illinois.	Indiana.	Rhode Island.	All other states and territories. <sup>1</sup>
Number of establishments.....	24	7	3	3	11
Character of organization:					
Individual.....	4	1	.....	.....	3
Firm and limited partnership.....	3	1	.....	.....	2
Incorporated company.....	17	5	3	3	6
Capital:					
Total.....	\$3,023,646	\$1,131,835	\$137,393	\$702,299	\$1,052,119
Land.....	\$200,868	\$40,674	\$17,700	\$31,494	\$111,000
Buildings.....	\$535,020	\$165,686	\$15,700	\$100,000	\$251,231
Machinery, tools, and implements.....	\$182,477	\$150,236	\$24,500	\$77,949	\$229,792
Cash and sundries.....	\$1,804,681	\$775,239	\$79,493	\$492,856	\$457,093
Proprietors and firm members.....	10	3	.....	.....	7
Salaried officials, clerks, etc.:					
Total number.....	394	120	27	25	222
Total salaries.....	\$412,012	\$110,784	\$27,790	\$31,626	\$241,812
Officers of corporations—					
Number.....	8	6	.....	2	.....
Salaries.....	\$13,100	\$11,100	.....	\$2,000	.....
General superintendents, managers, clerks, etc.—					
Total number.....	386	114	27	23	222
Total salaries.....	\$398,912	\$99,684	\$27,790	\$29,626	\$241,812
Men—					
Number.....	348	90	24	19	215
Salaries.....	\$373,698	\$82,238	\$25,790	\$27,506	\$238,161
Women—					
Number.....	38	24	3	4	7
Salaries.....	\$25,214	\$17,446	\$2,000	\$2,120	\$3,648
Wage-earners, including pieceworkers and total wages:					
Greatest number employed at any one time during the year.....	1,831	602	91	147	431
Least number employed at any one time during the year.....	865	408	48	103	306
Average number.....	1,084	528	70	127	359
Wages.....	\$534,444	\$273,084	\$38,968	\$52,796	\$169,596
Men, 16 years and over—					
Average number.....	1,007	491	62	111	343
Wages.....	\$511,288	\$261,655	\$36,378	\$47,856	\$165,349
Women, 16 years and over—					
Average number.....	65	35	8	16	6
Wages.....	\$21,009	\$11,129	\$2,690	\$4,940	\$2,350
Children, under 16 years—					
Average number.....	12	2	.....	.....	10
Wages.....	\$2,197	\$300	.....	.....	\$1,897
Average number of wage-earners, including pieceworkers, employed during each month:					
Men, 16 years and over—					
January.....	1,138	582	64	113	379
February.....	1,136	583	63	116	374
March.....	1,143	579	65	115	383
April.....	1,035	493	63	113	366
May.....	925	442	58	108	317
June.....	818	372	51	101	291
July.....	816	364	59	99	291
August.....	854	378	58	100	318
September.....	914	423	56	111	324
October.....	1,060	523	66	115	356
November.....	1,110	573	65	118	354
December.....	1,135	575	73	120	367
Women, 16 years and over—					
January.....	77	44	8	17	8
February.....	77	44	7	18	8
March.....	77	41	9	18	9
April.....	66	37	5	18	5
May.....	62	34	7	16	5
June.....	40	25	7	13	1
July.....	41	18	5	13	5
August.....	53	25	8	14	6
September.....	53	34	8	16	2
October.....	69	35	11	18	7
November.....	72	39	9	18	6
December.....	77	41	10	19	7
Children, under 16 years—					
January.....	16	3	.....	.....	13
February.....	16	3	.....	.....	13
March.....	15	2	.....	.....	13
April.....	13	2	.....	.....	11

<sup>1</sup>Includes establishments distributed as follows: District of Columbia, 2; Kansas, 2; Kentucky, 1; Missouri, 1; New Jersey, 1; Ohio, 2; Pennsylvania, 1; Texas, 1.

TABLE 8.—OLEOMARGARINE MANUFACTURE, BY STATES AND TERRITORIES: 1900—Continued.

	United States.	Illinois.	Indiana.	Rhode Island.	All other states and territories. <sup>1</sup>
Average number of wage-earners, including pieceworkers, employed during each month—Con.					
Children under 16 years—Continued.					
May.....	12	2			10
June.....	8	2			6
July.....	8	2			6
August.....	8	2			6
September.....	9	3			6
October.....	7				7
November.....	16	3			13
December.....	16	3			13
Miscellaneous expenses:					
Total.....	\$2,489,784	\$1,386,148	\$228,726	\$121,912	\$752,998
Rent of works.....	\$16,800	\$11,280	\$750	\$1,000	\$8,770
Taxes, not including internal revenue.....	\$11,314	\$4,447	\$2,640	\$1,460	\$2,767
Rent of offices, insurance, interest, and all sundry expenses not hitherto included.....	\$2,461,670	\$1,370,421	\$225,336	\$119,452	\$746,461
Materials used:					
Total cost.....	\$7,689,501	\$3,353,904	\$702,749	\$912,912	\$2,669,936
Milk and cream—					
Pounds.....	23,684,395	10,023,581	3,081,093	1,653,743	8,926,028
Cost.....	\$579,068	\$255,968	\$40,275	\$85,898	\$246,927
Olco oil—					
Pounds.....	33,724,621	15,582,919	2,916,120	4,230,000	10,995,582
Cost.....	\$2,744,235	\$1,192,239	\$229,511	\$386,728	\$935,757
Neutral lard—					
Pounds.....	37,651,741	17,561,013	3,494,856	3,335,100	13,260,772
Cost.....	\$2,976,870	\$1,348,416	\$280,656	\$292,636	\$1,055,162
Cottonseed oil—					
Pounds.....	11,818,921	4,585,760	1,921,656	1,456,300	3,855,205
Cost.....	\$567,790	\$222,002	\$89,03	\$72,455	\$183,399
Butter—					
Pounds.....	396,956	168,552	9,864	29,165	189,375
Cost.....	\$61,176	\$31,770	\$2,466	\$4,958	\$21,982
Salt—					
Pounds.....	6,962,233	3,697,680	969,766	402,600	1,892,187
Cost.....	\$58,887	\$30,531	\$8,541	\$2,013	\$17,802
Color—					
Pounds.....	204,418	93,931	24,038	12,003	71,446
Cost.....	\$32,078	\$12,162	\$1,363	\$2,441	\$13,112
Sugar—					
Pounds.....	137,842	804		80,800	56,238
Cost.....	\$7,084	\$44		\$1,040	\$3,000
Glucose—					
Pounds.....	32,965		32,965		
Cost.....	\$494		\$494		
Stearin and oleo stock—					
Pounds.....	134,541	28,824		26,190	79,527
Cost.....	\$4,320	\$1,890		\$1,833	\$597
Fuel.....	\$45,611	\$21,776	\$3,500	\$6,302	\$14,633
Rent of power and heat.....	\$1,244	\$3,027	\$1,100		\$117
Mill supplies.....	\$5,745	\$1,979	\$100	\$1,800	\$1,806
All other materials.....	\$501,107	\$232,100	\$41,809	\$92,113	\$135,085
Freight.....	\$50,792			\$9,635	\$41,157
Products:					
Total value.....	\$12,499,812	\$5,852,413	\$1,107,284	\$1,345,133	\$4,194,982
Oleomargarine—					
Pounds.....	104,633,214	45,574,073	10,596,071	10,433,986	38,029,074
Value.....	\$12,286,337	\$5,769,678	\$1,107,284	\$1,220,623	\$4,188,772
Value of all other products, including by-products.....	\$213,455	\$82,735		\$124,510	\$6,210
Comparison of products:					
Number of establishments reporting for both years.....	10	3	1	3	3
Value for census year.....	\$8,545,780	\$4,903,128	\$709,014	\$1,345,133	\$1,588,505
Value for preceding business year.....	\$6,196,185	\$3,120,564	\$625,000	\$1,256,043	\$1,194,573
Power:					
Number of establishments reporting.....	21	6	2	3	10
Total horsepower.....	1,356	764	35	133	424
Owned—					
Engines—					
Steam—					
Number.....	22	8	1	3	10
Horsepower.....	1,281	710	20	133	413
Rented horsepower.....	75	54	15		6
Establishments classified by number of persons employed, not including proprietors and firm members.					
Total number of establishments.....	24	7	3	3	11
Under 5.....	2				2
5 to 20.....	6	3		1	4
21 to 50.....	8		3		1
51 to 100.....	3	2		1	1
101 to 250.....	2				1
251 to 500.....	3	2			1

<sup>1</sup> Includes establishments distributed as follows: District of Columbia, 2; Kansas, 2; Kentucky, 1; Missouri, 1; New Jersey, 1; Ohio, 2; Pennsylvania, 1; Texas, 1.

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SALT.

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# SALT.

By EDWARD W. PARKER, *Expert Special Agent.*

It has been the custom in United States census inquiry to include salt production among manufacturing industries. Salt itself is a mineral, but it is not clear whether the process by which it is obtained should be regarded as manufacturing or as a method of mining. Rock salt is undoubtedly a mining product, but as it is considered in connection with salt manufacture by artificial heat or by solar evaporation, it is included in the present report. Salt is the only mineral product which enters directly into consumption as food, and while a considerable quantity is used for other purposes, by far the larger portion is consumed as food either directly or indirectly.

The history of the manufacture in this country covers the entire period subsequent to the early settlement by the English. The first salt was produced in Virginia prior to 1620, and in the various reports of the Federal Census mention is made of not less than 32 states in which salt has at some period been produced in considerable quantities. The early process consisted in the production from sea water, either by exposure to evaporation under the sun's rays, or sometimes by boiling in pans or kettles until the dissolved salt was deposited. About the close of the Eighteenth century the manufacture was begun from brine obtained from natural salt springs, following the same crude processes used in the manufacture of salt from sea water.

At the present time, however, comparatively little salt is made from sea water, or brine from natural springs, and some of that so obtained is evaporated by artificial heat. Nearly all the evaporated salt is now obtained by sinking wells to the salt body, pumping fresh water into the wells, and withdrawing the brine after it has become well saturated. Practically all the product from natural salt water, by solar evaporation, is made along the shores of San Francisco Bay in California, and Great Salt Lake, Utah. With these two exceptions the evaporated product is almost entirely obtained from deep wells.

Salt manufactured by artificial heat is made in kettles, open pans, vacuum pans, and grainers, the heat being applied either directly or by steam. In blocks where kettles or open pans are used, the heat is usually

applied directly and the brine is boiled. In grainers and vacuum pans steam heat is used. The grainer process is essentially American; the brine in this process is evaporated from rectangular vats about 12 inches deep, in which are suspended coils of pipe carrying either live or exhaust steam, according to local conditions. The brine is usually kept agitated mechanically, so that the salt which is formed on top will be broken up and precipitated. In some instances the salt is removed from the bottom of the pan by mechanical scrapers; in others, hand labor is employed. The grainer process seems to be the most popular method in the United States, and most of the finer grades of table and dairy salts are produced either by this or by the vacuum-pan process.

Solar salt is made in vats or ponds, covered and uncovered. At Syracuse, N. Y., the ponds are supplied with movable covers. No covers are used in Utah or California, as the operations in those states continue only during the dry season.

Rock salt is mined and prepared for use in the states of New York, Kansas, Louisiana, and California. It is now produced in greater quantities than solar salt. A more extended presentation of the method of mining rock salt follows in the description of salt manufacture in Kansas.

Four different units of measure are employed in the industry. At the solar salt works, Syracuse, N. Y., and at some of the salt blocks along the Ohio River in Ohio and West Virginia, the bushel of 56 pounds is used as the unit. At the rock salt mines in New York state, and at Avery Island rock salt mines in Louisiana, the long ton of 2,240 pounds is used as the unit, while the short ton of 2,000 pounds is the usual unit at the rock salt mines in Kansas and at the solar works along the shores of San Francisco Bay and Great Salt Lake. In nearly every other instance the barrel of 280 pounds is adopted. In the compilation of this report the barrel of 280 pounds net is used as the unit, and when the quantities have been reported in other units of measurement they have been reduced accordingly.

Table 1 shows the totals for the industry as returned at the censuses of 1850 to 1900, inclusive, with the percentages of increase for each decade.

TABLE 1.—COMPARATIVE SUMMARY, 1850 TO 1900, WITH PER CENT OF INCREASE FOR EACH DECADE.

	DATE OF CENSUS.						PER CENT OF INCREASE.				
	1900	1890	1880	1870	1860	1850	1890 to 1900	1880 to 1890	1870 to 1880	1860 to 1870	1850 to 1860
Number of establishments.....	159	200	268	282	399	340	20.5	25.4	25.0	29.3	17.4
Capital.....	\$27,123,364	\$13,437,749	\$8,225,740	\$6,561,615	\$3,692,215	\$2,640,860	101.8	63.4	25.4	77.7	30.8
Land.....	\$8,494,587	\$4,287,784	(a)	(a)	(a)	(a)	98.1				
Buildings.....	\$8,358,018	\$4,255,896	(a)	(a)	(a)	(a)	96.4				
Machinery, tools, and implements.....	\$4,523,294	\$2,703,868	(a)	(a)	(a)	(a)	67.3				
Cash and sundries.....	\$5,747,465	\$2,190,201	(a)	(a)	(a)	(a)	162.4				
Salaried officials, clerks, etc., number.....	406	4200	(a)	(a)	(a)	(a)	103.0				
Salaries.....	\$499,748	\$189,049	(a)	(a)	(a)	(a)	164.3				
Wage-earners, average number.....	4,774	4,255	4,289	2,953	2,213	2,786	12.2	20.8	45.2	33.4	220.6
Total wages.....	\$1,911,140	\$1,593,442	\$1,260,023	\$1,146,910	\$371,954	\$753,360	19.9	26.5	9.9	208.3	260.6
Miscellaneous expenses.....	\$760,539	\$674,183	(b)	(b)	(b)	(b)	12.8				
Cost of materials used.....	\$3,335,922	\$1,826,770	\$2,074,049	\$1,760,670	\$1,054,780	\$1,051,419	82.6	211.9	17.8	66.9	6.3
Value of products.....	\$7,966,897	\$5,484,618	\$4,829,566	\$4,818,229	\$2,289,504	\$2,177,945	45.3	18.6	0.2	110.4	5.1

<sup>1</sup> The report for the Twelfth Census is for the calendar year 1899.

<sup>2</sup> Decrease.

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

<sup>4</sup> Includes proprietors and firm members, with their salaries; number only reported in 1900, but not included in this table. (See Table 6.)

<sup>5</sup> Not reported.

<sup>6</sup> Exclusive of 4,520,796 barrels of salt valued at \$1,171,948, an intermediate product in the manufacture of chemicals, and included in the report of that industry.

<sup>7</sup> Includes products other than salt to the value of \$65,061.

<sup>8</sup> Includes products other than salt to the value of \$43,815.

Table 1 shows that the production of salt in the United States has increased continuously since 1850. In the half century from 1850 to 1900 the capital increased from \$2,640,860 to \$27,123,364, while the value of products increased from \$2,177,945 to \$7,966,897. In contrast with the increase in capital and products, the number of establishments shows a marked decrease since 1860. At the census of 1860 there were 399 establishments, while only 159 are shown at the census of 1900, a decrease of 60.2 per cent. During the last twenty years the development of the industry has been most rapid, the capital having increased from \$8,225,740 to \$27,123,364, a gain of 229.7 per cent. The products in the same period increased from \$4,829,566 to \$7,966,897, or 65 per cent, while the number of establishments decreased from 268 to 159, a loss of 40.7 per cent. The decrease in the number of establishments is due to the abandonment of many small plants along the Atlantic coast and in some of the interior districts where salt was manufactured from brine springs; also to the consolidation of a number of large establishments, particularly in New York, Ohio, Michigan, Kansas, Utah, and California.

From 1890 to 1899 the number of establishments decreased from 200 to 159, or 20.5 per cent. The capital increased from \$13,437,749 to \$27,123,364, or 101.8 per cent, and of this increase the greatest gain was shown in the item of live capital, which increased from \$2,190,201 to \$5,747,465, or 162.4 per cent.

The cost of materials increased from \$1,826,770 in 1890 to \$3,335,922 in 1899, or 82.6 per cent. The cost of the barrels, boxes, cartons, bags, cooperage stock, and cloth for sacks purchased, amounting in 1899 to \$1,837,122, formed the most important factor in the cost of materials.

The next most important item of expense was that for fuel, which, in 1899, amounted to \$991,248. The ex-

pense for fuel in 1890 was \$745,917. No separation was made of any of the other items included in the cost of materials in 1890. For 1899, besides the cost of packages and fuel, the following items were separately reported: mill supplies, \$192,777; rent of power and heat, \$2,111; all other materials, \$189,747; and freight, \$122,917; a total of \$507,552. While the cost of fuel, \$991,248, represents the amount actually reported for this item of expense in 1899, there are also large quantities of fuel consumed, particularly in Michigan, where salt blocks are operated in connection with the manufacture of lumber, the salt operations being carried on largely to utilize sawdust and other waste. In such cases nothing is reported for the cost of fuel. The detailed statistics as to materials used and miscellaneous expenses are presented in Table 6.

In 1890 the value of products was \$5,484,618, and in 1899, \$7,966,897, an increase of 45.3 per cent. In general, however, owing to a decline in the price of salt, the increase in the value of the product does not adequately represent the growth of the industry. A better index of growth is afforded by the quantity produced, which, as presented in Table 2, shows an increase of 30.2 per cent from 1850 to 1860, 38.4 per cent from 1860 to 1870, 69.3 per cent from 1870 to 1880, 74.6 per cent from 1880 to 1890, and 45.9 per cent from 1890 to 1899. Comparison with the corresponding figures for the value of salt (see Table 1) shows that the price declined continuously until 1890, except during the decade from 1860 to 1870, when the quantity increased 38.4 per cent, while the value rose 110.4 per cent. It should be remembered, however, that values in 1870 were expressed in a currency which was at a discount in gold, and should, therefore, be reduced about one-fifth for purposes of comparison with other census years.

In 1899, in addition to the 159 active establishments, 10 idle establishments were reported, with a capital of \$1,737,150.



Table 2 presents a comparative statement of the quantity of salt manufactured by the various processes, as reported at the censuses of 1880, 1890, and 1900, with

the percentage that each constitutes of the total; and also a statement of the total quantity reported at each census from 1850 to 1900, inclusive.

TABLE 2.—QUANTITY OF EACH KIND OF SALT MANUFACTURED, AND PER CENT OF TOTAL.

KINDS OF SALT.	1900 <sup>1</sup>		1890		1880		1870		1860		1850	
	Quantity, barrels.	Per cent of total.	Quantity, barrels.	Per cent of total.	Quantity, barrels.	Per cent of total.	Quantity, barrels.	Per cent of total.	Quantity, barrels.	Per cent of total.	Quantity, barrels.	Per cent of total.
Total .....	15,187,819	100.0	10,406,860	100.0	5,961,060	100.0	3,521,221	100.0	2,543,440	100.0	1,952,768	100.0
Rock salt .....	2,543,679	16.7	1,413,281	13.6	62,400	1.0	( <sup>2</sup> )	.....	( <sup>2</sup> )	.....	( <sup>2</sup> )	.....
Solar salt .....	910,974	6.0	1,443,262	13.9	903,555	15.2	( <sup>2</sup> )	.....	( <sup>2</sup> )	.....	( <sup>2</sup> )	.....
Salt made by the boiling process....	11,733,166	77.3	7,550,317	72.5	4,995,105	83.8	( <sup>2</sup> )	.....	( <sup>2</sup> )	.....	( <sup>2</sup> )	.....

<sup>1</sup> The report of the Twelfth Census is for the calendar year 1899.

<sup>2</sup> Not separately reported.

<sup>3</sup> Includes table salt, 1,866,058 barrels; common fine, 6,866,126 barrels; common coarse, 2,635,282 barrels; packers', 182,930 barrels; milling, 96,178 barrels; other grades, 86,502 barrels.

The varieties of salt were not reported until 1880. In that year the product of the United States amounted to 29,805,298 bushels of 56 pounds, or 5,961,060 barrels of 280 pounds net. At the census of 1890 it was 52,034,360 bushels, or 10,406,860 barrels, an increase of 74.6 per cent. At the Twelfth Census, which covered the calendar year 1899, it reached 75,939,095 bushels, or 15,187,819 barrels, an increase over 1890 of 45.9 per cent, and over 1880 of 154.8 per cent. The production in 1899 does not include 4,520,796 barrels of salt valued at \$1,171,948, which formed an intermediate product in the manufacture of chemicals in Michigan, New York, and Pennsylvania, and were included in the report for the chemical industry. Including this intermediate product the total output in 1899 amounted to 19,708,615 barrels, valued at \$9,073,784. In addition to the salt product there were obtained, as by-products, 279,437 pounds of bromine, valued at \$64,921, and other products not classified, to the value of \$140.

This table emphasizes the decrease in the manufacture of solar salt as compared with the growth of the salt industry. In 1880 the output was 903,555 barrels, forming 15.2 per cent of all salt produced; while in 1899 the product was 910,974 barrels, forming but 6 per cent of the total production. The production of rock salt, on the other hand, increased from 62,400 barrels in 1880, when it formed but 1 per cent of the total salt production, to 2,543,679 barrels in 1899, forming 16.7 per cent. More than 90 per cent of this rock salt is mined in New York and Kansas. (See Table 6.) Salt made by the boiling process shows a steady increase for each decade. The increase from 1880 to 1899 was 6,738,061 barrels, or 134.9 per cent.

Table 3 presents the statistics of the number of establishments in each state in which salt was made in 1899, together with a statement as to the number and square feet of the covers or ponds in use, and the number of grainers, kettles, open pans, or vacuum pans used in the manufacture by evaporation.

TABLE 3.—COVERS OR PONDS, AND EVAPORATING APPARATUS, BY STATES: 1900.

STATES AND TERRITORIES.	Number of establishments.	COVERS OR PONDS.		Grain-ers.	Open pans.	Ket-tles.	Vacu-um pans.
		Num-ber.	Square feet.				
United States .....	159	35,222	100,921,360	522	264	411	40
California.....	24	474	62,062,800	.....	2	.....	1
Kansas .....	8	30	144,656	13	36	.....	.....
Michigan .....	53	2,009	545,300	273	17	5	19
Nevada .....	3	2	30,000	.....	.....	.....	.....
New York .....	38	32,295	8,176,948	92	43	338	9
Ohio .....	10	4	12,320	83	38	31	5
Oklahoma .....	4	13	92,120	2	21	.....	.....
Texas .....	3	14	135,680	24	2	.....	.....
Utah .....	5	39	38,610,728	.....	.....	1	.....
West Virginia .....	1	.....	.....	23	.....	36	.....
All other states <sup>1</sup> .....	7	342	110,808	12	105	.....	6

<sup>1</sup> Includes establishments distributed as follows: Illinois, 1; Louisiana, 2; Massachusetts, 2; Pennsylvania, 1; and Virginia, 1.

It appears from Table 3 that the 24 establishments in California used the solar process almost entirely, there being but 2 open pans and 1 vacuum pan in the state, while there were 474 covers or ponds, having an area of 62,062,800 square feet, or 56.5 per cent of the total area in the United States. Utah shows for the solar process 5 establishments, with an area of 38,610,728 square feet for 39 covers or ponds, and for the evaporating process but 1 kettle. The relation of climate to the manufacture of solar salt is clearly seen from the statistics of California and Utah. Because of the dryness of their climate, these states offer exceptional advantages for the development of the solar process, and of the 109,921,360 square feet of covers or ponds in the United States, these 2 states contain 100,673,528 square feet, or 91.6 per cent of the total. Nevada, with 3 establishments, uses the solar process entirely. In New York the ponds for evaporation by solar heat are provided with movable covers; by this means the rains are kept from the brine and the process is considerably accelerated. This state had 38 establishments, and while the solar process still showed an area of 8,176,948 square feet for the 32,295 covers or ponds, the evaporating

apparatus consisted of 92 grainers, 43 open pans, 338 kettles, and 9 vacuum pans. The remaining states represent less than 1 per cent of the square feet area in covers or ponds, and practically use the boiling process entirely.

In the last decade manufacturers have made great progress in the production of the finer grades of salt, particularly those for table and dairy use, and for the preservation of fish and meats. Much of the increase shown in production was due to the development of the large meat-packing establishments and, in a lesser degree, to the development of the dairy industry. The extensive use of the chlorination process of extracting gold and silver from ores has required large amounts of the lower grades of salt.

It is interesting to note the extent to which salt of domestic production has supplanted that of foreign manufacture, as seen by the following statement:

	1880	1890	1899
In warehouses at the beginning of the year.....	<i>Barrels.</i> 204,814	<i>Barrels.</i> 196,854	<i>Barrels.</i> 34,940
Domestic production .....	5,961,060	10,406,860	15,187,819
Imports .....	3,442,758	1,807,285	1,879,925
Quantity available.....	9,608,627	12,410,999	16,602,684
Exports (domestic) .....	4,436	15,292	90,001
Exports (foreign) .....	28,680	12,588	18,629
In warehouses at the end of year.....	197,359	209,673	62,689
Net consumption.....	9,389,152	12,178,446	16,431,365
Net imports.....	3,419,073	1,794,697	1,861,296
Per cent of net imports to consumption .....	36.4	14.7	8.8

<sup>1</sup> Calendar year ending December 31.

This statement shows that in 1880 imported salt formed 36.4 per cent of the domestic consumption; in 1890 it had fallen to 14.7 per cent; while in 1899 it was only 8.3 per cent. Reducing to pounds the figures presented above, it is found that the total domestic consumption in 1880 was 2,627,282,560 pounds; in 1890 it was 3,408,564,880 pounds; and 4,600,782,200 pounds in 1899. The population of the United States was <sup>1</sup>50,189,209 in 1880; <sup>2</sup>62,979,766 in 1890, and <sup>3</sup>76,149,386 in 1900. From these figures it is seen that the per capita consumption in these three years was, respectively, 52.3, 54.1, and 60.4 pounds.<sup>3</sup>

Table 4 shows the total quantity of salt produced in each state during the census years of 1890 and 1900, the rank of each state according to the quantity of product, and the percentage that the product of each state is of the total for the United States.

<sup>1</sup> Includes population of Alaska, but exclusive of population of Indian Territory (Oklahoma and Indian Territory in 1890 and 1900) for which there are no figures for 1880.

<sup>2</sup> Exclusive of population of Hawaii.

<sup>3</sup> The figures for the production of salt are for the calendar year 1899, while those for the population are for 1900—no others being available.

TABLE 4.—QUANTITY OF SALT MANUFACTURED IN EACH STATE, AND PER CENT OF TOTAL, 1890 AND 1900.

STATES AND TERRITORIES.	RANK.		1900		1890	
	1900	1890	Number of barrels of salt manufactured.	Per cent of total output.	Number of barrels of salt manufactured.	Per cent of total output.
United States .....			15,187,819	100.0	10,406,860	100.0
Michigan.....	1	1	5,206,510	34.3	3,729,110	35.8
New York.....	2	2	4,894,852	32.2	3,226,250	31.0
Kansas.....	3	3	1,645,350	10.8	1,140,799	11.0
Ohio.....	4	5	1,460,516	9.6	409,514	3.9
California.....	5	7	640,420	4.2	255,328	2.5
Texas.....	6		312,436	2.1	( <sup>2</sup> )	
Utah.....	7	4	235,671	1.5	626,429	6.0
West Virginia.....	8	6	221,534	1.5	285,461	2.7
Louisiana.....	9		208,850	1.4	( <sup>2</sup> )	
Virginia.....	10		151,391	1.0	( <sup>2</sup> )	
Pennsylvania.....	11	8	140,000	0.9	172,400	1.7
Illinois.....	12		56,782	0.4	( <sup>2</sup> )	
Nevada.....	13	9	7,671	0.1	25,250	0.2
Oklahoma.....	14		4,856	( <sup>3</sup> )	( <sup>2</sup> )	
Massachusetts.....	15		980	( <sup>3</sup> )	( <sup>2</sup> )	
All other states <sup>1</sup> .....					536,819	5.2

<sup>1</sup> The report of the Twelfth Census is for the calendar year 1899.

<sup>2</sup> Included with all other states in 1890.

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

<sup>4</sup> Includes Illinois, Kentucky, Louisiana, Massachusetts, Texas, and Virginia, not separately shown in 1890.

#### SALT PRODUCTION BY STATES.

The first attempt at salt making is recorded in Beverly's History of Virginia, in which it is stated that as early as 1620, "a salt work was set up at Cape Charles on the Eastern Shore." What success attended this effort is not stated.<sup>4</sup>

Prince's Chronological History of New England states that an attempt to manufacture salt was made at Plymouth, Mass., in 1624, but was not successful. Prior to the Revolutionary War, salt was not manufactured in the colonies in large quantities, and it is probable that the supply was procured from England or from other foreign sources. The commencement of hostilities cut off importations, and a system (extensive for that period) of making salt by boiling sea water was developed around New Bedford and on Cape Cod. This industry continued until after the War of 1812, when importation was resumed and the works were allowed to fall into decay. Foreign salt was sold in the American markets at that time for 50 cents per bushel, which was considered a very low figure. It is now sold for from 25 to 30 cents a barrel of 5 bushels, or about one-tenth of the early price.

Salt making from brine other than sea water began in the later years of the Eighteenth century. In the report on manufactures for the Eighth Census, it is stated that salt works were said to have been erected on Big Beaver Creek, in western Pennsylvania, in 1784, but no reference was made to the success of the enterprise. In New York the first salt made by white men

<sup>4</sup> United States Agricultural Report, 1858. Historical sketch of salt manufacture, by Wm. C. Dennis.

was produced in 1788. At Avery Island, La., in 1791, an unsuccessful attempt was made to make salt from brine. The first salt furnace in what is now West Virginia was built in 1797 on the Kanawha River near the present city of Charleston, and in the following year the first salt was produced in Ohio at what is now known as the Old Scioto Works.

CALIFORNIA.—The first salt made or "harvested" in California appears to have been a purely natural product. Along the shores of Alameda Bay are what were formerly known as "tide lands," covered by the high tides of June and July. Here were a number of natural sinks or ponds where the water was retained and, not being reached by the tides of the late season, was evaporated by solar heat, leaving small quantities of salt. The Spaniards, Mexicans, and Indians gathered this salt annually until about 1852, although the harvest amounted to only a few bushels. In that year the discovery was made that the land was public domain (school lands), and it was purchased from the state at a price said to have been \$1.25 per acre. During the following year levees were built for the more complete retention of the salt water. The harvest for that year, it is said, amounted to 40 or 45 tons, and was sold for \$50 per ton. In the following year other levees were built, and the harvest amounted to about 150 tons, which sold for about \$40 per ton. From this time the number of people engaged in the industry increased, but no attempts were made for a number of years to improve the quality of the product, and as the supply increased the prices fell until they reached as low a figure as \$2 per ton.

The first attempt to improve the quality appears to have been made in 1864, when the Crystal Salt Works were built. These works consisted of ponds for receiving and settling the sea water so as to precipitate the gypsum and other impurities which were less soluble than the salt. The mother liquor, or bittern, which remained in the brine after the salt itself was precipitated, was drained off, and a salt of high quality obtained.

The manner of making the settling and evaporating ponds and of preparation for market is thus described by Mr. A. A. Oliver, of Mount Eden, Cal.:<sup>1</sup> "The land having been cleared of grass and weeds is first diked with a good levee 3 or 4 feet high. It is then partitioned off into reservoirs of different sizes for receiving and evaporating the water. Crystallizing ponds are excavated and platforms for stacking the salt are built. The ground is principally peat, overlaying blue clay; the crystallizing ponds are dug in the peat, of which enough is left to form a bottom or carpet in the pond, the salt crystals being readily removed from the peat floor. There are usually 7 evaporating reservoirs to a plant, the brine being drawn from one to another as it strengthens and decreases in volume by evaporation.

<sup>1</sup> Eighteenth Annual Report of the United States Geological Survey, 1896-97, Part 5, page 1310.

The last 3 are called lime ponds, because large quantities of gypsum and other matter, precipitated before the salt, settles in them. The brine is retained in the seventh reservoir until it reaches a density of 25° Baumé. When this strength of brine is attained, the crystallizing ponds are filled to a depth of 10 or 12 inches and the brine evaporated until 29° by the hydrometer is reached. The mother liquor is then drawn off and the salt gathered up and conveyed into warehouses to drain. This completes the solar process.

"Much of the salt is sold after drying in the warehouses, but many thousands of tons are taken to refining works in San Francisco, where it is more thoroughly dried by artificial heat and ground into various grades for chlorination works, packing houses, and silver mills, and for dairy and table uses. The regular trade winds which blow in the summer months are quite strong in this locality, and greatly aid evaporation."

Owing to overproduction, the industry for a number of years has not been in a prosperous condition. During 1899 the management of all the large works along San Francisco Bay passed into the hands of the Federal Salt Company, and it is believed that with a restricted production and conservative management, the industry may be made a profitable one.

While the principal salt works in California are located on San Francisco Bay, small quantities of salt are produced in other places in the state. There are salt works at Salton, in Riverside county. In a portion of the Colorado Desert which is below the level of the sea, salt water is pumped from wells and evaporated. At National City, in San Diego county, salt is made by the evaporation of water from San Diego Bay. A small amount of rock salt, which is said to be very pure and transparent, has been mined in San Bernardino county 30 miles south of Danby; as many as 5,000 tons have been mined there during one year, but only 250 tons were mined in 1899. The distance from railroads prevents a larger production. A small amount is made from saline springs near Sites, in Colusa county, and at Black Lake, in San Luis Obispo county.

The report on manufactures for the Eighth Census contains the first official record of the salt production of California, which was then reported as 44,000 bushels, or 8,800 barrels. The production reported at each subsequent census has been: In 1870, 34,971 barrels; in 1880, 176,949 barrels; in 1890, 255,328 barrels; and in 1899, 640,420 barrels.

ILLINOIS.—There was 1 establishment producing salt in Illinois in 1899, as in 1890. The works are located at St. John, Perry county, and as this establishment is the only one in the state, the statistics are combined with those for other states having less than 3 establishments.

KANSAS.—The first salt made in Kansas was obtained from marshes which are scattered over the central part of the state. The pioneer travelers, hunters, and trad-

ers were led by buffalo paths to these marshes, which are the salty remains of decomposed saline strata; they are large, shallow lakes, which dry up almost entirely in the summer, leaving a thin white scale of salt deposited over a large area of grassless territory. Along the banks of these marshes salt works were constructed, similar to those described as used by the ancients. Stone arches were erected about the kettles in which the brine was evaporated, and chimneys were built in order to economize fuel and heat as much as possible. Until 1868, these crude factories were the only ones in Kansas. As late as 1870, salt obtained in this way was worth as much as 10 cents a pound,<sup>1</sup> equivalent to \$28 per barrel.

In 1867 a company erected a plant and began drying brine at Solomon City, where wells were sunk and good brine struck at about 75 feet. A second solar plant was erected by William Dewar at Solomon City in 1874. No record of any salt manufactured in Kansas was obtained until the Tenth Census, in 1880, in which year a total production of 2,000 barrels was reported. The development of the industry between 1880 and 1890 was marked by one of the most remarkable changes which took place in that region during the decade. The product of Kansas in 1890, as reported by the Eleventh Census, was 1,140,799 barrels, while in 1899 it reached a total of 1,645,350 barrels. It was not until the latter part of the decade from 1880 to 1890, however, that salt manufacture in Kansas assumed importance as an industry. In 1887 the state experienced a period of great activity in the development of coal mining and other industries. In the search for petroleum or gas a large body of rock salt was struck near Hutchinson. The people who owned the wells in which the salt was found were much disappointed at finding neither coal oil nor gas in large quantities, and did not at once appreciate the real value of the discovery, but an important industry was soon built up, as is shown by the statistics above presented, and some of this salt, particularly the dairy and table brands, now finds its way into the markets of the Eastern states.

A small amount of salt was made by solar evaporation in Kansas in 1899, but the greater portion of the product was evaporated in the 13 grainers and 36 open pans shown in Table 3. The use of kettles has been abandoned, and no vacuum pans have been introduced into the state. The amount of rock salt produced in Kansas was not reported separately at the Eleventh Census. The quantity produced in 1899 amounted to 468,029 barrels.

A body of rock salt was discovered at Lyons, in Rice county, in 1887, by prospectors in search of oil or natural gas.<sup>2</sup> The drill penetrated the body of salt at a depth of 800 feet, and passed through it only on reaching a depth of 1,100 feet. In 1890 a company was

organized by business men at Lyons, Kans., and St. Louis, Mo., and a shaft was sunk at a point about three-fourths of a mile from the city of Lyons. The shaft penetrated the bed of salt to a depth of 265 feet, making the total depth of the shaft from the surface 1,065 feet, there being some 30 or 40 feet of salt below the bottom of the shaft.

On sinking the shaft through this 265 feet of salt strata, 15 workable veins of rock salt, ranging from 4 to 18 feet in thickness, and separated by veins or layers of shale, from one-fourth of an inch to 5 feet in thickness, were penetrated. A vein of salt 18 feet in thickness and of exceptional purity was selected for mining purposes, the lower 10 or 12 feet of this vein being mined. From the bottom of the shaft the mine is laid off somewhat similarly to the streets of a city. The main streets, 25 feet in width, running east and west, and the cross streets, of the same width, running north and south. From these cross streets rooms or chambers are driven, having a width of 50 feet, there being pillars 50 feet in thickness left standing between the chambers. It is in these chambers that the principal mining operations are carried on.

The rock salt is at first undercut with mining or channeling machines operated by compressed air; holes are made in the salt with air drills, and dynamite, exploded by electricity, brings the salt down to the floor of the mine. The loose salt is loaded on cars, each holding about 2 tons, conveyed to the shaft by underground railroads, and hoisted to the top of a five-story mill building directly over the mouth of the shaft. It is dumped automatically from the mine cars into crushers over dumps and passes by gravity down through different sized crushers to the screen room below, where, by screens of various sizes, it is separated into 9 different grades. Thence it is conveyed to large bins, from which it is loaded into railway cars.

LOUISIANA.—The southern coast of Louisiana is marked by a striking topographical and geographical feature, consisting of 5 islands or mounds which rise from the otherwise marshy land. These islands range in height from a few feet to about 250 feet. They are arranged in a practically straight line running northwest and southeast. They are known as Jefferson or Orange Island, Weeks Island, Avery Island, Cote Blanche, and Belle Isle. All of these, except Cote Blanche, have been prospected for salt, which has been struck at a comparatively shallow depth in each case. No knowledge of the thickness of the beds, however, has yet been obtained. On Jefferson Island a drill penetrated to a depth of 2,100 feet without passing through the salt bed.

So far as known, the first attempt to manufacture salt in Louisiana was made in 1791,<sup>3</sup> on Avery Island, the discovery being made by a man named John Hays, who came across a brine spring while hunting. The

<sup>1</sup> Eleventh Annual Report of the Kansas Bureau of Labor, 1895, quoted in the Eighteenth Annual Report of the United States Geological Survey, 1896-97, Part 5, page 1306 et seq.

<sup>2</sup> Report of the Kansas Bureau of Labor, 1893.

<sup>3</sup> Eighteenth Annual Report of the United States Geological Survey, 1896-97, Part 5, page 1296 et seq.

attempt to manufacture salt from this spring was, however, not a success, as the supply of brine was not sufficient to pay the expenses of operation. During the War of 1812 the price of salt was so advanced that operations were resumed, and continued there until 1815, when the work was stopped. It was not again resumed until 1861, when, on account of the blockade of the southern seaports, salt became expensive. As the supply of brine was not sufficient to meet the requirements, an attempt was made to deepen the wells, and in May, 1862, a body of rock salt was encountered at a depth of about 16 feet. The mining of rock salt in pits was then introduced, and about ten pits were dug, the salt being found at from 14 to 20 feet below the surface. No official record of the salt taken from these works was kept, although it is said that there were from 400 to 600 men employed, and that 22,000,000 pounds were mined during the 11 months they were in operation.

The Report of the American Bureau of Mines, published in 1867, stated that this method of pit mining would possibly endanger subsequent successful shaft mining. This prediction was borne out, as the shaft afterwards sunk to the salt body had to be abandoned because of surface waters penetrating to the works. The first shaft sunk on Avery Island was a small one, 8 by 8 feet and 83 feet deep. This shaft was leased afterwards to the American Salt Company, which continued it to a depth of 190 feet and extended galleries east and west to distances of 270 and 370 feet respectively, crosscuts being made from these galleries.

The problem of marketing the product of the mines proved to be so serious that the mining company cut a channel through two miles of marsh to deep water, and considerable trade was thus developed with Galveston, New Orleans, and Mobile. Transportation was further improved in 1886 by the construction of a branch railroad from New Iberia. The later owners of the mines experienced much difficulty in keeping back surface water from the mine works, and were finally compelled to abandon the shaft. In 1897 a shaft was sunk some distance from the old one, and the new works were equipped with all modern appliances. The new shaft was sunk 500 feet before any attempt at working the property was begun. It was evidently believed that by sinking the shaft to this distance all danger from surface waters would be obviated.

Until 1898 all the production of Louisiana had been from mines at Avery Island. In 1898 the Gulf Company of Morgan City sunk a shaft on Belle Isle, but, through a misapprehension as to the conditions, the galleries were driven out from the shaft at too shallow a depth, and the surface waters, percolating through the thin stratum of soil and the roof of salt, forced an abandonment of the work. A new shaft was then sunk at the distance of about a quarter of a mile from the first. An evaporating plant was erected beside the

original works and a considerable quantity of brine salt was made there in 1899, the grainer process being used.

The entire production of Louisiana in 1899 was 208,850 barrels. In 1890 Louisiana was included with "all other states." In 1880 the production was reported as 62,400 barrels, and in 1870 as 25,600 barrels. No production was reported at the census of 1860.

MASSACHUSETTS.—Many years ago a considerable amount of salt was made in Massachusetts from sea water, but this industry has almost entirely disappeared. The total amount made in Massachusetts in 1899 was 980 barrels. There was only 1 establishment engaged in the manufacture at the Eleventh Census, and the state was not reported separately. In 1880 the production amounted to 1,915 barrels, not quite double the production in 1899. In 1870 it amounted to 4,569 barrels, and in 1860 to 6,305 barrels.

MICHIGAN.—Michigan was for a number of years the leading state of the Union in the manufacture of salt. Its salt springs were used by the Indians, but salt manufacture is of comparatively recent date. On March 4, 1838, the governor of the state approved an act directing the state geologist to bore for salt at one or more of the salt springs. An appropriation of \$3,000 was made for the purpose, and the state geologist was directed to report the result of his investigation to the next session of the legislature. The report was made January 1, 1839, and states: "The brine springs of our state, like those of Ohio, Pennsylvania, and Virginia [now West Virginia], emanate from a rock which lies deep, being covered with a mass of rock and earthy matter which it is necessary to penetrate. In this respect they differ most essentially from those of New York." Other work was done by the state in 1840, 1841, and 1842, but no satisfactory results were obtained.

It remained for private enterprise to establish the industry in the Saginaw Valley. The first well was bored in 1859, at what is now Saginaw.

The census report covering the fiscal year ending May 31, 1860, gives the production for the state as 472 barrels. This was the beginning of an important industry, but irregularities in manufacture soon developed the necessity of a state salt inspection, and a law was enacted in 1869 establishing the office of State Salt Inspector. By this time the industry had developed so that the production amounted to over 550,000 barrels.

The census report for 1870 shows that the production in Michigan amounted to 796,263 barrels; in 1880 it was 2,485,177 barrels; in 1890 it was 3,729,111 barrels; and in 1899 it was 5,206,510 barrels.

NEVADA.—There were 3 establishments in the state of Nevada engaged in this industry in 1899. No production was reported for this state at any previous census. The salt is made from brine springs, a portion of it being used locally for domestic purposes, or for the reduction of silver in works using the chlorination

process. The entire production was obtained by solar evaporation.

NEW YORK.—Lemoyne, a French Jesuit explorer, in his journal, published in 1653, mentioned the salt springs of western New York, which were at that time well known to the Indians. In 1770<sup>1</sup> salt from the Onondaga region was in use among the Delaware Indians, and was sold by them in Albany and as far north as Quebec to the pioneer whites. The first salt made by white men in this district was in 1788.

New York was the first state to pass any law regulating the manufacture of salt. This was done as early as 1797, and for over one hundred years the state maintained control of the Onondaga salt reservation, furnishing the brine to those who paid for it. The state built and repaired the settling tanks from which the brine was delivered to the lessees. The law regulating the

<sup>1</sup>Eighteenth Annual Report of the United States Geological Survey, 1896-97, Part 5, page 1290 et seq.

manufacture of brine on the Onondaga reservation was amended a number of times after enactment. At first, 4 cents per bushel was charged on all salt made, and each lessee was required to manufacture not less than 10 bushels a year and prohibited from charging more than 60 cents per bushel. In 1805 the rate was reduced to 3 cents per bushel; in 1812 it was advanced to 12½ cents, in order to raise revenue for the construction of the canals of the state. The duty was reduced to 6 cents in 1834 and to 1 cent in 1846, which rate was continued until the state sold its title to the lands in 1898, a little over one hundred years after assuming control.

The sale of the state's interest in the Onondaga reservation was due to the fact that the revenue obtained from the sale of the brine was less than the expense of keeping up the works.

Table 5 presents a statement of the amount of salt produced during the one hundred years from 1797, when the works were first put in operation.

TABLE 5.—SALT PRODUCTION OF THE ONONDAGA DISTRICT, NEW YORK, FOR ONE HUNDRED YEARS.

YEARS.	Total.	Solar.	Fine.	YEARS.	Total.	Solar.	Fine.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>		<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
1797	25,474		25,474	1847	3,951,355	262,879	3,688,476
1798	59,928		59,928	1848	4,737,126	342,497	4,394,629
1799	42,701		42,701	1849	5,083,669	377,735	4,705,884
1800	50,000		50,000	1850	4,268,919	374,732	3,894,187
1801	62,000		62,000	1851	4,614,117	378,967	4,235,150
1802	75,000		75,000	1852	4,922,633	633,595	4,288,938
1803	90,000		90,000	1853	5,404,524	577,947	4,826,577
1804	100,000		100,000	1854	5,803,347	734,474	5,068,873
1805	154,071		154,071	1855	6,082,885	498,124	5,584,761
1806	122,577		122,577	1856	5,966,810	709,391	5,257,419
1807	175,448		175,448	1857	4,312,126	481,230	3,830,846
1808	319,618		319,618	1858	7,033,219	1,514,554	5,518,665
1809	128,282		128,282	1859	6,894,272	1,345,022	5,549,250
1810	450,000		450,000	1860	5,693,247	1,462,565	4,230,682
1811	200,000		200,000	1861	7,200,391	1,884,697	5,315,694
1812	221,011		221,011	1862	9,053,374	1,983,022	7,070,352
1813	226,000		226,000	1863	7,942,983	1,437,656	6,504,727
1814	295,000		295,000	1864	7,378,834	1,971,122	5,407,712
1815	322,058		322,058	1865	6,985,930	1,886,760	4,499,170
1816	348,665		348,665	1866	7,158,503	1,978,183	5,180,320
1817	408,665		408,665	1867	7,595,565	2,271,892	5,323,673
1818	406,540		406,540	1868	8,666,616	2,027,490	6,639,126
1819	548,374		548,374	1869	8,662,237	1,857,942	6,804,295
1820	458,329		458,329	1870	8,748,113	2,487,691	6,260,422
1821	526,049		526,049	1871	8,374,956	2,464,464	5,910,492
1822	481,562		481,562	1872	7,930,925	1,882,604	6,048,321
1823	726,988		726,988	1873	7,460,357	1,691,359	5,768,998
1824	816,634		816,634	1874	6,029,300	1,667,368	4,361,932
1825	757,203		757,203	1875	7,179,446	2,655,955	4,522,491
1826	811,023		811,023	1876	5,892,677	2,308,679	3,583,998
1827	983,410		983,410	1877	6,427,988	2,525,335	3,902,648
1828	1,160,888		1,160,888	1878	7,176,197	2,788,754	4,387,443
1829	1,129,280		1,129,280	1879	8,322,162	2,957,744	5,364,418
1830	1,435,446		1,435,446	1880	7,998,750	2,516,485	5,482,265
1831	1,514,037		1,514,037	1881	7,917,236	3,011,461	4,905,775
1832	1,652,985		1,652,985	1882	8,340,180	3,032,447	5,307,733
1833	1,838,046		1,838,046	1883	7,497,431	2,444,374	5,053,057
1834	1,943,252		1,943,252	1884	6,942,270	2,353,800	4,588,470
1835	1,209,867		1,209,867	1885	6,934,299	2,439,332	4,494,967
1836	1,912,858		1,912,858	1886	6,101,757	2,772,348	3,329,409
1837	2,167,287		2,167,287	1887	5,695,797	3,118,974	2,576,823
1838	2,575,033		2,575,033	1888	5,657,367	3,115,314	2,542,053
1839	2,864,718		2,864,718	1889	5,365,039	2,916,922	2,448,117
1840	2,622,306		2,622,306	1890	4,928,122	2,726,471	2,201,651
1841	3,340,767	220,247	3,120,520	1891	3,948,913	2,113,727	1,735,186
1842	2,291,903	163,021	2,128,882	1892	4,405,674	3,122,789	1,282,885
1843	3,127,500	318,105	2,809,395	1893	3,065,906	2,332,052	733,854
1844	4,003,552	332,418	3,671,134	1894	3,227,253	2,355,394	871,859
1845	3,762,358	358,459	3,403,899	1895	3,214,124	2,608,289	605,835
1846	3,638,851	331,705	3,307,146	1896	2,806,600	2,464,422	342,178



During the first forty-four years only boiled salt was manufactured on the Onondaga reservation, and in this period the production increased from 25,474 bushels in 1797 to 2,622,305 bushels in 1840. The manufacture by the solar process began with the production of 220,247 bushels in 1841. In the same year the amount of fine salt made was 3,120,520 bushels, making a total product of 3,340,767 bushels. The salt-making industry on the Onondaga reservation continued to increase gradually until 1862, in which year 1,983,022 bushels of solar salt and 7,070,852 bushels of fine or boiled salt were produced, making a total product of 9,053,874 bushels. This was the largest product ever obtained. Since that time the production has shown a declining tendency, which from 1885 to 1896 was quite pronounced, the total output in the latter year amounting to only 2,806,600 bushels. Practically all this decrease has been in the manufacture of fine salt, which in 1896 had declined to 342,178 bushels, or only 4.8 per cent of what it was in 1862. This rapid decline, which is particularly noticeable from 1882 to 1896, was due in a large degree to the development of the Warsaw district, which began producing in 1883. The manufacturers in the Warsaw district were independent of state control, and their product was not subjected to the tax of 1 cent per bushel which was imposed upon the production of the reservation. The average price ranged between 25 and 30 cents per barrel containing 5 bushels. The tax, therefore, amounted to practically 20 per cent of the selling price.

The discovery of salt in the Warsaw district, which is in the county of Wyoming, was made near the town of Wyoming in 1880 by parties drilling for oil. The oil was not found, and very little salt was made from this well. In the fall of 1882 a well was sunk to the salt bed and the manufacture began the following year. Sixteen other companies were afterwards formed. The initial production, in 1883, amounted to 600,000 bushels, or 120,000 barrels. In 1890 the production had increased to 7,732,060 bushels, or 1,546,412 barrels. The production in this district in 1899 is not separately published.

The opening of the Genesee district was nearly contemporaneous with that of the Warsaw district, the first well being put down in the spring of 1883, and the manufacture beginning the same year. The initial output was 80,000 barrels of common fine salt. Of the 3 companies which began operations in 1884 and the 3 which began in 1885 only 1 survives.

The Ithaca or southern New York district was developed in 1895. The production from this region has not been particularly important.

The mining of rock salt in New York began in December, 1885. The first shaft of the Retsof Mining Company was located near York, Livingston county. In 1892 shafts were sunk near Leroy, Genesee county, and at Livonia and Greigsville, Livingston county, and

shipments of salt were made from these mines that same year. The shaft of the Retsof mine is 1,100 feet in depth; the Lehigh shaft, near Leroy, 804 feet; the Livonia shaft, 1,432 feet; and the Greigsville shaft, 1,150 feet. Three of these companies have since passed out of existence, and all the rock-salt mining in the state of New York is now carried on by one company.

The production of rock salt in New York state varies from 150,000 long tons to 250,000 long tons annually, according to the market requirements.

OHIO.—The first attempt at salt making in Ohio was made in 1798 at what is now called the Old Scioto Salt Works, located on Salt Creek, a branch of the Scioto River in Jackson county. At this time the wells were dug only to the rocks below the surface soil, the brine flowing through the rock crevices into the wells. The brine was weak, full of bittern, and no attempt was made to purify the product even by draining. The brine was evaporated in kettles, from which it was transferred directly to pack horses and transported to other settlements, where it was sold for \$3 and \$4 per bushel. This continued as late as 1808. The brine springs were thought to be so important to the country, that when the territory of Ohio was admitted as a state, in 1802, a tract 6 miles square, embracing the wells, was set apart for the use of the state. Two other reservations were made, each of 640 acres or 1 square mile, one being in Muskingum county and the other in Delaware county.

The state legislature in 1804 enacted a law regulating the management of the salt reservations, and an agent or superintendent was appointed to lease lots to manufacturers, to inspect the salt made, and to carry out the other provisions of the law. A tax of 16 cents per year was imposed on each gallon of kettle capacity of the plant, no one being allowed to have less than 600 nor more than 4,000 gallons to a furnace. The revenue to the state, however, did not exceed \$500 in any one year, and as better discoveries were made on navigable streams, the old works became unprofitable, were abandoned, and the reservations sold. The exact date of the development of the other salt-producing properties in Ohio is not known, but it was probably about 1825.

There is no record as to the quantity made in Ohio prior to 1860, in which year, according to the census, the product amounted to 348,640 barrels. In 1870 the product of Ohio amounted to 579,730 barrels. In 1880 it had decreased to 530,060 barrels. Between 1890 and 1899 the production increased rapidly, and amounted in the latter year to 1,460,516 barrels. From Table 3 it appears that there were in operation during 1899, 83 grainers, 38 open pans, 31 kettles, and 5 vacuum pans. There were also 4 covers or ponds, having an area of 12,320 square feet, in which solar salt was made. The principal grades produced in the state are table, dairy, and common fine.

OKLAHOMA.—Salt making began in Oklahoma as late as 1896. The works were established near the town of Okeene, on the banks of a branch of the Cimarron River, a creek whose waters are highly impregnated with salt. One of the first attempts at salt making was made by M. J. M. White, who began evaporating the brine in an old stove kettle, afterwards using a galvanized wash tub. These were soon destroyed by the action of the salt, and he then experimented with an ordinary sorghum pan, meeting with more success. Others adopted the same method, and there are now 4 establishments engaged in the manufacture, although the original primitive plants are still used. There is comparatively little market for the salt, the demand being limited to a local consumption. The amount made in the territory in 1899 was 4,856 barrels, valued at \$4,329.

PENNSYLVANIA.—The manufacture of salt in the state of Pennsylvania has ceased to be an industry of any moment, although at one time it was of comparative importance in the western part of the state. The industry has been mainly confined to the valley of the Conemaugh River, where it was quite firmly established early in the present century.

In the census report for 1860 it is stated that a company of Philadelphia and Pittsburg merchants erected salt works on Big Beaver Creek in 1784. In 1810 one establishment in Indiana county was reported as having made 600 bushels of salt, worth \$1,000. About that time William Johnson commenced boring on the Conemaugh River, near the mouth of the Loyalhanna, struck an abundant fountain of salt water at the depth of 450 feet, and erected furnaces, pans, etc., by which he made about 30 bushels a day, and sold at a high price. Other wells were soon sunk to a depth of 300 to 600 feet in the coal measures of that region, and the price of salt was reduced as low as \$1 per barrel, but afterwards fixed at \$2, which afforded a profit. The pumps were first worked by horsepower, and afterwards by small engines. In 1820 the business employed a capital of \$33,000 in western Pennsylvania, and in 1826 there were 35 salt works on the Conemaugh and Kiskiminitas rivers, 3 on the Allegheny, and others were being constructed elsewhere, one of which was expected to yield 1,500 bushels daily. Salt was supplied at the works for from 20 to 25 cents per bushel, while it brought 50 cents in Kentucky, Ohio, and Illinois.

In Egle's History of Pennsylvania it is stated that about 1812 or 1813 the discovery of a salt spring was made by an old lady named Deemer at low-water mark of the Conemaugh River, about 2 miles above the present site of Saltsburg. This discovery shortly led to the development of an important industry in Indiana county. A well was sunk to the depth of 270 feet and an abundance of salt water found. The salt was manufactured by boiling the water in large kettles, using wood for fuel, and was sold at \$5 per bushel. Afterwards, as

the number of wells and plants increased, the price was reduced to \$4 per bushel. Improvements were made in the methods of pumping the brine and manufacturing the salt; coal was used instead of wood for fuel, and steam engines instead of horsepower for boring and pumping. The place was known as the Great Conemaugh Salt Works. The same authority states that, between 1820 and 1830, 21 salt works, with a total of 24 wells, were in operation on the Conemaugh River in Westmoreland county. Mr. James M. Swank, in his report to the Centennial Commission, states that all but 3 of these works had been abandoned in 1876. Mr. Swank states that as early as 1811 salt works, which are reported to have produced considerable salt, were erected on the Sinnemahoning Creek, probably in what is now the county of Cameron.

The census report of 1820 makes a brief reference to salt manufacture in Pennsylvania in that year, but in most instances shows values only, without quantities. Armstrong county had 38 pans in operation, and the value of the product amounted to \$18,000. Erie county had 18 kettles of 32 gallons each in operation. Indiana county had 32 pans and 190 kettles, the price being given as \$1 per bushel. Westmoreland county had 6 establishments, and produced 70,000 bushels worth \$1 per bushel.

The manufacture of salt was the only industry reported in Indiana county in 1820. The Gazetteer of Pennsylvania, published in 1832, shows that the total product of Pennsylvania in 1830 was 100,000 barrels of 5 bushels each, valued at \$200,000. In 1840 it is reported to have been 549,478 bushels, an increase of about 10 per cent in the ten years. In 1850 there were 47 establishments, and the production amounted to 919,100 bushels, valued at \$206,796.<sup>1</sup> In 1860 the number of establishments had decreased to 34, but the product had increased to 1,011,800 bushels, with a decrease in value to \$196,916. A considerable decrease in the industry was shown in 1870, when there were 27 establishments, producing 579,970 bushels, valued at \$187,312. In 1880 the number of establishments had been reduced to 16, but the product had increased to 851,450 bushels, with a decrease in value to \$177,415. In 1890 there were only 3 of these establishments in Pennsylvania, but the product was a little more than that of ten years before, amounting to 862,000 bushels, valued at \$156,398. In 1899 there was only 1 establishment in Pennsylvania, and the statistics were included under "all other states."

TEXAS.—The first salt well sunk in the state was begun at the town of Colorado in 1884. Salt was struck at a depth of 7 feet and the work of making from brine was begun in 1885. A second well was drilled in 1889 and completed before the close of the year. The manufacture of salt was begun at once, and

<sup>1</sup>So given in Vol. III, Report of Ninth Census, page 622. In the Digest of the Census of 1850, page 100, the value is given as \$161,796, without the quantity of salt.



since that time the industry has assumed considerable importance. As there were only 2 establishments, the production of the state was not reported separately at the census of 1890.

In 1899 the product amounted to 312,436 barrels, valued at \$256,900, a third establishment having been added during the decade. Of this product 10,000 barrels were made by solar evaporation and the rest by boiling, either in grainers or open pans. The greater part was made in grainers, of which there were 24 in use in the state. There were only 2 open pans operated.

**UTAH.**—The manufacture of salt in the territory of Utah began almost immediately after the advent of the Mormons in 1847. The first salt was harvested from the shores of Great Salt Lake in the following year. The water from the lake being thrown back upon the shore by the westerly winds prevailing in the spring, formed small pools of brine which evaporated during the warm, dry weather of July and August, leaving deposits of salt. This was scraped up and used for domestic purposes and for the curing of meats. The early settlers were supplied in this way until about 1860, when the idea was conceived of making dams in low places which would hold large quantities of water. Salt was made in this way in 1860, but no product is reported by the census of that year. The dams were flooded in the spring, and the salt deposited during the summer by solar evaporation. As the summer is generally dry, it is not necessary to cover the ponds, and the process of evaporation is practically a continuous one. At about this time the chlorination process for the reduction of silver from its ores was discovered, and the first use of salt from Great Salt Lake for this purpose is reported to have been made at the Alice mine in Butte, Mont. This was before the days of railroads, and the product was carried on the backs of mules from the lake to the mine at a cost of about \$200 per ton.

It does not appear from the census records that this very largely increased the production from the lake, as the amount reported in 1870 was only 1,950 bushels. By 1880, however, the output had increased to 483,800 bushels, and a number of large companies had in the meanwhile been formed. By 1890 this output was still further augmented to a production of 3,132,143 bushels, valued at \$144,300.

In 1899 Utah produced 235,671 barrels, equivalent to 1,178,355 bushels, nearly all of which was made by solar evaporation. In the making of salt by solar evaporation the pumps are started each year about the month of March, the brine being pumped into large reservoirs, each covering from 10 to 20 acres. As the brine becomes stronger it is drawn off into other reservoirs or sloughs covering from 3 to 15 acres. Sloughs are made with a hard clay bottom and with a levee thrown up 3 or 4 feet high around the sides to retain the brine and at the same time furnish a ditch on the outside to carry off fresh water. The sloughs are replenished

from time to time during the summer, the reservoirs being kept stocked until September or October, by which time salt is deposited to the depth of from 3 to 6 inches. Harvesting then begins with wheelbarrows and tramway, the salt being stacked on the banks in large piles shaped something like a haystack, but not so high. A crust which answers every purpose of a shingle roof forms on each pile. This is the crude salt ready for market; it is hauled to the mills for refining purposes or is shipped in this crude state to the silver mills working under the chlorination process.

The latest improved machinery in the mills consists of revolving cylinders, roller burrs, and a series of sieves. The salt is hauled to a crusher, whence it is carried by hoppers to the heated cylinders, which deliver it perfectly dried to the roller burrs; thence it goes to the sieves. It is purified by means of a suction blower as it passes over the sieves. The impurities are lighter than the salt, and as it passes over the sieves the suction is set with just enough strength to take off the impurities and allow the salt to pass on to the bins, the different grades being conveyed to the proper bins by a series of hoppers.

**VIRGINIA.**—Since West Virginia was separated from Virginia, there has been only 1 establishment making salt in the latter state. This is located at Saltville, in the valley of the Shenandoah River. The production is combined with that of other states having less than 3 establishments engaged in the business.

Most of the Virginia product is used in the production of soda ash, bicarbonate of soda, etc., by an electrolytic process.

**WEST VIRGINIA.**—The early attempts at making salt in West Virginia were attended with many interesting incidents. They have been historically recorded in a contribution to a report on the resources of West Virginia by Dr. J. P. Hale, of Charleston, which was published in 1876 by the state board of centennial managers. According to this the principal points at which salt has been manufactured in the state are: Charleston, on the Kanawha River; Hartford, Mason City, Clifton, and other places in Mason county, along the Ohio River; near Birch on Elk River; and at a few other places on a small scale for local use. The seat of the industry at present is along the Ohio River in Mason county, there being but 1 establishment of any importance in the state outside of that county.

The earliest attempts were on the Kanawha River. The Kanawha "licks" were known to have been used by the Indians, and were the gathering places for buffalo, elk, deer, and other wild animals before the advent of the white man. The earliest settlement in this region was made in 1774 by Walter Kelly and family at the mouth of the creek bearing his name. They were all killed by Indians. Later, in 1785, when life in that section had become a little more secure, Joseph Ruffner, an enterprising farmer from the Shenandoah Valley of Virginia, purchased about 500 acres of land

at the mouth of Campbell's Creek from one John Dickinson, on Dickinson's representations as to the valuable salt springs on the property. Ruffner also purchased 900 acres, extending from a point on the Elk River to the Kanawha, and embracing the present site of Charleston. Joseph Ruffner did not live to see his design for making salt effected, but in transmitting the property to his sons, David and Joseph, he enjoined them to carry out his plans for building extensive salt works. All that the elder Ruffner had accomplished was the leasing of the "licks" to one Elisha Brooks, with the right to manufacture salt. Brooks, in 1797, erected the first salt furnace in Kanawha county, which was also the first one west of the Allegheny Mountains. It consisted of two dozen small kettles set in a double row, with a flue beneath, a chimney at one end and a fire bed at the other.

In order to obtain a supply of brine, Brooks sank two or three "gums" into the mire and quicksand of the lick and dipped up the brine with a bucket and sweep. In this crude way he manufactured about 150 pounds of salt a day, which he sold at from 8 to 10 cents a pound. No attempt was made to purify the salt from the bittern and other impurities, either organic or inorganic. This salt soon acquired a reputation for its strong, pungent taste and superior qualities for curing meat, etc. The presence of iron gave the salt a reddish tinge, and it became widely and favorably known as "that strong red salt from the Kanawha 'licks'."

In 1806 the two brothers Ruffner, inspired by the growing needs of an increasing population, began to look for the source of the brine springs in the hope of finding a larger and better supply. The history of their struggle, as recorded by Dr. Hale, is very interesting. They began by sinking a "gum," consisting of a hollow sycamore tree, which reached what they supposed was bed rock at 13 feet. With the primitive means at their command, even this little was accomplished only after much work and many and trying delays. Upon cutting at the bottom with crowbars, this bed was found to be shale only about 6 inches thick, which, when penetrated, furnished a larger stream of brine but much weaker than the "lick" at the surface. The brothers, disappointed at this result, decided to sink a well in the bottom land about 100 yards from the river, but after penetrating 45 feet of alluvial deposit they struck the same shale as at the "gum" with only a slightly brackish water.

They then decided to return to the "gum" and continue work until they struck bed rock, which they finally did at about 17 feet. The quantity of brine was small but of a strong quality. Encouraged by this, they decided to drill the rock. This was done by means of a long drill with a 2½-inch chisel bit attached at the upper end to a spring pole, and the pole to a rope. Boring by this means was slow, difficult, and tedious, but on November 1, 1807, at 17 feet in the rock, they struck a larger flow of strong brine. Con-

tinuing the work, at 28 feet a still larger and stronger flow was obtained. On January 15, 1808, at 40 feet in the rock, they found a stream large and strong enough for all their purposes and ceased boring.

But they had no pipes in which to bring the strong brine to the top of the ground undiluted by the surface seepage. These were finally provided by whittling out two half-tubes from long strips of wood, fitting the edges carefully together, and wrapping the whole from end to end with small twine. The brine came up free and strong from below, the "gum" floor was made water-tight, and from the "gum" the brine was raised to the surface by bucket and sweep. This is said to be the first rock-bored salt well west of the Allegheny Mountains, if not in the United States; it required a year and a half to complete it. The success is the surprising feature. As Dr. Hale says: "Without preliminary study, previous experience, or training; without precedents in what they undertook; in a newly settled country, without steam power, machine shops, skilled mechanics, suitable tools or materials, failure rather than success might reasonably have been predicted."

Meanwhile their furnace, a reproduction of Brooks's on a larger plan, was under construction and was completed in time for the brine. On February 8, 1808, the Ruffner brothers secured their first output, and immediately cut the former price of salt one-half, selling it at the unprecedentedly low figure of 4 cents per pound. The neighbors, who had watched the progress and result of the Ruffner struggle, began boring on their own lands with more or less success, and in 1817 there were about 30 furnaces and 15 or 20 wells in operation. Improvements in mechanical methods of raising the brine were adopted, the bucket and sweep giving way to the winch, and the winch in 1828 to steam. Coal, too, began to be used for fuel, David Ruffner being the enterprising pioneer in this as in the boring. In 1831 William Morris invented an ingenious but simple tool for boring salt wells, which is to-day used in boring oil and gas wells. It was the tool known as "slip" or "jar." Morris's invention was never patented, and, like the hydraulic ram, has not been improved upon.

In 1835 there were about 40 furnaces along the Kanawha River, producing annually about 2,000,000 bushels of salt. But the activity in the industry in West Virginia has since that time been transferred to the region along the Ohio River in Mason county. The change began in 1849. In this year Messrs. Williams & Stevens bored for salt water at West Columbia, and, striking a good flow of strong brine at 700 feet, erected the first salt furnace on the Ohio River. This was soon after sold to New York parties, and enlarged and improved by them to a capacity of 1,200 bushels per day. The second furnace on the Ohio was built in 1854 by a company formed by Hartford, Conn., parties. The first one was located at the southern limit of the coal exposures and the other at the northern limit. The third furnace was erected and wells were sunk at

Mason City, about halfway between the others. Within the next few years 10 more furnaces were erected, making a total of 13, with an annual capacity of 3,700,000 bushels. At the time of the writing of Dr. Hale's report (1875), 4 of these furnaces were idle, and the actual output from the 9 other furnaces was reported by him at 2,500,000 bushels, or 500,000 barrels.

The census report for 1860 shows that the production of salt in those counties of Virginia which were set off from that state and, in 1863, admitted as the state of West Virginia, amounted to 2,076,513 bushels, or 415,303 barrels. By 1870 the production had increased to 4,633,750 bushels, or 926,750 barrels, an increase of 123.2 per cent. During the next decade the industry in West Virginia suffered from the competition brought

about by developments in other states, and in 1880 the production had declined to 2,679,438 bushels, or 535,888 barrels. In 1890 it had dropped to 285,461 barrels, and had further decreased in 1899 to 221,534 barrels.

As shown in Table 3, all the salt made in West Virginia is made by the boiling process. There were 4 establishments in 1899, one less than at the preceding census. The salt is made entirely in grainers and kettles, there being 23 grainers and 36 kettles in operation in the state during 1899.

Table 6 presents the detailed statistics for the industry, by states, as reported at the Twelfth Census for the calendar year 1899.

TABLE 6.—SALT MANUFACTURE, BY STATES AND TERRITORIES: 1900.<sup>1</sup>

	United States.	California.	Kansas.	Michigan.	Nevada.	New York.	Ohio.	Oklahoma.	Texas.	Utah.	West Virginia.	All other states. <sup>2</sup>
Number of establishments .....	159	24	8	53	3	38	10	4	3	5	4	7
Character of organization:												
Individual .....	56	15	2	15	1	10	1	4	.....	4	1	3
Firm and limited partnership .....	23	6	.....	11	1	8	.....	.....	.....	.....	.....	.....
Incorporated company .....	80	3	6	27	1	25	7	.....	3	1	3	4
Capital:												
Total .....	\$27,123,364	\$757,895	\$960,733	\$4,759,865	\$9,320	\$17,231,864	\$796,841	\$2,555	\$327,036	\$646,850	\$331,200	\$1,299,205
Land .....	\$8,494,587	\$468,661	\$68,732	\$280,432	\$3,350	\$6,387,587	\$78,047	\$275	\$54,493	\$540,010	\$160,500	\$452,500
Buildings .....	\$8,358,018	\$36,000	\$303,454	\$884,128	\$2,400	\$6,143,385	\$268,400	\$335	\$115,876	\$23,740	\$69,500	\$450,800
Machinery, tools, and implements .....	\$4,523,294	\$102,511	\$266,869	\$1,067,072	\$1,520	\$2,368,407	\$308,000	\$204	\$80,000	\$25,011	\$52,500	\$281,200
Cash and sundries .....	\$5,747,465	\$150,723	\$261,678	\$2,528,283	\$2,050	\$2,362,485	\$142,394	\$1,741	\$76,667	\$58,089	\$48,700	\$114,705
Proprietors and firm members .....	81	28	2	29	3	157	48	4	.....	4	.....	.....
Salaries of officials, clerks, etc.:												
Total number .....	406	37	32	91	.....	247,378	\$42,218	.....	11	8	13	9
Total salaries .....	\$499,748	\$87,128	\$36,010	\$87,249	.....	\$94,365	\$12,680	.....	\$8,600	\$2,100	\$10,700	\$8,580
Officers of corporations—												
Number .....	87	5	9	24	.....	24	13	.....	4	1	7	.....
Salaries .....	\$185,524	\$9,600	\$15,600	\$31,879	.....	\$153,008	\$29,538	.....	\$8,470	\$8,480	\$2,840	\$8,580
General superintendents, managers, clerks, etc.—												
Total number .....	319	32	23	67	.....	121	29	.....	7	6	6	9
Total salaries .....	\$814,224	\$27,528	\$20,410	\$55,370	.....	\$144,624	\$27,705	.....	\$8,470	\$8,000	\$2,840	\$8,580
Men—												
Number .....	291	31	21	61	.....	121	29	.....	7	6	6	9
Salaries .....	\$299,382	\$27,288	\$19,210	\$52,005	.....	\$8,384	\$1,833	.....	.....	\$480	.....	.....
Women—												
Number .....	28	1	2	6	.....	12	6	.....	.....	1	.....	.....
Salaries .....	\$14,842	\$240	\$1,200	\$2,705	.....	.....	.....	.....	.....	.....	.....	.....
Wage-earners, including pieceworkers, and total wages:												
Greatest number employed at any one time during the year .....	6,612	468	496	2,133	13	1,799	848	11	213	120	220	291
Least number employed at any one time during the year .....	4,179	178	420	1,342	5	1,116	636	4	135	38	128	177
Average number .....	4,774	267	450	1,449	7	1,279	678	7	191	59	190	197
Wages .....	\$1,911,140	\$109,774	\$168,084	\$619,883	\$3,070	\$542,909	\$243,397	\$1,100	\$66,079	\$23,702	\$54,805	\$78,287
Men, 16 years and over—												
Average number .....	4,337	260	429	1,340	6	1,137	543	7	179	58	186	192
Wages .....	\$1,813,638	\$107,604	\$163,724	\$595,041	\$3,450	\$509,436	\$215,975	\$1,100	\$61,929	\$23,537	\$54,305	\$77,537
Women, 16 years and over—												
Average number .....	378	6	21	71	1	133	133	.....	12	1	.....	.....
Wages .....	\$86,007	\$1,927	\$4,310	\$16,027	\$220	\$82,106	\$27,102	.....	\$4,150	\$165	.....	.....
Children, under 16 years—												
Average number .....	59	1	.....	38	.....	9	2	.....	.....	.....	4	5
Wages .....	\$11,495	\$243	.....	\$8,315	.....	\$1,367	\$320	.....	.....	.....	\$500	\$750
Average number of wage-earners, including pieceworkers, employed during each month:												
Men, 16 years and over—												
January .....	3,402	153	430	760	3	943	484	9	186	42	209	183
February .....	3,375	162	408	773	3	941	537	9	136	40	197	164
March .....	3,057	190	412	945	4	985	554	9	154	36	195	173
April .....	4,472	224	406	1,356	5	1,330	563	7	167	38	203	173
May .....	4,877	250	435	1,649	5	1,328	604	6	176	63	197	164
June .....	4,834	230	418	1,666	6	1,219	641	5	189	88	194	178
July .....	4,975	360	429	1,721	9	1,220	567	4	191	85	194	198
August .....	5,046	413	437	1,752	5	1,249	510	4	192	80	201	203
September .....	4,880	423	438	1,569	5	1,233	566	5	195	82	177	207
October .....	4,488	355	449	1,506	12	1,100	491	7	189	50	139	190
November .....	4,804	204	450	1,409	10	1,102	491	10	188	64	150	226
December .....	3,784	154	432	965	7	993	513	10	186	53	175	246
Women, 16 years and over—												
January .....	336	10	22	36	1	135	118	.....	13	1	.....	.....
February .....	325	10	23	46	1	118	118	.....	8	1	.....	.....
March .....	356	10	23	64	1	119	129	.....	9	1	.....	.....
April .....	403	6	21	80	1	149	132	.....	13	1	.....	.....
May .....	443	13	22	99	1	156	138	.....	13	1	.....	.....
June .....	384	2	17	98	1	125	127	.....	13	1	.....	.....
July .....	371	3	16	87	1	117	133	.....	13	1	.....	.....
August .....	372	3	19	82	1	123	130	.....	13	1	.....	.....
September .....	397	3	19	87	1	126	147	.....	13	1	.....	.....
October .....	385	3	23	67	1	143	134	.....	13	1	.....	.....
November .....	395	7	23	60	1	147	143	.....	13	1	.....	.....
December .....	369	5	22	50	.....	122	146	.....	13	1	.....	.....

<sup>1</sup> The report for the Twelfth Census is for the calendar year 1899.

<sup>2</sup> Includes establishments distributed as follows: Illinois, 1; Louisiana, 2; Massachusetts, 2; Pennsylvania, 1; Virginia, 1.

TABLE 6.—SALT MANUFACTURE, BY STATES AND TERRITORIES: 1900<sup>1</sup>—Continued.

	United States.	California.	Kansas.	Michigan.	Nevada.	New York.	Ohio.	Oklahoma.	Texas.	Utah.	West Virginia.	All other states. <sup>2</sup>
<b>Average number of wage-earners, including pieceworkers, employed during each month—Continued:</b>												
<b>Children, under 16 years—</b>												
January	17	1	.....	1	.....	4	1	.....	.....	.....	5	5
February	17	1	.....	1	.....	4	1	.....	.....	.....	5	5
March	27	1	.....	5	.....	10	1	.....	.....	.....	5	5
April	66	1	.....	44	.....	10	1	.....	.....	.....	5	5
May	69	1	.....	45	.....	11	2	.....	.....	.....	5	5
June	75	1	.....	51	.....	11	2	.....	.....	.....	5	5
July	82	1	.....	58	.....	11	2	.....	.....	.....	5	5
August	87	1	.....	64	.....	10	2	.....	.....	.....	5	5
September	67	1	.....	46	.....	10	3	.....	.....	.....	5	5
October	74	1	.....	53	.....	10	3	.....	.....	.....	5	5
November	68	1	.....	48	.....	10	3	.....	.....	.....	5	5
December	59	1	.....	36	.....	9	3	.....	.....	.....	5	5
<b>Miscellaneous expenses:</b>												
Total	\$760,539	\$30,990	\$52,798	\$193,915	\$1,110	\$329,701	\$93,342	\$350	\$6,255	\$24,065	\$9,838	\$18,176
Rent of works	\$42,340	\$9,458	\$500	\$650	.....	\$21,071	.....	\$246	.....	\$4,275	.....	\$5,540
Taxes, not including internal revenue	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rent of offices, insurance, interest, and all sundry expenses not hitherto included	\$71,067	\$2,504	\$5,793	\$29,217	\$110	\$19,069	\$6,656	\$69	\$2,235	\$402	\$2,404	\$2,603
Contract work	\$621,855	\$19,028	\$46,505	\$140,548	\$1,000	\$288,161	\$85,709	\$35	\$4,020	\$19,388	\$7,484	\$10,027
Materials used:	\$25,277	.....	.....	\$23,500	.....	\$800	\$977	.....	.....	.....	.....	.....
Total cost	\$3,335,922	\$116,712	\$327,890	\$1,095,780	\$2,876	\$958,302	\$423,875	\$1,235	\$141,342	\$31,759	\$57,398	\$178,753
Barrels, bags, sacks, cartons, etc., purchased	\$907,503	\$30,662	\$49,072	\$355,451	\$2,612	\$385,495	\$52,388	.....	\$44,793	\$25,288	\$4,700	\$38,042
Cooperage stock purchased	\$775,411	.....	\$124,061	\$352,014	.....	\$157,611	\$88,268	.....	\$13,000	.....	\$15,548	\$23,909
Cloth purchased for sacks	\$84,208	\$1,300	.....	\$3,708	.....	.....	\$58,470	.....	.....	.....	.....	.....
Fuel	\$901,248	\$10,404	\$119,036	\$274,056	\$167	\$305,864	\$149,239	\$230	\$40,399	\$3,874	\$25,500	\$61,740
Rent of power and heat	\$2,111	\$1,721	.....	.....	.....	\$140	.....	.....	.....	.....	.....	.....
Mill supplies	\$192,777	\$2,632	\$5,366	\$50,312	\$17	\$63,767	\$24,163	.....	\$4,150	\$931	\$1,600	\$38,839
All other materials	\$189,747	\$5,442	\$3,980	\$24,355	.....	\$35,534	\$32,222	\$25	\$5,000	\$866	\$10,050	\$16,223
Freight	\$122,917	\$2,551	\$25,375	\$35,885	\$90	\$6,341	\$18,125	.....	\$34,000	\$50	.....	.....
Products:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total value	\$7,966,897	\$380,193	\$717,449	\$2,460,538	\$12,696	\$2,693,691	\$818,200	\$4,329	\$256,900	\$139,488	\$150,292	\$328,121
Salt, including value of packages:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of barrels	15,187,819	640,420	1,645,350	5,206,510	7,671	4,894,852	1,460,516	4,856	312,436	235,671	221,584	558,003
Value	\$7,901,836	\$380,193	\$717,449	\$2,451,904	\$12,696	\$2,693,671	\$804,872	\$4,329	\$256,900	\$139,488	\$150,492	\$304,882
Table and dairy salt—number of barrels	1,866,058	128,779	56,524	233,713	3,000	1,028,893	375,789	1,729	31,286	1,485	5,000	.....
Common fine	6,856,126	33,571	47,157	4,076,497	357	1,054,619	887,445	1,773	220,000	.....	216,534	325,173
Common coarse	2,685,282	128,852	1,072,676	820,259	2,437	397,664	84,982	576	44,721	62,115	.....	20,980
Packers'	182,930	47,143	.....	19,119	.....	4,318	112,350	.....	.....	.....	.....	.....
Coarse solar	910,674	282,122	714	17,743	.....	523,724	.....	778	10,000	75,893	.....	.....
Rock salt, mined	2,543,679	250	468,029	.....	.....	1,866,550	.....	.....	.....	.....	.....	208,850
Milling	96,178	7,200	.....	.....	71	.....	.....	.....	.....	88,907	.....	.....
Other grades	86,592	12,503	250	89,179	1,786	19,174	.....	.....	6,429	7,271	.....	.....
Bromine—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pounds	270,437	.....	.....	27,584	.....	.....	62,041	.....	.....	.....	93,000	96,812
Value	\$64,921	.....	.....	\$8,554	.....	.....	\$13,325	.....	.....	.....	\$19,800	\$23,230
Value of all other products	\$140	.....	.....	\$20	.....	\$120	.....	.....	.....	.....	.....	.....
Value of packages included in foregoing	\$2,082,474	\$98,992	\$174,158	\$826,958	\$2,612	\$515,311	\$234,868	\$100	\$59,793	\$25,798	\$26,705	\$67,180
Comparison of products:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of establishments reporting for both years	114	17	5	39	3	25	8	4	2	3	3	5
Value for census year	\$5,000,810	\$270,143	\$310,899	\$1,627,181	\$12,696	\$1,658,958	\$341,200	\$4,329	\$241,300	\$135,788	\$110,692	\$287,174
Value for preceding business year	\$4,405,762	\$214,610	\$211,911	\$1,392,160	\$6,500	\$1,421,635	\$374,089	\$3,455	\$197,000	\$89,001	\$105,900	\$239,501
Processes employed:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Covers or ponds—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number	35,222	474	30	2,009	2	32,295	4	13	14	39	.....	342
Square feet	109,921,360	62,062,800	144,656	545,300	80,000	8,176,948	12,320	92,120	135,680	38,610,728	.....	110,808
Grainers	522	.....	13	273	.....	92	83	2	24	.....	23	12
Open pans	264	2	36	17	.....	43	38	21	.....	.....	.....	105
Kettles	411	.....	.....	6	.....	338	31	.....	.....	1	96	.....
Vacuum pans	40	1	.....	19	.....	9	5	.....	.....	.....	.....	6
Power:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number of establishments reporting	117	11	7	48	1	28	10	.....	2	4	4	2
Total horsepower	24,060	376	2,130	10,525	42	7,781	1,312	.....	56	108	320	1,410
Owned—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Engines—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Steam—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number	380	9	18	133	3	150	37	.....	3	2	16	9
Horsepower	23,104	238	2,052	10,149	42	7,776	1,052	.....	37	90	318	1,350
Gas or gasoline—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number	13	7	1	.....	.....	.....	.....	.....	2	.....	1	2
Horsepower	182	93	8	.....	.....	.....	.....	.....	19	.....	2	60
Water wheels—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....
Horsepower	8	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	.....
Electric motors—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number	8	.....	.....	6	.....	.....	2	.....	.....	.....	.....	.....
Horsepower	195	.....	.....	160	.....	.....	35	.....	.....	.....	.....	.....
Other power—	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Number	9	.....	1	4	.....	.....	3	.....	.....	1	.....	.....
Horsepower	521	.....	70	216	.....	.....	225	.....	.....	10	.....	.....
Furnished to other establishments	200	.....	.....	200	.....	.....	.....	.....	.....	.....	.....	.....
Rented horsepower	50	45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Establishments classified by number of persons employed, not including proprietors and firm members:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total number of establishments	159	24	8	53	3	38	10	4	3	5	4	7
No employees	2	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....
Under 5	22	6	1	7	1	2	.....	3	.....	.....	.....	1
5 to 20	53	9	3	19	1	15	1	1	1	2	.....	1
21 to 50	38	5	2	8	.....	8	4	.....	1	1	2	2
51 to 100	38	4	1	16	.....	8	3	.....	.....	1	2	3
101 to 250	6	.....	.....	.....	.....	4	1	.....	1	.....	.....	.....
251 to 500	5	.....	1	2	.....	1	1	.....	.....	.....	.....	.....

<sup>1</sup> The report for the Twelfth Census is for the calendar year 1899.<sup>2</sup> Includes establishments distributed as follows: Illinois, 1; Louisiana, 2; Massachusetts, 2; Pennsylvania, 1; Virginia, 1.