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WAGES AND HOURS OF LABOR IN COTTON GOODS MANUFACTURING AND FINISHING, 1916

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WAGES AND HOURS OF LABOR IN COTTON-GOODS MANUFACTURING AND FINISHING, 1916.

INTRODUCTION AND SUMMARY.

Rates of wages per hour, hours of labor per week, and full-time and actual weekly earnings in the cotton-goods manufacturing and finishing industry of the United States for the year 1916 are presented in this report. Separate figures are shown for cotton-goods manufacturing and cotton-goods finishing. Comparable figures for 1914, and summaries for each year except 1915, from 1907 to 1916 for cotton-goods manufacturing, and from 1911 to 1916 for cotton-goods finishing, are also shown. Data were not collected for 1915, nor for cotton-goods finishing prior to 1911.[1]

An extended description of the processes of the machines used and of the work done by the employees engaged in several occupations appears in a second part of this report, pages 140 to 258.

The average full-time weekly earnings of the employees in cotton-goods manufacturing in 1916 were 15 per cent higher than in 1914, 16 per cent higher than in 1913, 18 per cent higher than in 1912, 27 per cent higher than in 1911, and 28 per cent higher than in 1910.

The average full-time hours of labor per week in 1916 were the same as in 1914, 1 per cent lower than in 1912 and 1913, and 3 per cent lower than in 1910 and 1911.

The average rate of wages (or earnings) per hour in 1916 was 15 per cent higher than in 1914, 18 per cent higher than in 1913, 19 per cent higher than in 1912, 30 per cent higher than in 1911, and 32 per cent higher than in 1910.

In cotton-goods finishing, the average full-time weekly earnings in 1916 were 16 per cent higher than in 1914, 18 per cent higher than in 1912 and 1913, and 19 per cent higher than in 1911.

The average full-time hours per week in 1916 were 1 per cent less than in 1914, 3 per cent less than in 1912 and 1913, and 4 per cent less than in 1911.

[1] Previous reports of wages and hours of labor in cotton-goods manufacturing and finishing have been published by the bureau, as follows: Nineteenth Annual Report, covering 1890 to 1893; Bulletin No. 59 (July, 1905), covering 1903 and 1904; Bulletin No. 65 (July, 1906), covering 1904 and 1905; Bulletin No. 71 (July, 1907), covering 1905 and 1906; Bulletin No. 77 (July, 1908), covering 1906 and 1907; Bulletin No. 128 (August, 1913), covering 1907 to 1912; Bulletin No. 150 (May, 1914), covering 1912 and 1913; and Bulletin No. 190 (May, 1916), covering 1913 and 1914.

The average rate of wages (or earnings) per hour in 1916 was 16 per cent higher than in 1914, 20 per cent higher than in 1912 and 1913, and 23 per cent higher than in 1911.

Owing to the reduction of hours the increase in full-time weekly earnings in both branches of the industry was not quite so much as in rates of wages per hour.

In 1916 the average full-time weekly earnings of male employees in the selected occupations in cotton-goods manufacturing varied from $7.39 for drawing-frame tenders to $18.85 for mule spinners. The average full-time weekly earnings of female employees varied from $7.21 for trimmers or inspectors to $12.17 for beamer tenders.

In cotton-goods finishing the average full-time weekly earnings of male employees in the selected occupations varied from $9.72 for the dyehouse laborers to $30.37 for the skilled occupation of printers. Data were obtained for the wages of females in cotton-goods finishing for only one occupation—knotters—in which the average full-time weekly earnings in 1916 were $7.61.

The hours in this branch of the industry do not vary materially from the hours in cotton-goods manufacturing.

A summary of the rates of wages and hours of labor in the principal occupations of the two branches of the industry, is presented in Table 1 which follows. This table shows very clearly the general reduction of hours and increase of wage rates between 1907 and 1916, as well as the prevailing rates and hours of labor in 1916.

TABLE 1.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS IN THE PRINCIPAL OCCUPATIONS, 1907 TO 1916.

MANUFACTURING.

[The figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916 whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Per cent of employees whose full-time hours per week were—					Average rate of wages per hour.	Per cent of employees whose rates of wages per hour were—									Average full-time weekly earnings.
				54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60.		Under 8 cents.	8 and under 9 cents.	9 and under 10 cents.	10 and under 12 cents.	12 and under 14 cents.	14 and under 16 cents.	16 and under 18 cents.	18 and under 20 cents.	20 and under 25 cents.	25 cents and over.	
Card strippers, male:																				
36 establishments	1907	284	59.8	.....	.....	58	19	23	$0.131	.....	1	12	8	39	35	6	.....	.....	.....	$7.83
	1908	289	59.3	.....	.....	64	24	11	.124	.....	1	11	21	51	14	2	.....	.....	.....	7.35
	1909	287	59.3	.....	.....	61	29	10	.121	.....	1	10	27	57	5	.....	.....	.....	.....	7.18
	1910	318	57.8	.....	52	25	16	7	.124	.....	1	5	26	62	6	(1)	.....	.....	.....	7.17
59 establishments	1910	523	58.4	.....	48	23	13	16	.120	(1)	5	5	26	56	6	1	.....	.....	.....	6.95
	1911	515	58.3	.....	49	24	12	15	.122	(1)	4	5	26	58	5	1	.....	.....	.....	7.08
88 establishments	1911	786	58.3	.....	40	32	16	12	.121	(1)	3	4	29	59	5	1	.....	.....	.....	7.02
	1912	800	57.1	36	5	31	27	1	.134	.....	1	1	19	32	43	5	.....	.....	.....	7.62
88 establishments	1912	804	57.1	35	5	31	28	1	.134	.....	1	1	19	31	43	4	.....	.....	.....	7.62
	1913	845	57.2	34	4	34	27	1	.138	(1)	(1)	1	15	29	44	9	1	.....	.....	7.83
90 establishments	1913	871	57.1	36	4	33	27	1	.139	(1)	(1)	1	15	28	44	9	2	1	.....	7.89
	1914	904	56.3	38	26	7	29	(1)	.144	(1)	.....	1	13	25	40	19	2	(1)	.....	8.06
88 establishments	1914	869	56.1	40	27	7	26	(1)	.145	(1)	.....	1	10	25	42	20	2	(1)	.....	8.11
	1916	792	56.7	38	19	7	36	1	.166	.....	.....	.....	11	13	17	15	30	13	1	9.23
106 establishments	1916	903	56.7	36	19	10	34	1	.167	.....	.....	.....	10	14	18	13	28	15	1	9.27
Drawing-frame tenders, male:																				
34 establishments	1907	219	60.4	.....	.....	51	12	37	.100	26	6	8	34	25	2	.....	.....	.....	.....	6.05
	1908	234	59.7	.....	.....	47	40	13	.098	26	8	12	36	15	2	.....	.....	.....	.....	5.81
	1909	253	59.7	.....	.....	51	35	14	.099	20	9	19	37	14	1	.....	.....	.....	.....	5.93
	1910	253	58.5	.....	45	13	31	11	.098	22	7	21	32	16	2	.....	.....	.....	.....	5.74

[1] Less than 1 per cent.

TABLE 1.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS IN THE PRINCIPAL OCCUPATIONS, 1907 TO 1916—Continued.

MANUFACTURING—Continued.

[The figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916 whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Per cent of employees whose full-time hours per week were—					Average rate of wages per hour.	Per cent of employees whose rates of wages per hour were—									Average full-time weekly earnings.
				54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60.		Under 8 cents.	8 and under 9 cents.	9 and under 10 cents.	10 and under 12 cents.	12 and under 14 cents.	14 and under 16 cents.	16 and under 18 cents.	18 and under 20 cents.	20 and under 25 cents.	25 cents and over.	
Drawing-frame tenders, male—Concluded.																			
56 establishments	1910	436	59.5	.....	33	12	25	29	$0.096	17	13	28	29	11	1	.....	.....	.....	.....	$5.70
	1911	457	59.7	.....	32	10	26	32	.097	16	20	25	22	15	2	.....	.....	.....	.....	5.78
84 establishments	1911	750	59.5	.....	28	17	31	23	.097	18	17	25	26	12	3	(1)	.....	.....	.....	5.73
	1912	723	57.9	27	5	17	48	2	.108	14	5	10	36	25	7	2	(1)	.....	.....	6.22
82 establishments	1912	727	57.9	27	5	17	48	2	.108	15	5	10	35	25	7	2	(1)	.....	.....	6.20
	1913	624	58.0	26	6	12	55	1	.109	13	2	13	35	25	9	2	(1)	.....	.....	6.31
76 establishments	1913	572	58.4	20	5	13	60	1	.109	14	3	10	37	26	8	2	1	.....	.....	6.32
	1914	660	57.9	28	6	5	60	1	.116	9	4	8	30	31	13	4	1	(1)	.....	6.66
74 establishments	1914	649	57.8	30	6	6	58	1	.117	6	4	8	31	33	13	4	1	(1)	.....	6.75
	1916	662	58.2	22	6	6	65	1	.127	7	6	4	27	22	12	14	6	2	.....	7.32
89 establishments	1916	736	58.2	21	8	6	65	1	.128	7	6	4	27	23	12	15	5	2	(1)	7.39
Drawing-frame tenders, female:																			
19 establishments	1907	234	60.2	.....	.....	50	27	23	.093	20	16	18	43	3	.....	.....	.....	.....	.....	5.60
	1908	232	59.3	.....	.....	56	37	7	.093	31	19	11	23	17	.....	.....	.....	.....	.....	5.51
	1909	249	59.4	.....	.....	51	42	6	.091	28	22	12	32	7	.....	.....	.....	.....	.....	5.41
	1910	233	58.1	.....	29	47	21	3	.089	25	24	22	26	2	(1)	.....	.....	.....	.....	5.17
27 establishments	1910	359	58.2	.....	38	39	16	8	.090	22	20	29	27	1	(1)	.....	.....	.....	.....	5.20
	1911	344	57.7	.....	42	42	11	5	.094	20	17	25	28	10	(1)	.....	.....	.....	.....	5.41
45 establishments	1911	502	57.8	.....	34	51	11	4	.095	16	14	31	30	9	(1)	.....	.....	.....	.....	5.46
	1912	525	57.0	36	2	44	16	2	.110	4	5	11	62	13	4	1	(1)	.....	.....	6.23
	1913	594	56.8	37	2	45	16	.....	.114	3	2	7	59	20	7	2	1	.....	.....	6.48

32 establishments	1913	594	56.7	40	2	45	14	.....	.115	2	1	7	59	22	7	2	1	.....	6.50
	1914	574	55.5	43	32	11	14	.....	.118	3	1	6	44	35	6	4	1	(1)	6.51
31 establishments	1914	569	55.3	46	33	11	11	.....	.118	3	1	9	40	37	6	4	1	(1)	6.51
	1916	526	55.5	42	36	9	14	.....	.142	5	(1)	2	9	21	44	12	3	2	1	7.86
45 establishments	1916	667	55.7	40	32	13	15	.....	.136	5	1	2	15	21	41	10	3	1	(1)	7.53
Slubber tenders, male:																			
161 establishments	1916	839	57.5	24	19	10	47	1	.197	(1)	(1)	(1)	6	10	14	13	8	28	20	11.20
Slubber tenders, female:																			
17 establishments	1916	70	54.3	87	9	3	1	.....	.185	.....	.....	.....	4	7	20	10	23	31	4	10.05
Speeder tenders, male:																			
16 establishments	1907	201	63.9	.....	.....	.....	.....	100	.116	12	6	8	31	26	9	5	2	.....	.....	7.41
	1908	224	61.1	.....	.....	.....	76	24	.123	3	6	11	34	26	9	5	2	4	.....	7.52
	1909	258	61.2	.....	.....	.....	76	24	.129	2	4	7	26	31	20	8	2	1	.....	7.89
	1910	249	61.0	.....	.....	.....	77	23	.131	2	4	6	25	29	17	13	3	1	.....	7.99
32 establishments	1910	426	61.4	.....	.....	.....	64	36	.131	1	5	6	25	27	16	14	4	1	.....	8.03
	1911	396	61.4	.....	.....	.....	61	39	.135	(1)	5	5	22	30	17	11	9	1	.....	8.29
62 establishments	1911	623	61.2	.....	(1)	3	76	21	.135	1	5	5	21	27	22	11	7	1	.....	8.24
	1912	666	59.7	8	.....	2	87	3	.142	1	3	2	15	30	23	16	9	1	.....	8.47
61 establishments	1912	680	59.7	7	.....	2	88	3	.143	1	3	2	13	30	24	16	9	1	.....	8.52
	1913	745	59.8	5	.....	1	93	1	.145	(1)	(1)	3	16	25	29	16	7	4	(1)	8.72
55 establishments	1913	742	59.7	6	.....	(1)	93	1	.145	(1)	(1)	3	15	25	29	16	7	4	1	8.64
	1914	778	59.7	4	(1)	.....	95	.....	.151	1	(1)	1	9	25	29	20	9	5	1	9.04
58 establishments	1914	799	59.3	11	1	1	87	.....	.153	1	(1)	2	9	24	27	21	11	5	1	9.04
	1916	1,285	59.1	9	7	1	83	(1)	.164	(1)	1	1	6	17	27	20	10	13	4	9.67
98 establishments	1916	1,768	58.5	15	11	3	70	(1)	.174	(1)	1	1	5	14	23	18	10	21	7	10.12
Speeder tenders, female:																			
35 establishments	1907	721	59.3	.....	.....	64	21	15	.139	1	4	3	13	24	34	17	3	1	.....	8.24
	1908	694	59.1	.....	.....	63	30	7	.138	1	4	5	17	24	27	14	7	(1)	.....	8.16
	1909	714	59.1	.....	.....	63	31	6	.135	(1)	2	4	17	34	34	7	1	(1)	.....	7.98
	1910	800	57.6	.....	55	23	18	4	.134	1	3	5	16	36	27	8	4	1	.....	7.72
57 establishments	1910	1,175	57.8	.....	51	27	14	8	.133	1	3	5	17	35	28	8	3	1	.....	7.68
	1911	1,189	57.9	.....	50	26	14	10	.135	1	2	5	17	30	33	9	3	(1)	(1)	7.80
82 establishments	1911	1,753	57.9	.....	46	31	15	8	.136	1	2	5	16	29	34	10	3	(1)	(1)	7.86
	1912	1,784	56.6	44	6	30	18	2	.149	(1)	1	3	11	16	33	24	8	2	(1)	8.42

[1] Less than 1 per cent.

TABLE 1.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS IN THE PRINCIPAL OCCUPATIONS, 1907 TO 1916—Continued.

MANUFACTURING—Continued.

[The figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916 whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Per cent of employees whose full-time hours per week were—					Average rate of wages per hour.	Per cent of employees whose rates of wages per hour were—										Average full-time weekly earnings.
				54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60.		Under 8 cents.	8 and under 9 cents.	9 and under 10 cents.	10 and under 12 cents.	12 and under 14 cents.	14 and under 16 cents.	16 and under 18 cents.	18 and under 20 cents.	20 and under 25 cents.	25 cents and over.	
Speeder tenders, female—Concluded.																				
80 establishments	1912	1,791	56.7	44	7	28	19	2	$0.148	(1)	1	3	11	16	33	24	8	2	(1)	$8.38
	1913	1,855	56.7	43	5	32	18	1	.151	.....	1	2	10	17	35	25	7	3	(1)	8.55
79 establishments	1913	1,946	56.5	46	5	31	18	1	.153	.....	1	2	9	16	33	27	9	3	(1)	8.61
	1914	2,001	55.8	50	19	10	21	(1)	.155	(1)	1	2	9	14	29	30	10	5	(1)	8.61
76 establishments	1914	1,987	55.8	51	19	10	20	(1)	.155	(1)	1	2	9	14	30	30	10	5	(1)	8.62
	1916	2,578	55.6	52	21	9	17	(1)	.187	(1)	(1)	1	5	6	9	16	25	34	3	10.33
99 establishments	1916	2,902	55.7	49	23	11	17	(1)	.187	(1)	(1)	1	4	6	10	16	25	33	4	10.39
Spinners mule, male:																				
11 establishments	1907	199	58.6	.....	.....	69	31	.....	.234	.....	.....	.....	.....	1	1	4	12	54	29	13.71
	1908	193	58.4	.....	.....	82	18	.....	.225	.....	.....	.....	.....	.....	1	7	11	58	23	13.14
	1909	156	58.5	.....	.....	76	24	.....	.221	.....	.....	.....	.....	.....	3	6	11	68	12	12.93
	1910	131	56.8	.....	68	25	7	.....	.218	.....	.....	.....	.....	.....	1	8	21	61	9	12.38
14 establishments	1910	222	57.0	.....	53	43	4	.....	.219	.....	.....	.....	.....	.....	1	5	19	63	12	12.50
	1911	207	57.0	.....	53	43	4	.....	.225	.....	.....	.....	.....	1	2	3	16	64	14	12.82
16 establishments	1911	288	56.8	.....	62	35	3	.....	.255	.....	.....	.....	.....	1	2	2	11	51	33	14.44
	1912	266	55.7	44	24	32	.....	.....	.279	.....	.....	.....	.....	(1)	.....	2	8	36	55	15.48
	1913	258	55.6	47	23	29	.....	.....	.281	.....	.....	.....	.....	.....	(1)	3	5	33	58	15.58
14 establishments	1913	234	55.6	52	15	32	.....	.....	.286	.....	.....	.....	.....	.....	(1)	4	6	28	62	15.82
	1914	245	54.9	67	15	18	.....	.....	.291	.....	.....	.....	.....	(1)	.....	2	7	27	64	15.95
11 establishments	1914	215	54.9	73	7	20	.....	.....	.296	.....	.....	.....	.....	(1)	.....	1	8	28	62	16.20
	1916	196	54.8	76	4	20	.....	.....	.346	.....	.....	.....	.....	.....	.....	.....	1	7	92	18.94

17 establishments	1916	334	54.7	66	22	12	.....	.....	.345	.....	.....	.....	.....	.....	.....	.....	(1)	6	93	18.85
Spinners, frame, male:																				
25 establishments	1907	184	59.4	.....	.....	66	12	22	.124	12	4	16	17	17	13	17	1	3	.....	7.37
	1908	214	58.8	.....	.....	64	35	2	.119	8	3	5	38	24	13	7	2	.....	.....	7.00
	1909	188	58.9	.....	.....	72	22	6	.117	15	3	13	19	28	12	3	6	.....	.....	6.89
	1910	188	57.2	.....	58	25	16	1	.119	7	2	17	21	33	11	5	3	.....	.....	6.81
36 establishments	1910	261	57.2	.....	61	20	17	2	.120	7	2	13	21	40	10	5	2	.....	.....	6.83
	1911	420	57.0	.....	69	19	9	2	.125	2	3	5	23	44	19	3	1	.....	.....	7.08
46 establishments	1911	700	57.2	.....	57	33	7	3	.126	1	2	7	24	40	19	5	1	(1)	.....	7.18
	1912	679	56.2	52	.....	40	6	2	.148	1	1	3	17	18	25	15	15	5	.....	8.30
49 establishments	1912	564	56.7	42	.....	48	8	2	.144	1	1	4	19	19	27	15	11	3	.....	8.14
	1913	530	56.9	38	3	35	22	1	.143	3	4	4	16	21	22	14	11	5	.....	8.07
31 establishments	1913	503	56.8	41	2	37	19	1	.145	1	3	4	16	21	23	15	12	5	(1)	8.19
	1914	458	55.2	46	37	4	13	.....	.152	1	2	4	14	13	22	22	13	9	.....	8.37
38 establishments	1914	483	54.7	47	34	4	16	.....	.150	1	2	4	16	13	22	21	12	8	.....	8.18
	1916	547	56.6	41	18	2	39	.....	.169	9	3	3	8	10	9	11	12	27	8	9.47
64 establishments	1916	707	57.0	37	14	3	46	(1)	.156	15	4	4	9	9	9	10	11	22	7	8.80
Spinners, frame, female:																				
36 establishments	1907	2,317	61.0	.....	.....	43	13	44	.110	21	8	16	15	23	12	4	2	(1)	.....	6.71
	1908	2,114	59.9	.....	.....	42	44	14	.107	22	7	7	29	22	9	3	(1)	1	.....	6.41
	1909	2,408	59.8	.....	.....	46	39	15	.106	16	8	17	26	24	8	2	(1)	.....	.....	6.34
	1910	2,500	58.5	.....	41	18	31	10	.112	14	8	11	27	24	13	3	(1)	.....	.....	6.55
59 establishments	1910	3,704	59.0	.....	35	17	29	18	.108	18	9	12	23	23	11	3	(1)	(1)	.....	6.33
	1911	3,735	59.1	.....	34	17	28	20	.111	14	10	13	23	24	12	3	1	.....	.....	6.48
88 establishments	1911	5,981	59.1	.....	27	27	30	16	.111	12	10	13	26	25	11	3	(1)	(1)	.....	6.51
	1912	6,214	58.0	25	3	27	41	3	.123	8	5	8	23	21	26	6	2	(1)	.....	7.11
88 establishments	1912	6,364	58.0	27	3	26	41	3	.124	8	5	8	23	21	25	7	3	1	.....	6.98
	1913	6,561	57.9	27	3	27	42	2	.127	8	6	7	22	18	25	10	3	1	.....	7.29
90 establishments	1913	6,762	57.8	28	3	26	41	2	.128	8	5	7	22	18	25	10	4	1	(1)	7.33
	1914	6,906	56.9	33	20	5	42	(1)	.132	4	6	8	21	17	24	14	5	1	(1)	7.45
88 establishments	1914	6,766	56.8	34	20	5	40	(1)	.132	4	6	8	20	17	24	14	5	2	(1)	7.47
	1916	7,012	57.2	30	18	5	46	(1)	.147	8	4	6	14	13	9	12	21	11	1	8.32
105 establishments	1916	7,775	57.2	29	18	7	45	(1)	.148	8	4	6	14	13	10	12	20	12	1	8.39
Doffers, male:																				
100 establishments	1916	3,246	57.9	21	13	4	62	1	.136	11	7	6	20	10	13	14	11	7	1	7.77

[1] Less than 1 per cent.

TABLE 1.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS IN THE PRINCIPAL OCCUPATIONS, 1907 TO 1916—Continued.

MANUFACTURING—Continued.

[The figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916 whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Per cent of employees whose full-time hours per week were—					Average rate of wages per hour.	Per cent of employees whose rates of wages per hour were—									Average full-time weekly earnings.
				54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60.		Under 8 cents.	8 and under 9 cents.	9 and under 10 cents.	10 and under 12 cents.	12 and under 14 cents.	14 and under 16 cents.	16 and under 18 cents.	18 and under 20 cents.	20 and under 25 cents.	25 cents and over.	
Doffers, female:																				
23 establishments	1916	566	54.9	42	26	32	.....	.....	$0.162	.....	.....	5	4	15	25	25	18	5	3	$8.86
Spooler tenders, female:																				
105 establishments	1916	3,695	57.3	30	15	7	47	(1)	.136	9	7	8	17	13	14	12	9	9	1	7.70
Warper tenders, male:																				
29 establishments	1916	81	59.5	9	.....	.....	91	.....	.175	.....	.....	.....	4	11	33	21	9	11	11	10.39
Warper tenders, female:																				
83 establishments	1916	578	56.1	41	25	10	24	(1)	.181	.....	.....	(1)	5	13	12	21	19	24	6	10.13
Beamer tenders, male:																				
24 establishments	1916	338	56.0	62	5	.....	33	.....	.269	(1)	.....	.....	2	.....	3	8	9	15	63	14.93
Beamer tenders, female:																				
6 establishments	1916	94	54.8	37	60	.....	3	.....	.222	.....	.....	.....	.....	1	5	10	7	54	22	12.17
Slasher tenders, male:																				
35 establishments	1907	159	60.3	.....	.....	48	18	33	.183	.....	.....	1	19	10	4	6	5	52	4	11.03
	1908	158	59.6	.....	.....	47	44	9	.183	.....	.....	.....	8	20	11	5	18	23	15	10.91
	1909	167	59.4	.....	.....	49	44	7	.180	.....	.....	.....	6	20	13	4	20	29	9	10.69
	1910	166	58.1	.....	43	20	31	5	.181	.....	.....	.....	5	17	12	8	23	30	5	10.52
57 establishments	1910	276	58.4	.....	42	19	26	13	.178	.....	.....	.....	3	23	10	6	29	26	3	10.33
	1911	303	58.5	.....	40	18	27	15	.178	.....	.....	.....	3	21	13	7	27	27	3	10.32
85 establishments	1911	455	58.5	.....	33	32	23	12	.194	1	.....	.....	2	15	12	6	24	24	15	11.26
	1912	447	57.4	31	4	34	29	1	.215	.....	.....	.....	2	8	13	8	3	44	23	12.28

85 establishments	1912	449	57.4	31	4	34	30	1	.216	.....	.....	.....	2	8	13	8	3	43	23	12.34
	1913	472	57.6	28	3	33	35	1	.212	.....	.....	.....	5	5	19	7	3	36	23	12.12
87 establishments	1913	485	57.5	30	3	32	34	1	.212	.....	.....	.....	5	5	19	7	3	38	22	12.09
	1914	528	56.8	33	22	5	39	(1)	.211	.....	.....	.....	6	7	20	6	3	36	23	11.81
78 establishments	1914	499	56.6	35	24	6	35	(1)	.214	.....	.....	.....	6	6	17	6	3	38	24	11.99
	1916	499	56.6	36	23	6	35	(1)	.244	.....	.....	.....	5	5	10	9	3	14	53	13.62
98 establishments	1916	572	56.7	34	22	8	36	(1)	.243	.....	.....	.....	5	6	10	8	3	17	51	13.60
Drawers-in, female:																				
89 establishments	1916	934	56.1	43	24	7	25	(1)	.190	1	1	2	9	12	9	12	13	26	17	10.56
Loom fixers, male:																				
36 establishments	1907	631	60.8	.....	.....	44	17	39	.207	.....	.....	.....	(1)	3	23	12	5	35	23	12.59
	1908	619	59.7	.....	.....	45	44	11	.202	.....	.....	.....	.....	1	11	25	11	33	18	12.06
	1909	680	59.8	.....	.....	45	42	13	.197	.....	.....	.....	(1)	1	10	29	13	34	12	11.78
	1910	728	58.3	.....	44	18	28	9	.202	.....	.....	.....	.....	1	9	24	14	29	22	11.78
59 establishments	1910	1,267	58.7	.....	42	18	23	17	.200	.....	.....	.....	.....	1	17	19	9	40	14	11.64
	1911	1,314	58.6	.....	44	17	23	17	.203	.....	.....	.....	.....	1	16	18	9	41	15	11.81
88 establishments	1911	2,200	58.6	.....	33	30	25	12	.203	.....	.....	.....	.....	1	15	18	7	48	12	11.80
	1912	2,273	57.7	25	8	31	34	2	.224	.....	.....	.....	.....	.....	6	21	7	29	37	12.91
88 establishments	1912	2,290	57.7	25	8	31	34	2	.224	.....	.....	.....	.....	.....	6	21	7	29	37	12.84
	1913	2,321	57.6	26	8	30	35	2	.226	.....	.....	.....	.....	.....	3	22	7	26	42	12.93
90 establishments	1913	2,370	57.6	27	8	29	34	2	.227	.....	.....	.....	.....	.....	3	22	7	25	43	12.96
	1914	2,491	56.8	33	24	6	36	1	.233	.....	.....	.....	.....	.....	3	19	11	20	48	13.09
87 establishments	1914	2,441	56.7	34	24	6	34	2	.234	.....	.....	.....	.....	.....	2	18	11	20	49	13.17
	1916	2,486	56.9	33	23	6	35	3	.268	.....	.....	.....	.....	.....	(1)	9	6	24	61	15.10
104 establishments	1916	2,804	56.9	32	23	7	35	3	.269	.....	.....	.....	.....	.....	(1)	9	6	23	61	15.15
Weavers, male:																				
36 establishments	1907	2,769	60.3	.....	.....	50	18	31	.161	(1)	2	5	12	16	13	17	16	15	3	9.71
	1908	2,848	59.6	.....	.....	50	35	15	.160	(1)	1	4	15	16	15	14	16	17	1	9.54
	1909	3,123	59.8	.....	.....	48	37	15	.151	(1)	2	5	17	18	21	17	9	10	1	9.03
	1910	3,037	58.3	.....	49	11	30	9	.154	(1)	1	4	14	19	21	18	10	11	1	8.98
58 establishments	1910	5,334	58.8	.....	41	13	27	19	.151	(1)	1	4	16	21	21	17	10	9	1	8.83
	1911	5,012	58.8	.....	41	13	24	21	.155	(1)	1	3	12	19	23	18	11	11	1	9.07
88 establishments	1911	8,855	58.6	.....	35	27	25	13	.156	(1)	1	3	12	19	22	19	13	11	1	9.08
	1912	9,751	57.5	30	8	24	37	1	.169	.....	1	2	9	15	16	19	16	20	3	9.67
88 establishments	1912	9,775	57.5	30	8	24	37	1	.169	.....	1	2	9	15	16	19	16	19	3	9.67
	1913	9,316	57.7	27	7	24	42	1	.169	(1)	(1)	2	10	14	15	18	16	21	3	9.71

[1] Less than 1 per cent.

TABLE 1.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS IN THE PRINCIPAL OCCUPATIONS, 1907 TO 1916—Continued.

MANUFACTURING—Concluded.

[The figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916 whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employes.	Average full-time hours per week.	Per cent of employees whose full-time hours per week were—					Average rate of wages per hour.	Per cent of employees whose rates of wages per hour were—									Average full-time weekly earnings.
				54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60.		Under 8 cents.	8 and under 9 cents.	9 and under 10 cents.	10 and under 12 cents.	12 and under 14 cents.	14 and under 16 cents.	16 and under 18 cents.	18 and under 20 cents.	20 and under 25 cents.	25 cents and over.	
Weavers, male—Concluded.																			
89 establishments	1913	9,485	57.6	29	6	23	41	1	$0.170	(1)	(1)	2	10	14	15	18	16	21	3	$9.73
	1914	9,755	56.8	35	20	4	41	(1)	.176	(1)	1	2	7	12	15	17	16	25	5	9.93
86 establishments	1914	9,518	56.7	35	21	5	39	(1)	.176	(1)	1	2	7	11	15	17	16	25	5	9.96
	1916	9,027	56.8	36	18	5	40	(1)	.202	(1)	(1)	(1)	5	8	12	13	12	30	21	11.37
102 establishments	1916	10,410	56.8	36	19	6	39	(1)	.204	(1)	(1)	(1)	5	8	11	12	12	29	22	11.51
Weavers, female:																			
36 establishments	1907	3,724	59.5	.....	.....	61	22	17	.151	(1)	2	4	14	17	19	22	14	7	(1)	8.98
	1908	3,903	59.0	.....	.....	63	31	6	.152	(1)	2	4	15	20	20	20	12	6	(1)	8.97
	1909	3,930	59.1	.....	.....	60	34	6	.144	.....	2	5	18	22	26	18	6	4	(1)	8.51
	1910	3,905	57.6	.....	53	27	16	4	.151	.....	1	4	18	22	26	17	7	4	(1)	8.70
59 establishments	1910	6,334	57.8	.....	51	26	13	9	.147	(1)	2	4	19	22	25	15	8	4	(1)	8.47
	1911	6,242	57.8	.....	51	25	13	10	.144	(1)	1	4	18	24	25	16	7	5	(1)	8.31
88 establishments	1911	10,792	57.9	.....	39	41	13	7	.148	(1)	1	4	16	22	23	18	10	6	(1)	8.54
	1912	10,980	56.9	35	6	41	17	1	.163	.....	1	3	10	15	19	20	16	15	1	9.26
88 establishments	1912	10,998	56.9	35	6	41	17	1	.163	.....	1	3	10	15	19	20	16	15	1	9.26
	1913	11,105	56.8	38	5	39	17	1	.164	(1)	(1)	2	10	15	19	20	16	16	1	9.29
89 establishments	1913	11,236	56.7	39	5	39	17	1	.164	(1)	(1)	2	10	15	18	20	16	16	1	9.30
	1914	11,188	55.8	43	29	7	21	(1)	.167	(1)	1	3	10	13	17	20	16	19	2	9.30
86 establishments	1914	11,066	55.8	43	30	7	20	(1)	.168	(1)	1	3	10	13	17	20	16	19	3	9.31
	1916	10,505	55.7	45	30	6	19	(1)	.199	.....	(1)	(1)	5	8	10	11	15	37	14	11.05
103 establishments	1916	11,590	55.7	44	29	7	19	(1)	.200	.....	(1)	(1)	5	8	10	11	15	36	15	11.10

Trimmers or inspectors, female:																			
30 establishments	1907	251	60.4	.....	.....	41	28	31	.102	25	1	16	37	10	10	2	.....	.....	.....	6.16
	1908	261	60.0	.....	.....	39	46	15	.101	21	8	30	19	11	6	6	.....	.....	.....	6.06
	1909	285	59.6	.....	.....	40	52	8	.099	18	5	38	28	1	7	2	(1)	.....	.....	5.90
	1910	297	58.1	.....	43	26	25	7	.101	15	5	30	40	.....	7	2	1	.....	.....	5.87
46 establishments	1910	408	58.3	.....	39	25	27	9	.099	15	9	27	39	1	6	1	(1)	.....	.....	5.78
	1911	474	58.7	.....	35	25	27	13	.102	15	6	26	37	7	9	1	.....	(1)	.....	5.94
75 establishments	1911	712	58.7	.....	32	28	29	11	.103	16	9	20	33	13	7	2	(1)	(1)	.....	6.02
	1912	703	58.0	29	3	28	38	2	.112	10	9	9	37	21	8	6	1	(1)	.....	6.45
77 establishments	1912	708	57.7	29	3	27	38	2	.112	11	9	8	36	20	7	6	1	(1)	.....	6.41
	1913	687	57.9	27	5	26	39	4	.111	11	7	6	41	23	8	3	(1)	.....	.....	6.39
74 establishments	1913	698	57.8	28	4	26	38	4	.112	11	6	6	41	25	8	3	(1)	.....	.....	6.41
	1914	720	57.2	33	11	14	42	.....	.113	10	9	7	40	20	8	4	1	2	.....	6.41
73 establishments	1914	717	57.2	33	11	14	42	.....	.113	9	9	7	41	20	8	4	1	2	.....	6.42
	1916	844	56.9	33	16	16	34	1	.129	5	11	6	19	22	17	8	8	4	(1)	7.27
87 establishments	1916	992	56.7	33	17	17	32	1	.129	4	10	6	17	28	17	7	7	4	(1)	7.21
Other employees, male:																			
88 establishments	1914	29,861	57.5	27	24	5	41	3	.151	7	2	3	17	17	18	11	6	11	7	8.59
	1916	24,532	57.7	25	23	5	43	4	.174	5	2	2	16	11	10	16	11	13	15	9.98
106 establishments	1916	27,582	57.7	26	22	7	41	4	.175	4	2	2	15	11	11	15	11	13	15	10.03
Other employees, female:																			
88 establishments	1914	12,143	56.3	39	24	7	31	(1)	.123	18	6	6	17	18	14	11	6	4	1	6.89
	1916	5,175	55.7	40	31	5	23	1	.138	14	4	5	11	19	17	10	13	7	1	7.62
105 establishments	1916	5,976	55.7	42	29	5	23	(1)	.140	13	4	5	11	18	16	9	15	8	2	7.75

[1] Less than 1 per cent.

TABLE 1.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS IN THE PRINCIPAL OCCUPATIONS, 1907 TO 1916—Continued.

FINISHING.

[The figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916 whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Per cent of employees whose full-time hours per week were—							Average rate of wages per hour.	Per cent of employees whose rates of wages per hour were—												Average full-time weekly earnings.
				Over 48 and under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.		8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.	
Laborers, bleach house, male:																								
19 establishments	1911	688	57.5	.....	.....	.....	53	19	28	.....	$0.133	6	16	41	30	5	2	1	(1)	.....	.....	.....	.....	$7.63
	1912	748	57.2	.....	.....	9	45	25	21	.....	.137	5	8	43	33	9	1	2	.....	.....	.....	.....	.....	7.82
19 establishments	1912	714	57.7	.....	.....	1	43	26	29	.....	.137	4	7	46	33	8	1	2	.....	.....	.....	.....	.....	7.88
	1913	787	57.7	.....	.....	2	39	29	29	.....	.142	1	8	40	35	10	2	4	(1)	.....	.....	.....	.....	8.20
18 establishments	1913	801	57.4	.....	.....	11	35	25	29	.....	.142	(1)	7	41	36	9	3	4	.....	.....	.....	.....	.....	8.17
	1914	785	56.2	(1)	.....	44	14	20	21	.....	.143	(1)	6	39	39	12	3	1	.....	.....	.....	.....	.....	8.05
21 establishments	1914	920	56.0	(1)	.....	39	25	17	18	.....	.146	(1)	5	34	41	14	4	2	.....	.....	.....	.....	.....	8.19
	1916	867	55.7	(1)	.....	41	31	19	7	1	.175	.....	2	4	18	30	32	14	(1)	(1)	.....	.....	.....	9.76
24 establishments	1916	959	55.6	(1)	.....	42	34	17	7	1	.176	.....	1	4	16	33	32	14	(1)	(1)	.....	.....	.....	9.79
Laborers, dyehouse, male:																								
30 establishments	1911	1,229	57.7	.....	.....	.....	34	47	19	1	.144	(1)	5	30	47	16	1	1	.....	.....	.....	.....	.....	8.32
	1912	1,268	57.2	.....	.....	21	12	51	16	.....	.153	.....	3	12	43	38	2	1	.....	.....	.....	.....	.....	8.75
27 establishments	1912	1,179	57.4	.....	.....	18	11	55	17	.....	.154	.....	2	14	42	39	2	1	.....	.....	.....	.....	.....	8.83
	1913	1,120	57.4	.....	.....	19	12	51	18	.....	.153	(1)	2	19	36	40	2	(1)	.....	.....	.....	.....	.....	8.77
33 establishments	1913	1,167	57.5	.....	.....	25	4	44	28	.....	.149	(1)	8	18	35	37	2	(1)	.....	.....	.....	.....	.....	8.56
	1914	1,267	56.1	(1)	.....	34	31	12	23	.....	.153	1	8	16	34	32	8	1	(1)	.....	.....	.....	.....	8.55
32 establishments	1914	1,275	56.0	(1)	.....	37	31	12	20	.....	.153	1	8	15	33	34	7	1	(1)	.....	.....	.....	.....	8.57
	1916	1,214	56.3	.....	.....	33	32	13	20	3	.174	1	9	4	11	20	35	20	(1)	.....	.....	.....	.....	9.76
37 establishments	1916	1,264	56.4	.....	.....	32	31	12	22	3	.173	1	8	7	11	19	34	20	(1)	.....	.....	.....	.....	9.72

Laborers, color mixing, male:																							
12 establishments	1911	263	57.7				40	34	25		.146		(1)	30	53	13	3	1					8.45
	1912	270	57.4			14	24	38	24		.147		1	27	56	12	3	1					8.45
12 establishments	1912	243	58.4				18	42	40		.145		1	35	53	7	3	1					8.46
	1913	246	58.6				15	43	42		.149		(1)	25	57	11	5	2					8.73
12 establishments	1913	288	57.5			24	13	27	36		.151		(1)	21	59	14	4	1					8.67
	1914	317	56.8			38	10	29	22	1	.153	(1)	1	14	63	16	3	2					8.66
11 establishments	1914	295	56.5			41	11	31	16	1	.152	(1)	(1)	15	62	17	3	2					8.61
	1916	255	56.2			46	12	24	18		.178			1	16	30	40	13					9.99
15 establishments	1916	283	56.1			42	20	22	17		.182			1	14	27	37	21	(1)					10.17
Engravers, male:																							
12 establishments	1911	179	55.8	3	15		40	42			.479								5	64	30	1	26.68
	1912	166	55.4	4	14	22	19	42			.483								4	57	39	1	26.75
11 establishments	1912	123	55.8	5	19		19	57	1		.488								1	63	34	2	27.20
	1913	107	55.9	6	25		18	35	17		.484								3	65	30	2	27.01
11 establishments	1913	124	54.9	5	22	32	15	11	15		.482								8	52	38	2	26.41
	1914	123	53.0	8	43	44	5				.510								1	32	66	2	27.01
10 establishments	1914	118	53.0	8	41	46	5				.511								1	31	66	2	27.05
	1916	107	53.1	6	41	48	6				.526								2	24	68	9	27.89
11 establishments	1916	122	53.3	5	36	42	17				.533								2	21	67	10	28.42
Printers, male:																							
12 establishments	1911	156	56.9				55	37	8		.489							10	3	8	79		27.79
	1912	164	56.7			13	40	38	9		.487							11	5	8	76		27.54
12 establishments	1912	137	57.4				38	48	14		.472							13	7	16	64		27.04
	1913	133	57.1				42	48	10		.470						3	13	6	8	70		26.78
12 establishments	1913	147	56.3			22	38	31	9		.479						3	12	5	7	73		26.85
	1914	159	55.5			43	29	28	1		.518						2	10	5	4	75	4	28.57
11 establishments	1914	152	55.5			45	26	29	1		.516						2	11	5	4	74	5	28.51
	1916	155	55.2			46	34	19	2		.548							3	13	3	43	38	30.11
13 establishments	1916	176	55.2			40	41	16	2		.553							3	11	3	45	38	30.37
Calender tenders, male:																							
20 establishments	1911	412	57.9				29	49	23		.149		4	19	52	24	(1)	(1)					8.61
	1912	409	57.8			3	27	49	21		.151		7	14	44	31	3	1					8.73
20 establishments	1912	422	58.1			1	23	48	28		.150		7	15	46	29	1	1					8.72
	1913	395	57.8			4	24	49	23		.153			15	52	29	4	1					8.85

[1] Less than 1 per cent.

TABLE 1.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS IN THE PRINCIPAL OCCUPATIONS, 1907 to 1916—Concluded.

FINISHING—Concluded.

[The figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916 whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Per cent of employees whose full-time hours per week were—						Average rate of wages per hour.	Per cent of employees whose rates of wages per hour were—												Average full-time weekly earnings.
				Over 48 and under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.		8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.	
Calender tenders, male—Concluded.																							
19 establishments	1913	344	57.7	....	....	5	25	40	27	....	$0.156	....	....	10	50	33	6	1	....	....	....	....	....	$8.98
	1914	359	56.7	....	....	38	14	17	31	....	.161	....	....	9	28	52	8	3	(1)	....	....	....	....	9.12
19 establishments	1914	359	56.7	....	....	38	14	17	31	....	.161	....	....	9	28	52	8	3	(1)	....	....	....	....	9.12
	1916	326	55.9	....	....	42	27	18	13	....	.192	....	....	4	5	20	33	35	2	1	....	....	....	10.73
23 establishments	1916	363	55.8	....	....	38	34	16	12	....	.195	....	....	4	4	19	31	40	2	1	....	....	....	10 84
Folders, male:																							
19 establishments	1911	268	57.4	....	....	....	59	14	27	....	.230	....	....	1	10	5	17	35	22	10	....	....	....	13.16
	1912	277	57.2	....	....	8	46	25	21	....	.246	....	....	....	10	3	10	23	39	13	1	1	....	14.06
19 establishments	1912	276	57.7	....	....	4	40	25	32	....	.243	....	....	....	10	3	9	30	33	13	1	1	....	13.99
	1913	250	57.1	....	....	17	41	14	28	....	.250	....	....	....	....	4	5	38	40	13	....	....	....	14.20
19 establishments	1913	266	56.8	....	....	24	38	11	27	....	.247	....	....	....	....	4	5	42	37	12	....	....	....	13.95
	1914	255	56.0	....	....	59	7	9	25	....	.273	....	....	....	1	3	4	24	27	39	2	....	....	15.18
20 establishments	1914	260	55.7	....	....	60	13	8	19	....	.272	....	....	....	1	3	3	25	27	38	2	....	....	15.05
	1916	300	54.8	....	....	66	24	7	3	....	.306	....	....	....	1	(1)	1	25	11	55	5	(1)	98	16.72
24 establishments	1916	361	54.8	....	....	58	34	6	2	....	.303	....	....	....	1	1	1	24	14	55	4	(1)	....	16.56
Knotters, female:																							
19 establishments	1911	281	56.9	....	....	....	65	19	16	....	.116	26	47	8	6	11	1	(1)	....	....	....	....	....	6.59
	1912	296	56.1	....	....	28	46	14	13	....	.121	23	37	19	5	12	2	1	1	....	....	....	....	6.78

19 establishments	1912	300	56.5	.....	.....	25	39	13	22	.....	.121	17	45	18	5	12	2	1	1	.....	.....	.....	.....	6.82
	1913	274	55.9	.....	.....	39	35	16	11	.....	.118	15	46	22	9	8	.....	(1)	.....	.....	.....	.....	.....	6.54
19 establishments	1913	279	55.8	.....	.....	40	34	16	10	.....	.117	14	45	27	5	8	.....	(1)	.....	.....	.....	.....	.....	6.51
	1914	282	54.6	.....	.....	83	6	6	5	.....	.122	5	46	27	16	4	2	(1)	.....	.....	.....	.....	.....	6.69
20 establishments	1914	285	54.6	.....	.....	83	6	6	5	.....	.122	5	46	27	16	4	2	(1)	.....	.....	.....	.....	.....	6.66
	1916	317	54.4	.....	.....	87	8	3	3	.....	.139	.....	19	45	24	5	3	5	1	.....	.....	.....	.....	7.57
24 establishments	1916	353	54.4	.....	.....	86	9	2	3	.....	.140	.....	17	47	22	7	3	4	1	.....	.....	.....	.....	7.61
Other employees, male:																								
23 establishments	1914	7,546	56.9	1	1	50	8	13	23	4	.172	1	2	18	34	16	7	10	7	3	1	(1)	(1)	9.78
	1916	7,923	56.2	1	1	49	18	16	11	3	.205	(1)	1	5	11	21	24	22	8	7	1	(1)	(1)	11.48
26 establishments	1916	8,655	56.1	1	1	47	24	15	10	3	.206	(1)	1	5	10	21	24	24	8	7	1	(1)	(1)	11.51
Other employees, female:																								
19 establishments	1914	1,857	54.4	1	(1)	2	81	8	4	4	.136	7	25	34	13	7	7	6	1	(1)	.....	.....	.....	7.38
	1916	1,961	54.2	2	1	78	10	7	1	.....	.161	(1)	8	30	20	14	9	15	3	(1)	.....	.....	.....	8.72
22 establishments	1916	2,231	54.2	2	1	81	9	6	1	.....	.160	(1)	7	30	25	13	8	14	3	(1)	.....	.....	.....	8.65

[1] Less than 1 per cent.

As wages and hours differ in different establishments, the inclusion or exclusion of any establishment in a group may raise or lower the average for the group, so that exact comparisons can be made between the actual wages and hours shown for different years only when the data for the several years are from identical establishments. To illustrate: In the last column of Table 1 it is seen that in 46 establishments the full-time weekly earnings of male frame spinners increased from $7.18 in 1911 to $8.30 in 1912. In 49 establishments there was a decrease from $8.14 in 1912 to $8.07 in 1913. It would not be a proper comparison, however, to state that weekly earnings had increased from $7.18 in 1911 to $8.07 in 1913, because of the change in the number of establishments and of the difference in the average for 1912 in the two groups of establishments.

To aid in making comparisons where the establishments change more or less from year to year, relative or index numbers have been computed for full-time hours per week, rates of wages per hour, and full-time weekly earnings for each selected occupation and for each branch of the industry, for the years 1910 to 1916, inclusive. These relative numbers, which are based on the averages in Table 1, are shown in Table 2, and are simply percentages in which the figures for 1916 are taken as the base, or 100 per cent. Thus the facts in percentage form for each preceding year are brought into direct comparison with the facts for the latest year available, namely, 1916. The index numbers for each branch of the industry as a unit follow those for the several occupations

TABLE 2.—RELATIVE FULL-TIME HOURS PER WEEK, RATES OF WAGES PER HOUR, AND FULL-TIME WEEKLY EARNINGS, 1910 TO 1916, TOGETHER WITH PER CENT OF INCREASE OR DECREASE IN SPECIFIED YEARS, IN THE PRINCIPAL OCCUPATIONS AND IN THE INDUSTRY.

MANUFACTURING.

Occupation, sex, and year.	Hours per week.			Wages per hour.			Weekly earnings.		
	Relative full-time hours per week (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative rate of wages per hour (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative full-time weekly earnings (1916=100).	Per cent of increase (+) or decrease (−) in—	
		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.
Card strippers, male:									
1910	102	−2	.....	73	+37	.....	76	+32	.....
1911	102	−2	(1)	74	+35	+ 1	77	+30	+ 1
1912	100	(1)	−2	82	+22	+11	84	+19	+ 9
1913	100	(1)	(1)	84	+19	+ 2	86	+16	+ 2
1914	99	+1	−1	87	+15	+ 4	88	+14	+ 2
1916	100	.....	+1	100	.....	+15	100	.....	+14
Drawing-frame tenders, male:									
1910	102	−2	.....	76	+32	.....	78	+28	.....
1911	103	−3	+1	77	+30	+ 1	79	+27	+ 1
1912	100	(1)	−3	86	+16	+12	86	+16	+ 9
1913	100	(1)	(1)	87	+15	+ 1	87	+15	+ 1
1914	99	+1	−1	92	+ 9	+ 6	92	+ 9	+ 6
1916	100	.....	+1	100	.....	+ 9	100	.....	+ 9
Drawing-frame tenders, female:									
1910	104	−4	.....	65	+54	.....	67	+49	.....
1911	104	−4	(1)	68	+47	+ 5	70	+43	+ 4
1912	102	−2	−2	78	+28	+15	80	+25	+14
1913	102	−2	(1)	81	+23	+ 4	83	+20	+ 4
1914	100	(1)	−2	83	+20	+ 2	83	+20	(1)
1916	100	.....	(1)	100	.....	+20	100	.....	+20
Feeder tenders, male:									
1910	103	−3	.....	82	+22	.....	82	+22	.....
1911	103	−3	(1)	84	+19	+ 2	85	+18	+ 4
1912	100	(1)	−3	88	+14	+ 5	87	+15	+ 2
1913	100	(1)	(1)	90	+11	+ 2	89	+12	+ 2
1914	100	(1)	(1)	93	+ 8	+ 3	93	+ 8	+ 4
1916	100	.....	(1)	100	.....	+ 8	100	.....	+ 8
Feeder tenders, female:									
1910	104	−4	.....	72	+39	.....	75	+33	.....
1911	104	−4	(1)	73	+37	+ 1	76	+32	+ 1
1912	102	−2	−2	80	+25	+10	82	+22	+ 8
1913	102	−2	(1)	82	+22	+ 3	83	+20	+ 1
1914	100	(1)	−2	83	+20	+ 1	83	+20	(1)
1916	100	.....	(1)	100	.....	+20	100	.....	+20
Spinners, mule, male:									
1910	104	−4	.....	74	+35	.....	77	+30	.....
1911	104	−4	(1)	76	+32	+ 3	79	+27	+ 3
1912	102	−2	−2	83	+20	+ 9	84	+19	+ 6
1913	101	−1	−1	84	+19	+ 1	85	+18	+ 1
1914	100	(1)	−1	86	+16	+ 2	86	+16	+ 1
1916	100	.....	(1)	100	.....	+16	100	.....	+16
Spinners, frame, male:									
1910	101	−1	.....	70	+43	.....	71	+41	.....
1911	101	−1	(1)	73	+37	+ 4	74	+35	+ 4
1912	99	+1	−2	85	+18	+16	85	+18	+15
1913	99	+1	(1)	85	+18	(1)	85	+18	(1)
1914	97	+3	−2	89	+12	+ 5	86	+16	+ 1
1916	100	.....	+3	100	.....	+12	100	.....	+16

[1] No change.

TABLE 2.—RELATIVE FULL-TIME HOURS PER WEEK, RATES OF WAGES PER HOUR, AND FULL-TIME WEEKLY EARNINGS, 1910 TO 1916, TOGETHER WITH PER CENT OF INCREASE OR DECREASE IN SPECIFIED YEARS, IN THE PRINCIPAL OCCUPATIONS AND IN THE INDUSTRY—Continued.

MANUFACTURING—Continued.

Occupation, sex, and year.	Hours per week.			Wages per hour.			Weekly earnings.		
	Relative full-time hours per week (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative rate of wages per hour (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative full-time weekly earnings (1916=100).	Per cent of increase (+) or decrease (−) in—	
		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.
Spinners, frame, female:									
1910	103	−3	.....	75	+33	.....	76	+32	.....
1911	103	−3	(1)	77	+30	+ 3	77	+30	+ 1
1912	101	−1	−2	85	+18	+10	85	+18	+10
1913	101	−1	(1)	87	+15	+ 2	88	+14	+ 4
1914	99	+1	−2	90	+11	+ 3	90	+11	+ 2
1916	100	.....	+1	100	.....	+11	100	.....	+11
Slasher tenders, male:									
1910	103	−3	.....	81	+23	.....	84	+19	.....
1911	103	−3	(1)	81	+23	(1)	84	+19	(1)
1912	101	−1	−2	90	+11	+11	92	+ 9	+10
1913	101	−1	(1)	88	+14	− 2	90	+11	− 2
1914	100	(1)	−1	88	+14	(1)	88	+14	− 2
1916	100	.....	(1)	100	.....	+14	100	.....	+14
Loom fixers, male:									
1910	103	−3	.....	75	+33	.....	77	+30	.....
1911	103	−3	(1)	76	+32	+ 1	78	+28	+ 1
1912	101	−1	−2	84	+19	+11	86	+16	+10
1913	101	−1	(1)	85	+18	+ 1	86	+16	(1)
1914	100	(1)	−1	87	+15	+ 2	87	+15	+ 1
1916	100	.....	(1)	100	.....	+15	100	.....	+15
Weavers, male:									
1910	103	−3	.....	76	+32	.....	78	+28	.....
1911	103	−3	(1)	78	+28	+ 3	80	+25	+ 3
1912	101	−1	−2	84	+19	+ 8	85	+18	+ 6
1913	101	−1	(1)	84	+19	(1)	86	+16	+ 1
1914	100	(1)	−1	87	+15	+ 4	88	+14	+ 2
1916	100	.....	(1)	100	.....	+15	100	.....	+14
Weavers, female:									
1910	104	−4	.....	76	+32	.....	79	+27	.....
1911	104	−4	(1)	75	+33	− 1	77	+30	− 3
1912	102	−2	−2	82	+22	+ 9	84	+19	+ 9
1913	102	−2	(1)	83	+20	+ 1	84	+19	(1)
1914	100	(1)	−2	84	+19	+ 1	84	+19	(1)
1916	100	.....	(1)	100	.....	+19	100	.....	+19
Trimmers or inspectors, female:									
1910	102	−2	.....	79	+27	.....	80	+25	.....
1911	102	−2	(1)	81	+23	+ 3	83	+20	+ 4
1912	101	−1	−1	88	+14	+ 9	89	+12	+ 7
1913	102	−2	+1	87	+15	− 1	88	+14	− 1
1914	101	−1	−1	88	+14	+ 1	88	+14	(1)
1916	100	.....	−1	100	.....	+14	100	.....	+14
Other employees male:									
1914	100	(1)	.....	87	+15	.....	86	+16	.....
1916	100	.....	(1)	100	.....	+15	100	.....	+16
Other employees female:									
1914	101	−1	.....	89	+12	.....	90	+11	.....
1916	100	.....	−1	100	.....	+12	100	.....	+11

(1) No change.

TABLE 2.—RELATIVE FULL-TIME HOURS PER WEEK, RATES OF WAGES PER HOUR, AND FULL-TIME WEEKLY EARNINGS, 1910 TO 1916, TOGETHER WITH PER CENT OF INCREASE OR DECREASE IN SPECIFIED YEARS, IN THE PRINCIPAL OCCUPATIONS AND IN THE INDUSTRY—Continued.

MANUFACTURING—Concluded.

Occupation, sex, and year.	Hours per week.			Wages per hour.			Weekly earnings.		
	Relative full-time hours per week (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative rate of wages per hour (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative full time weekly earnings (1916=100).	Per cent of increase (+) or decrease (−) in—	
		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.
The industry:									
1910	103	−3	.....	76	+32	.....	78	+28	.....
1911	103	−3	(1)	77	+30	+ 1	79	+27	+ 1
1912	101	−1	−2	84	+19	+ 9	85	+18	+ 8
1913	101	−1	(1)	85	+18	+ 1	86	+16	+ 1
1914	100	(1)	−1	87	+15	+ 2	87	+15	+ 1
1916	100	.....	(1)	100	.....	+15	100	.....	+15

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Laborers, bleach house, male:									
1911	103	−3	.....	78	+28	.....	80	+25	.....
1912	103	−3	(1)	80	+25	+ 3	82	+22	+ 3
1913	103	−3	(1)	83	+20	+ 4	85	+18	+ 4
1914	101	−1	−2	83	+20	(1)	84	+19	− 1
1916	100	.....	−1	100	.....	+20	100	.....	+19
Laborers, dyehouse, male:									
1911	103	−3	.....	81	+23	.....	84	+19	.....
1912	102	−2	−1	86	+16	+ 6	89	+12	+ 6
1913	102	−2	(1)	86	+16	(1)	88	+14	− 1
1914	99	+1	−3	88	+14	+ 2	88	+14	(1)
1916	100	.....	+1	100	.....	+14	100	.....	+14
Laborers, color mixing, male:									
1911	102	−2	.....	81	+23	.....	84	+19	.....
1912	101	−1	−1	82	+22	+ 1	84	+19	(1)
1913	102	−2	+1	84	+19	+ 2	86	+16	+ 2
1914	101	−1	−1	85	+18	+ 1	86	+16	(1)
1916	100	.....	−1	100	.....	+18	100	.....	+16
Engravers, male:									
1911	104	−4	.....	92	+ 9	.....	95	+ 5	.....
1912	103	−3	−1	93	+ 8	+ 1	95	+ 5	(1)
1913	103	−3	(1)	92	+ 9	− 1	95	+ 5	(1)
1914	100	(1)	−3	97	+ 3	+ 5	97	+ 3	+ 2
1916	100	.....	(1)	100	.....	+ 3	100	.....	+ 3
Printers, male:									
1911	103	−3	.....	88	+14	.....	91	+10	.....
1912	102	−2	−1	87	+15	− 1	90	+11	− 1
1913	102	−2	(1)	87	+15	(1)	89	+12	− 1
1914	101	−1	−1	94	+ 6	+ 8	95	+ 5	+ 7
1916	100	.....	−1	100	.....	+ 6	100	.....	+ 5
Calender tenders, male:									
1911	104	−4	.....	79	+27	.....	81	+23	.....
1912	104	−4	(1)	80	+25	+ 1	82	+22	+ 1
1913	103	−3	−1	81	+23	+ 1	84	+19	+ 2
1914	101	−1	−2	84	+19	+ 4	85	+18	+ 1
1916	100	.....	−1	100	.....	+19	100	.....	+18

(1) No change.

TABLE 2.—RELATIVE FULL-TIME HOURS PER WEEK, RATES OF WAGES PER HOUR, AND FULL-TIME WEEKLY EARNINGS, 1910 TO 1916, TOGETHER WITH PER CENT OF INCREASE OR DECREASE IN SPECIFIED YEARS, IN THE PRINCIPAL OCCUPATIONS AND IN THE INDUSTRY—Concluded.

FINISHING—Concluded.

Occupation, sex, and year.	Hours per week.			Wages per hour.			Weekly earnings.		
	Relative full-time hours per week (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative rate of wages per hour (1916=100).	Per cent of increase (+) or decrease (−) in—		Relative full-time weekly earnings (1916=100).	Per cent of increase (+) or decrease (−) in—	
		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.		1916 as compared with each specified year.	Each specified year as compared with year preceding.
Folders, male:									
1911	**105**	−5	.....	**73**	+37	.....	**76**	+32	.....
1912	**104**	−4	−1	**78**	+28	+ 7	**81**	+23	+ 7
1913	**103**	−3	−1	**80**	+25	+ 3	**83**	+20	+ 2
1914	**102**	−2	−1	**89**	+12	+11	**90**	+11	+ 8
1916	**100**	.....	−2	**100**	.....	+12	**100**	.....	+11
Knotters, female:									
1911	**105**	−5	.....	**83**	+20	.....	**87**	+15	.....
1912	**104**	−4	−1	**86**	+16	+ 4	**89**	+12	+ 2
1913	**103**	−3	−1	**84**	+19	− 2	**86**	+16	− 3
1914	**100**	(1)	−3	**88**	+14	+ 5	**88**	+14	+ 2
1916	**100**	.....	(1)	**100**	.....	+14	**100**	.....	+14
Other employees, male:									
1914	**101**	−1	.....	**84**	+19	.....	**85**	+18	.....
1916	**100**	.....	−1	**100**	.....	+19	**100**	.....	+18
Other employees, female:									
1914	**100**	(1)	.....	**84**	+19	.....	**85**	+18	.....
1916	**100**	.....	(1)	**100**	.....	+19	**100**	.....	+18
The industry:									
1911	**104**	−4	.....	**81**	+23	.....	**84**	+19	.....
1912	**103**	−3	−1	**83**	+20	+ 2	**85**	+18	+ 1
1913	**103**	−3	(1)	**83**	+20	(1)	**85**	+18	(1)
1914	**101**	−1	−2	**86**	+16	+ 4	**86**	+16	+ 1
1916	**100**	.....	−1	**100**	.....	+16	**100**	.....	+16

(1) No change.

The relative number for each year preceding 1916 is the per cent that the average for that year is of the average for 1916. For example: Table 2 shows that relatively the full-time weekly earnings of card strippers in 1910 were but 76 per cent of their weekly earnings in 1916. In 1911 they had increased to 77 per cent, in 1912 to 84 per cent, in 1913 to 86 per cent, and in 1914 to 88 per cent of their earnings in 1916.

In addition to the relative numbers, which are shown in boldfaced type, Table 2 shows the per cent of increase or decrease in 1916 as compared with each preceding year back to 1910, and also the per cent of increase or decrease in each year as compared with the year immediately preceding.

The method used in computing the relative or index numbers may best be explained by an illustration. Take the rates of wages per hour of card strippers, for example:

RATES OF WAGES, PER HOUR, OF CARD STRIPPERS.

	Number of identical establishments.	1910	1911	1912	1913	1914	1916
Rates of wages per hour	59	$0.120	$0.122	.....	.....	.....	.....
	88	.....	.121	$0.134	.....	.....	.....
	88	.....	.....	.134	$0.138	.....	.....
	90	.....	.....	.....	.139	$0.144	.....
	88	.....	.....	.....	.....	.145	$0.166
Relative rate of wages per hour	.....	73	74	82	84	87	100

The rate per hour for 1916 is taken as the base (100); then $0.145 divided by $0.166 equals .87, or expressed as a whole number percentage 87, which becomes the relative for 1914. The ratio of 1913 to 1914 is $0.139 to $0.144. The relative for 1914, just determined (87), multiplied by $0.139 and the result divided by $0.144 equals 84, the relative for 1913. The ratio of 1912 to 1913 is $0.134 to $0.138. The relative for 1913, just determined (84), multiplied by $0.134 and the result divided by $0.138 equals 82, the relative for 1912. In like manner the relative numbers are computed for the preceding years. For greater accuracy the relative numbers were carried to one decimal place in the process of computation, but are entered in the table to the nearest whole number.

The reasons for using the data for the most recent year available as the base for relative numbers are: First, the most recent data are believed to be the most accurate and representative; second, comparisons are more often made between recent years than between any others; and, third, this method permits the inclusion of new or additional occupations that it may be found desirable to introduce, and the computing of relatives for such occupations for the years for which data are available, on the same base as that upon which the relatives for other occupations are computed. Thus relative numbers can be shown for "other employees" for 1914 and 1916, which could not be done if 1910 were taken as the base year, no data being available for that year.

Table 3 is a summary showing by States the number and per cent of employees working certain classified percentages of full time, during the period for which data were obtained.

This table is divided into two sections for each branch of the industry, one relating to employees whose time was reported for one week, and the other relating to those whose time was reported for two weeks in such a way that it could not be divided. In a majority of establishments a part of the force is on a one-week

pay roll and a part on a two-week pay roll, hence such plants have a representation in each section of the table.

A few establishments having other than a one-week or two-week pay roll are omitted from this table, as are also some employees for whom data were incomplete.

TABLE 3.—NUMBER AND PER CENT OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME DURING ONE PAY ROLL PERIOD, 1916, BY STATES.

MANUFACTURING.

One-week pay rolls.

State.	Number of establishments.	Number of employees.	Number and per cent of employees working each classified per cent of full time.									
			100 per cent and over.		Under 100 per cent.		Under 75 per cent.		Under 50 per cent.		Under 25 per cent.	
			No.	*P. ct.*	*No.*	*P. ct.*	*No.*	*P. ct.*	*No.*	*P. ct.*	*No.*	*P. ct.*
Alabama	4	1,527	724	47	803	53	427	28	237	16	124	8
Connecticut	4	1,958	1,615	82	343	18	183	9	109	6	43	2
Georgia	10	4,574	1,879	41	2,695	59	1,429	31	790	17	347	8
Maine	5	4,622	3,513	76	1,109	24	688	15	320	7	121	3
Massachusetts	20	15,090	11,958	79	3,132	21	1,648	11	862	6	368	2
New Hampshire	4	3,423	2,899	85	524	15	285	8	168	5	80	2
New York	2	1,487	1,133	76	354	24	207	14	112	8	58	4
North Carolina	11	2,583	1,527	59	1,056	41	461	18	181	7	62	2
Pennsylvania	2	150	68	45	82	55	41	27	35	23	21	14
Rhode Island	3	2,158	1,767	82	391	18	186	9	100	5	41	2
South Carolina	20	8,907	3,634	41	5,273	59	2,584	29	1,109	12	369	4
Total	85	46,479	30,717	66	15,762	34	8,139	18	4,023	9	1,634	4

Two-week pay rolls.

Alabama	8	3,854	1,146	30	2,708	70	1,356	35	684	18	288	7
Connecticut	4	790	636	81	154	19	87	11	14	2	8	1
Georgia	10	1,331	307	23	1,024	77	589	44	291	22	130	10
Maine	5	1,521	723	48	798	52	277	18	100	7	36	2
Massachusetts	20	6,978	4,572	66	2,406	34	1,548	22	613	9	326	5
New Hampshire	5	13,012	7,998	61	5,014	39	1,944	15	998	8	462	4
New York	2	486	363	75	123	25	76	16	32	7	15	3
North Carolina	12	1,319	492	37	827	63	447	34	235	18	101	8
Pennsylvania	4	563	372	66	191	34	85	15	53	9	35	6
Rhode Island	3	1,203	884	73	319	27	242	20	82	7	33	3
South Carolina	21	2,120	356	17	1,764	83	867	41	420	20	198	9
Total	94	33,177	17,849	54	15,328	46	7,518	23	3,522	11	1,632	5

FINISHING.

One-week pay rolls.

Connecticut	3	1,107	700	63	407	37	116	10	47	4	10	1
Georgia	1	6	.....	.....	6	100	6	100	.....	.....	.....	.....
Maine	1	542	433	80	109	20	43	8	17	3	6	1
Massachusetts	9	4,804	3,961	82	843	18	309	6	174	4	70	1
New Hampshire	1	332	292	88	40	12	22	7	12	4	7	2
New York	2	1,047	777	74	270	26	98	9	45	4	20	2
New Jersey	2	229	182	79	47	21	17	7	6	3	3	1
Pennsylvania	1	26	24	92	2	8	.....	.....	.....	.....	.....	.....
Rhode Island	7	3,670	2,282	65	1,288	35	469	13	188	5	89	2
North Carolina	2	35	21	60	14	40	6	17	.....	.....	.....	.....
South Carolina	1	23	15	65	8	35	6	26	6	26	2	9
Total	30	11,821	8,787	74	3,034	26	1,092	9	495	4	207	2

Two-week pay rolls.

Alabama	1	22	14	64	8	36	2	9	1	5	1	5
New Hampshire	2	674	404	60	270	40	63	9	25	4	14	2
New Jersey	1	462	293	63	169	37	45	10	23	5	8	2
Pennsylvania	3	674	357	53	317	47	141	21	104	15	49	7
Total	7	1,832	1,068	58	764	42	251	14	153	8	72	4

According to the first section of the cotton-manufacturing branch of this table, 66 per cent of the employees worked full time or over during the period covered by tle pay rolls, and 34 per cent did not work full time. Eighteen per cent worked under 75 per cent of full time and by deduction it is seen that 16 per cent of the employees worked 75 per cent and under 100 per cent of full time. In the two-week period a smaller per cent of employees made full time, 54, as would be expected. An employee might make full time the first week, yet lose time the second week, or vice versa.

Table 4 is a summary of General Table D, page 83, showing for each occupation the average full-time hours per week of the establishments in comparison with the average hours actually worked in the pay-roll period reported; and comparing the average full-time weekly earnings with the average amount actually earned in the week.

Like Table 3, this table is divided first into the two branches of the industry and each branch is divided into two sections, one representing one-week pay rolls, and the other two-week pay rolls. As in Table 3 certain establishments have been omitted from this table because the pay rolls were for other periods than one or two weeks; also some employees are omitted because of incomplete data.

TABLE 4.—AVERAGE FULL-TIME HOURS AND HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS, AND AMOUNTS ACTUALLY EARNED DURING ONE PAY-ROLL PERIOD, 1916.

MANUFACTURING.

One-week pay rolls.

Occupation and sex.	Number of establishments.	Number of employees.	Average full-time hours worked in establishment for pay-roll period.	Average hours actually worked per employee during pay-roll period.	Average full-time earnings for pay-roll period.	Average amount actually earned per employee during pay-roll period.
Card strippers, male	81	747	56.6	51.8	$9.48	$8.86
Drawing-frame tenders, male	69	578	58.1	47.7	7.34	6.16
Drawing-frame tenders, female	35	510	55.4	49.7	7.47	6.99
Slubber tenders, male	79	608	57.2	50.2	11.29	10 31
Slubber tenders, female	12	43	54.3	48.6	10.65	9.73
Speeder tenders, male	76	1,309	58.3	49.1	10.23	8.80
Speeder tenders, female	77	2,323	55.5	50.7	10.41	9.57
Spinners, mule, male	17	334	54.7	51.3	18.85	17.75
Spinners, frame, male	52	640	56.8	45.3	9.01	7.33
Spinners, frame, female	79	5,735	57.0	48.5	8.61	7.47
Doffers, male	76	2,357	57.7	48.4	7.91	6.75
Doffers, female	18	431	54.8	48.5	8.53	7.50
Spooler tenders, female	80	2,689	57.0	48.2	7.81	6.82
Warper tenders, male	16	28	60.0	56.1	10.98	10.07
Warper tenders, female	70	442	56.1	50.5	10.12	9.25
Beamer tenders, male	15	235	54.7	49.1	16.22	14.61
Beamer tenders, female	5	77	55.0	50.7	12.65	11.71
Slasher tenders, male	77	428	56.7	54.8	12.95	12.60
Drawers-in, female	69	697	56.0	49.8	10.59	9.46
Loom fixers, male	77	2,082	56.8	53.6	15.19	14.45
Trimmers or inspectors, female	70	824	56.5	51.4	7.19	6.64
Other employees, male	81	19,328	58.8	52.7	10.01	9.47
Other employees, female	79	4,043	55.4	49.5	7.66	7.00

TABLE 4.—AVERAGE FULL-TIME HOURS AND HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS, AND AMOUNTS ACTUALLY EARNED DURING ONE PAY-ROLL PERIOD, 1916—Concluded.

MANUFACTURING—Concluded.

Two-week pay rolls.

Occupation and sex.	Number of establishments.	Number of employees.	Average full-time hours worked in establishment for pay-roll period.	Average hours actually worked per employee during pay-roll period.	Average full-time earnings for pay-roll period.	Average amount actually earned per employee during pay-roll period.
Card strippers, male	13	104	113.2	92.9	$17.21	$15.84
Drawing-frame tenders, male	8	60	115.2	87.0	17.14	12.83
Drawing-frame tenders, female	8	144	112.4	99.5	15.91	14.33
Slubber tenders, male	11	156	114.6	97.2	23.97	21.02
Speeder tenders, male	11	262	116.7	90.5	20.59	16.42
Speeder tenders, female	13	511	112.1	94.4	21.12	17.90
Spinners, frame, male	7	46	116.8	95.0	15.77	13.15
Spinners, frame, female	14	1,405	114.2	96.8	17.10	14.93
Doffers, male	12	580	115.4	95.3	15.77	13.33
Doffers, female	4	132	109.7	93.5	19.91	16.73
Spooler tenders, female	13	672	114.3	92.7	16.07	13.33
Warper tenders, male	5	15	114.4	103.6	23.44	21.55
Warper tenders, female	8	113	112.4	98.5	21.19	18.84
Beamer tenders, male	4	30	113.7	102.5	27.13	24.81
Slasher tenders, male	10	95	111.2	95.8	36.97	31.60
Drawers-in, female	12	183	111.9	87.9	22.15	17.27
Loom fixers, male	12	523	112.5	105.6	33.01	30.78
Trimmers or inspectors, female	7	114	114.4	99.4	16.09	14.38
Weavers, male	89	9,471	113.0	93.1	23.33	19.73
Weavers, female	90	10,909	111.0	96.1	22.48	19.83
Other employees, male	16	6,095	114.6	99.0	22.07	19.51
Other employees, female	16	1,557	111.5	89.5	17.13	13.79

FINISHING.

One-week pay rolls.

Laborers, bleach house, male	19	762	55.5	56.6	$9.64	$9.90
Laborers, dyehouse, male	22	682	56.0	56.5	9.67	9.80
Laborers, color mixing, male	12	234	55.8	59.9	9.91	10.66
Engravers, male	10	107	53.1	53.5	27.89	28.06
Printers, male	12	156	55.2	57.2	30.02	31.01
Calender tenders, male	18	276	55.8	59.8	10.66	11.45
Folders, male	19	271	54.6	55.4	16.94	17.00
Knotters, female	19	290	54.3	49.3	7.69	7.08
Other employees, male	21	7,125	55.8	58.2	11.45	12.00
Other employees, female	18	1,918	54.2	49.5	8.85	8.06

Two-week pay rolls.

Laborers, bleach house, male	4	145	112.6	103.8	$21.06	$19.54
Laborers, dyehouse, male	7	398	112.6	109.7	21.53	21.08
Calender tenders, male	4	72	111.8	112.4	22.66	22.79
Folders, male	4	65	111.1	112.2	29.08	29.25
Knotters, female	4	40	109.5	101.3	14.41	13.40
Other employees, male	4	934	116.2	111.1	23.29	22.63
Other employees, female	3	178	108.4	92.2	14.69	12.81

EXPLANATION OF SCOPE AND METHOD.

The manufacturing section of this report includes data from establishments which make cambrics, chambrays, checks, converters' goods, colored goods, combed goods, cotton flannels, crepes, damasks, denims, drills, foulardines, ginghams, lawns, madras, napped fabrics, organdies, percales, print cloths, sateens, sheetings, shirtings, stripes, tickings, twills, etc. Mills making mixed cotton and silk goods are not included.

Some of the establishments furnishing data concerning cotton manufacturing have finishing departments, for which data were obtained at the same time. In addition, data were obtained from several establishments engaged exclusively in finishing cotton goods.

All data were obtained from pay rolls of the various establishments by agents of the bureau.

The number of establishments included or summarized in the report has varied considerably since 1907, as follows:

Manufacturing.

1907 to 1910	36 identical establishments.
1910 and 1911	59 identical establishments.
1911 and 1912	88 identical establishments.
1912 and 1913	88 identical establishments.
1913 and 1914	90 identical establishments.
1914 and 1916	88 identical establishments.

Finishing.

1911 and 1912	30 identical establishments.
1912 and 1913	27 identical establishments.
1913 and 1914	33 identical establishments
1914 and 1916	32 identical establishments.

In addition to the 88 manufacturing establishments from which data were obtained for both 1914 and 1916, data were obtained from 18 establishments for 1916 only, making a total of 106 establishments from which data for 1916 are presented.

In the finishing branch of the industry data from 5 establishments were obtained for 1916 only, making a total of 37 establishments from which data for 1916 are presented.

In selecting establishments from which to obtain data, the bureau undertook to represent all States in which cotton manufacturing and cotton finishing are of material importance, the measure of importance being the number of employees as reported by the United States Census of Manufactures.

Table 5 which follows shows, by States, the number of employees in this industry as reported by the United States Census, 1910; the

number of establishments from which the bureau obtained data for 1916; and the number of employees in such establishments:

TABLE 5.—TOTAL NUMBER OF EMPLOYEES IN COTTON-GOODS MANUFACTURING AND NUMBER OF EMPLOYEES FOR WHICH DATA ARE SHOWN FOR 1916.

State.	Number of employees reported by the U. S. Census, 1910.	Establishments and employees for which data are shown for 1916 in this report.	
		Number of establishments.	Number of employees.
Massachusetts	108,914	20	22,068
North Carolina	47,231	22	8,388
South Carolina	45,454	20	11,027
Rhode Island	28,786	3	3,361
Georgia	27,803	12	7,142
New Hampshire	24,290	5	16,440
Pennsylvania	16,293	5	1,393
Maine	14,634	5	6,143
Connecticut	14,300	4	2,748
Alabama	12,731	8	5,476
New York	10,663	2	1,973
Other States	29,721	.....	.....
Total	378,880	106	86,159

According to the census of 1910, more than 92 per cent of the total number of employees in the industry are found in the States in which the establishments furnishing information to the Bureau of Labor Statistics are located. The number of employees for which the bureau obtained 1916 data and for which detailed information for 1916 is presented in this report is nearly 23 per cent of the total in the industry in 1909, the year to which the census figures apply.

The number of employees in cotton-goods finishing for whom data for 1916 are shown is as follows:

Massachusetts	4,804	New Hampshire	1,008
Rhode Island	3,670	Maine	542
New York	1,957	Other States	205
Connecticut	1,107	Total	14,767
Pennsylvania	783		
New Jersey	691		

Full-time hours per week are the regular hours during which, under normal conditions, employees in an occupation are on duty. Full-time hours do not in any way indicate the extent of unemployment. Employees may work over time, or broken time, or be laid off, or a temporary reduction may be made in working hours without affecting the full-time hours as here presented.

The rates of wages per hour appearing in the tables include the wages of timeworkers and the earnings of pieceworkers. All time rates not already on an hourly basis have been reduced to rates per hour, and the earnings of pieceworkers and of persons working at both time and piece rates have been reduced to rates per hour by

dividing the earnings by the hours worked. For 1916 the piece-workers and timeworkers of each occupation are shown separately and also combined as one group.

Where there was no record regularly kept of the actual time worked by employees, the establishments, at the request of the Bureau, kept a record for the pay-roll period selected.

The full-time weekly earnings are the earnings of employees working full time, or the earnings on broken time reduced to equivalent earnings for a full week. The actual earnings of employees during one pay-roll period are shown in Table D. In this table low earnings may be due either to a low rate or to broken time.

The averages of full-time hours per week, rates of wages per hour, full-time weekly earnings, and actual earnings are computed by adding the data for each employee and dividing the total by the number of employees.

Descriptions of all the operations in a representative cotton mill are given later, pages 140 to 258. Figures relating to wages and hours are shown separately for 15 of the more important occupations in cotton manufacturing and 8 occupations in cotton finishing. The sex is shown for each occupation. Of the 15 occupations tabulated in cotton manufacturing, data are shown for males alone in 4 occupations, for females alone in 3 occupations, and for both males and females in 8 occupations.

Of the 8 occupations tabulated in cotton finishing, data are shown for males alone in 7 occupations, and for females alone in 1 occupation. The occupations arranged in order of manufacture are as follows:

Manufacturing.	*Finishing.*
Card strippers.	Laborers, bleach house.
Drawing-frame tenders.	Laborers, dyehouse.
Slubber tenders.	Laborers, color mixing.
Speeder tenders.	Engravers.
Spinners, mule.	Printers.
Spinners, frame.	Calender tenders.
Doffers.	Folders.
Spooler tenders.	Knotters.
Warper tenders.	
Beamer tenders.	
Slasher tenders.	
Drawers-in.	
Loom fixers.	
Weavers.	
Trimmers or inspectors.	

All employees not included under any of the above selected occupations are combined and shown under "Other employees."

GENERAL TABLES.

In addition to the text tables already shown, 8 general tables are presented as follows:

Table A.—Average and classified full-time hours per week, and rates of wages per hour, and average full-time weekly earnings, in the United States, by years, 1907 to 1916.

In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.

Table B.—Average and classified full-time hours per week, and rates of wages per hour, and average full-time weekly earnings, in each State, by years, 1914 and 1916.

In this table the figures for both years are for identical establishments, and do not include data from establishments furnishing information for 1916 only.

Table C.—Average and classified full-time hours per week, and rates of wages per hour, and average full-time weekly earnings, for pieceworkers and timeworkers, by States, 1916.

This table includes all data secured for 1916, whether or not comparable data for 1914 were available.

Table D.—Average full-time hours, hours actually worked, full-time earnings and amounts actually earned, and number of employees working each classified per cent of full time and earning each classified amount, during one pay-roll period, for pieceworkers and timeworkers, by States, 1916.

This table includes data for all establishments from which information was secured for 1916. The table is divided into two sections, one relating to employees whose time and earnings were reported for one week, and the other relating to those whose time and earnings were reported for two weeks in such a way that they could not be divided. The purpose of this table is to compare the time actually worked by employees with the full working time of the establishments and the average amount actually earned, with more or less broken time of some employees, with the possible full-time earnings. A few establishments having other than one-week or two-week pay-rolls are omitted from this table, as are also some employees because of incomplete data.

Tables E, F, G, and H, respectively, show for cotton finishing the same facts that Tables A, B, C, and D show for manufacturing.

TABLE A.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN THE UNITED STATES, BY YEARS, 1907 TO 1916.

MANUFACTURING.

[In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Card strippers, male:																							
36 establishments	1907	284	59.8	$0.131	$7.83	.....	.....	166	54	24	4	36	.....	.....	.....	3	33	24	110	98	16	.....	.....	.....
	1908	289	59.3	.124	7.35	.....	.....	186	70	.....	10	23	.....	.....	.....	2	32	60	148	40	7	.....	.....	.....
	1909	287	59.3	.121	7.18	.....	.....	175	82	.....	9	21	.....	.....	.....	2	30	77	163	15	.....	.....	.....	.....
	1910	318	57.8	.124	7.17	.....	166	78	52	.....	8	14	.....	.....	.....	3	16	83	196	19	1	.....	.....	.....
59 establishments	1910	523	58.4	.120	6.95	.....	250	121	68	12	19	53	.....	.....	1	28	27	138	295	29	5	.....	.....	.....
	1911	515	58.3	.122	7.08	.....	253	123	60	12	19	48	.....	.....	1	20	28	135	298	28	5	.....	.....	.....
88 establishments	1911	786	58.3	.121	7.02	.....	314	255	126	12	22	57	.....	.....	1	26	30	225	461	37	6	.....	.....	.....
	1912	800	57.1	.134	7.62	284	37	251	219	.....	1	8	.....	.....	.....	6	10	151	253	344	36	.....	.....	.....
88 establishments	1912	804	57.1	.134	7.62	284	37	251	223	.....	1	8	.....	.....	.....	6	10	155	253	344	36	.....	.....	.....
	1913	845	57.2	.138	7.83	288	37	284	229	.....	1	6	.....	.....	1	4	7	130	245	375	73	10	.....	.....
90 establishments	1913	871	57.1	.139	7.89	312	37	284	231	.....	1	6	.....	.....	1	4	7	130	248	379	79	17	6	.....
	1914	904	56.3	.144	8.06	348	231	60	264	.....	1	.....	.....	.....	4	.....	5	115	224	363	172	18	3	.....
88 establishments	1914	869	56.1	.145	8.11	348	231	60	229	.....	1	.....	.....	.....	4	.....	5	85	219	363	172	18	3	.....
	1916	792	56.7	.166	9.23	298	149	54	283	.....	8	.....	.....	.....	.....	.....	.....	89	105	133	118	235	106	6
106 establishments	1916	903	56.7	.167	9.27	327	168	89	311	.....	8	.....	.....	.....	.....	.....	.....	93	125	166	121	257	133	8
Drawing-frame tenders, male:																								
34 establishments	1907	219	60.4	.100	6.04	.....	.....	112	26	42	1	38	17	22	17	13	17	74	54	5	.....	.....	.....	.....
	1908	234	59.7	.098	5.85	.....	.....	110	94	.....	9	21	8	18	36	19	29	85	35	4	.....	.....	.....	.....
	1909	253	59.7	.099	5.91	.....	.....	129	89	.....	12	23	7	23	21	24	47	93	35	3	.....	.....	.....	.....
	1910	253	58.5	.098	5.73	.....	113	34	78	.....	10	18	13	9	34	18	53	81	40	5	.....	.....	.....	.....

TABLE A.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN THE UNITED STATES, BY YEARS, 1907 TO 1916—Continued.

MANUFACTURING—Continued.

[In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Drawing-frame tenders, male—Concluded.																								
56 establishments	1910	436	59.5	$0.096	$5.70	.....	144	54	111	62	17	48	15	15	46	58	124	126	47	5	.....	.....	.....	.....
	1911	457	59.7	.097	5.78	.....	147	45	120	62	23	60	15	22	37	90	116	99	70	8	.....	.....	.....	.....
84 establishments	1911	750	59.5	.097	5.73	.....	211	130	235	62	28	84	31	22	83	125	186	192	90	19	2	.....	.....	.....
	1912	723	57.9	.108	6.22	195	39	125	348	.....	4	12	7	12	84	39	71	259	184	51	14	2	.....	.....
82 establishments	1912	727	57.9	.108	6.20	195	39	125	352	.....	4	12	7	12	91	38	71	257	184	51	14	2	.....	.....
	1913	624	58.0	.109	6.31	164	37	75	341	.....	4	3	8	3	69	15	79	221	159	55	12	3	.....	.....
76 establishments	1913	572	58.4	.109	6.32	117	28	75	345	.....	4	3	8	3	69	15	55	213	149	47	10	3	.....	.....
	1914	660	57.9	.116	6.66	186	39	36	395	.....	4	.....	2	5	51	28	54	200	206	84	24	5	1	.....
74 establishments	1914	649	57.8	.117	6.75	195	39	36	375	.....	4	.....	.....	3	38	28	50	200	214	84	24	6	2	.....
	1916	662	58.2	.127	7.32	147	43	37	431	.....	4	.....	1	1	47	41	24	180	145	78	94	38	13	.....
89 establishments	1916	736	58.2	.128	7.39	158	56	41	477	.....	4	.....	1	1	47	43	26	196	169	87	108	39	18	1
Drawing-frame tenders, female:																								
19 establishments	1907	234	60.2	.093	5.60	.....	.....	117	64	.....	16	37	19	8	20	38	41	100	8	.....	.....	.....	.....	.....
	1908	232	59.3	.093	5.51	.....	.....	130	86	.....	.....	16	18	13	40	43	25	54	39	.....	.....	.....	.....	.....
	1909	249	59.4	.091	5.41	.....	.....	128	105	.....	.....	16	19	12	38	54	30	79	17	.....	.....	.....	.....	.....
	1910	233	58.1	.089	5.17	.....	67	110	49	.....	.....	7	14	6	39	56	51	61	5	1	.....	.....	.....	.....
27 establishments	1910	359	58.2	.090	5.20	.....	136	139	56	.....	.....	28	14	26	40	71	104	98	5	1	.....	.....	.....	.....
	1911	344	57.7	.094	5.41	.....	146	145	37	.....	.....	16	16	11	43	59	86	95	33	1	.....	.....	.....	.....

45 establishments	1911	502	57.8	.095	5.46	.....	172	255	56	.....	.....	19	16	19	47	68	155	151	45	1	.....	.....	.....
	1912	525	57.0	.110	6.23	190	9	231	82	.....	.....	13	4	12	4	26	58	327	69	20	4	1	.....
	1913	594	56.8	.114	6.48	221	11	265	97	.....	.....	.....	2	8	7	10	40	352	118	43	11	3	.....
32 establishments	1913	594	56.7	.115	6.50	235	11	265	83	.....	.....	.....	2	8	4	6	39	349	131	41	11	3	.....
	1914	574	55.5	.118	6.51	249	185	62	78	.....	.....	.....	10	6	4	4	36	255	199	32	23	4	1
31 establishments	1914	569	55.3	.118	6.51	262	185	62	60	.....	.....	.....	10	6	3	4	49	230	208	32	22	4	1
	1916	526	55.5	.142	7.86	219	187	47	73	.....	.....	.....	.....	10	15	1	13	49	112	233	64	17	9
45 establishments	1916	667	55.7	.136	7.53	268	212	86	101	.....	.....	.....	.....	10	24	10	14	102	140	273	65	17	9
Slubber tenders, male:																							
101 establishments	1916	839	57.5	.197	11.20	199	159	82	394	.....	5	.....	1	1	.....	3	4	50	86	116	111	68	233
Slubber tenders, female:																							
17 establishments	1916	70	54.3	.185	10.05	61	6	2	1	.....	.....	.....	.....	.....	.....	.....	.....	3	5	14	7	16	22
Speeder tenders, male:																							
16 establishments	1907	201	63.9	.116	7.41	.....	.....	.....	.....	96	10	95	2	12	10	12	17	63	52	18	10	5	.....
	1908	224	61.1	.123	7.52	.....	.....	.....	171	.....	24	29	.....	.....	6	14	24	77	58	20	12	5	8
	1909	258	61.2	.129	7.89	.....	.....	.....	195	.....	24	39	.....	1	4	10	19	66	79	52	21	4	2
	1910	249	61.0	.131	7.99	.....	.....	.....	192	.....	29	28	.....	.....	4	11	14	63	72	43	32	8	2
32 establishments	1910	426	61.4	.131	8.03	.....	.....	.....	273	41	52	60	.....	.....	4	23	26	107	115	69	60	19	3
	1911	396	61.4	.135	8.29	.....	.....	.....	243	63	35	55	.....	.....	1	20	20	87	118	67	45	35	3
62 establishments	1911	623	61.2	.135	8.24	.....	3	17	474	.....	41	88	.....	.....	5	30	32	131	168	140	66	46	5
	1912	666	59.7	.142	8.47	50	.....	12	581	.....	.....	23	.....	1	5	19	16	97	198	155	106	60	9
61 establishments	1912	680	59.7	.143	8.52	50	.....	12	595	.....	.....	23	.....	1	5	19	15	92	203	166	107	63	9
	1913	745	59.8	.145	8.72	39	.....	4	691	.....	.....	11	.....	.....	2	3	26	116	188	212	116	53	27
55 establishments	1913	742	59.7	.145	8.64	42	.....	2	687	.....	.....	11	.....	.....	2	3	24	111	189	214	116	51	26
	1914	778	59.7	.151	9.04	34	3	.....	741	.....	.....	.....	.....	2	2	2	11	70	196	226	152	73	40
58 establishments	1914	799	59.3	.153	9.04	85	6	10	698	.....	.....	.....	.....	2	2	3	13	68	195	215	169	86	42
	1916	1,285	59.1	.164	9.67	111	94	12	1,067	.....	.....	1	1	2	2	9	16	78	221	345	259	133	166
98 establishments	1916	1,768	58.5	.174	10.12	263	199	54	1,246	.....	4	2	1	2	2	11	19	96	256	404	310	181	364
Speeder tenders, female:																							
35 establishments	1907	721	59.3	.139	8.24	.....	.....	463	153	30	22	53	.....	2	7	26	25	95	176	242	123	19	6
	1908	694	59.1	.138	8.16	.....	.....	438	208	.....	5	43	.....	.....	8	25	36	118	168	185	100	51	3
	1909	714	59.1	.135	7.98	.....	.....	453	220	.....	1	40	.....	.....	1	13	31	119	246	246	51	5	2
	1910	800	57.6	.134	7.72	.....	437	185	143	.....	3	32	.....	.....	10	26	39	125	286	217	64	29	4
57 establishments	1910	1,175	57.8	.133	7.68	.....	602	313	165	21	12	62	.....	.....	11	36	59	194	413	326	99	31	6
	1911	1,189	57.9	.135	7.80	.....	597	311	165	36	10	70	.....	2	7	29	62	202	352	388	106	34	5
82 establishments	1911	1,753	57.9	.136	7.86	.....	801	547	258	36	16	95	.....	3	13	38	89	283	505	589	169	53	8
	1912	1,784	56.6	.149	8.42	784	106	531	328	.....	5	30	.....	2	2	26	60	195	286	593	429	149	39

TABLE A.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN THE UNITED STATES, BY YEARS, 1907 TO 1916—Continued.

MANUFACTURING—Continued.

[In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Speeder tenders, female—Concluded.																								
80 establishments	1912	1,791	56.7	$0.148	$8.38	784	134	503	335	.....	5	30	.....	2	2	26	60	198	288	595	429	149	39	3
	1913	1,855	56.7	.151	8.55	795	95	597	343	.....	6	19	.....	.....	.....	12	36	181	316	643	472	138	54	3
79 establishments	1913	1,946	56.5	.153	8.61	888	95	597	341	.....	6	19	.....	.....	.....	12	36	179	316	650	519	166	59	9
	1914	2,001	55.8	.155	8.61	1,004	382	191	418	.....	6	.....	.....	3	2	16	33	177	280	590	600	203	91	6
76 establishments	1914	1,987	55.8	.155	8.62	1,004	382	191	404	.....	6	.....	.....	3	2	15	31	174	275	589	600	201	91	6
	1916	2,578	55.6	.187	10.33	1,347	545	244	438	.....	4	.....	.....	1	5	11	22	120	158	243	416	653	870	79
99 establishments	1916	2,902	55.7	.187	10.39	1,425	679	314	480	.....	4	.....	1	1	6	11	22	126	177	285	456	730	967	120
Spinners, mule, male:																								
11 establishments	1907	199	58.6	.234	13.71	.....	.....	138	61	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	8	23	107	58
	1908	193	58.4	.225	13.14	.....	.....	158	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	13	21	112	45
	1909	156	58.5	.221	12.93	.....	.....	118	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	10	17	106	19
	1910	131	56.8	.218	12.38	.....	89	33	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	11	27	80	12
14 establishments	1910	222	57.0	.219	12.50	.....	117	96	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	11	43	139	26
	1911	207	57.0	.225	12.82	.....	110	88	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	6	33	133	28
16 establishments	1911	288	56.8	.255	14.44	.....	179	100	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	6	33	147	95
	1912	266	55.7	.279	15.48	118	64	84	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	5	20	95	145
	1913	258	55.6	.281	15.58	122	60	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9	13	85	150
14 establishments	1913	234	55.6	.286	15.82	122	36	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9	13	66	145
	1914	245	54.9	.291	15.95	165	37	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	4	18	66	156

11 establishments	1914	215	54.9	.296	16.20	158	14	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	3	17	60	134
	1916	196	54.8	.346	18.94	149	8	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	14	181
17 establishments	1916	334	54.7	.345	18.85	221	74	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	21	312
Spinners, frame, male:																							
25 establishments	1907	184	59.4	.124	7.37	.....	.....	122	22	26	.....	14	3	4	15	8	29	32	32	23	31	2	5	.....
	1908	214	58.8	.119	7.00	.....	.....	136	74	.....	1	3	4	3	10	7	10	82	51	28	15	4	.....	.....
	1909	188	58.9	.117	6.89	.....	.....	135	41	.....	1	11	4	16	9	5	25	36	52	23	6	12	.....	.....
	1910	188	57.2	.119	6.81	.....	109	47	31	.....	.....	1	1	11	1	4	32	40	62	21	10	6	.....	.....
36 establishments	1910	261	57.2	.120	6.83	.....	160	53	44	.....	3	1	1	15	3	5	34	54	105	25	13	6	.....	.....
	1911	420	57.0	.125	7.08	.....	291	81	39	.....	.....	9	2	6	1	14	23	95	184	78	11	6	.....	.....
46 establishments	1911	700	57.2	.126	7.18	.....	402	228	52	.....	.....	18	2	6	1	17	52	171	278	133	33	6	1	.....
	1912	679	56.2	.148	8.30	353	.....	269	44	.....	.....	13	.....	1	6	5	23	114	122	169	103	104	32	.....
49 establishments	1912	564	56.7	.144	8.14	237	.....	269	45	.....	.....	13	.....	.....	6	5	23	108	108	150	85	64	15	.....
	1913	530	56.9	.143	8.07	204	17	186	118	.....	.....	5	.....	3	12	19	23	85	110	117	75	59	27	.....
31 establishments	1913	503	56.8	.145	8.19	208	8	186	96	.....	.....	5	.....	1	6	16	22	79	104	114	75	58	27	1
	1914	458	55.2	.152	8.37	211	170	17	60	.....	.....	.....	.....	1	4	10	17	66	60	99	102	59	40	.....
38 establishments	1914	483	54.7	.150	8.18	226	164	18	75	.....	.....	.....	.....	2	4	12	21	75	61	108	102	59	39	.....
	1916	547	56.6	.169	9.47	224	98	11	214	.....	.....	.....	11	16	20	14	16	43	57	50	62	65	147	46
64 establishments	1916	707	57.0	.156	8.80	261	100	18	326	.....	2	.....	28	37	41	25	26	65	65	65	69	81	159	46
Spinners, frame, female:																							
36 establishments	1907	2,317	61.0	.110	6.71	.....	.....	1,000	305	327	113	572	58	224	202	174	367	343	527	287	92	42	1	.....
	1908	2,114	59.9	.107	6.41	.....	.....	896	923	17	61	217	56	197	208	147	156	612	466	186	59	5	22	.....
	1909	2,408	59.8	.106	6.34	.....	.....	1,107	951	.....	84	266	47	166	176	182	406	634	573	185	38	1	.....	.....
	1910	2,500	58.5	.112	6.55	.....	1,020	442	784	.....	98	156	45	147	164	191	274	674	597	316	84	8	.....	.....
59 establishments	1910	3,704	59.0	.108	6.33	.....	1,313	621	1,087	140	186	357	93	288	298	339	449	861	847	406	107	14	2	.....
	1911	3,735	59.1	.111	6.48	.....	1,285	646	1,053	181	181	389	34	218	286	369	488	871	891	434	124	20	.....	.....
88 establishments	1911	5,981	59.1	.111	6.51	.....	1,590	1,639	1,811	181	209	551	55	300	378	594	767	1,557	1,498	649	150	28	5	.....
	1912	6,214	58.0	.123	7.11	1,572	192	1,667	2,566	.....	23	194	16	159	322	325	512	1,452	1,304	1,591	397	121	15	.....
88 establishments	1912	6,364	58.0	.124	6.98	1,688	192	1,667	2,600	.....	23	194	16	155	312	345	524	1,477	1,317	1,610	415	161	32	.....
	1913	6,561	57.9	.127	7.29	1,739	193	1,742	2,763	.....	19	105	12	192	308	365	450	1,442	1,194	1,662	643	212	81	.....
90 establishments	1913	6,762	57.8	.128	7.33	1,925	193	1,742	2,778	.....	19	105	12	193	312	365	450	1,477	1,221	1,705	677	257	92	1
	1914	6,906	56.9	.132	7.45	2,282	1,385	349	2,874	.....	16	.....	11	55	189	398	567	1,444	1,203	1,623	981	331	102	2
88 establishments	1914	6,766	56.8	.132	7.47	2,282	1,385	349	2,734	.....	16	.....	.....	66	186	389	540	1,380	1,172	1,619	979	331	102	2
	1916	7,012	57.2	.147	8.32	2,127	1,272	362	3,222	.....	29	.....	116	194	266	308	405	962	945	666	849	1,464	787	50
105 establishments	1916	7,775	57.2	.148	8.39	2,283	1,385	544	3,534	.....	29	.....	129	204	282	327	442	1,054	1,043	775	920	1,589	958	52

TABLE A.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN THE UNITED STATES, BY YEARS, 1907 TO 1916—Continued.

MANUFACTURING—Continued.

[In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Doffers, male: 100 establishments	1916	3,246	57.9	$0.136	$7.77	666	429	129	2,004	.....	18	.....	37	101	210	212	204	665	310	420	444	365	235	43
Doffers, female: 23 establishments	1916	566	54.9	.162	8.86	240	147	179	.....	.....	.....	.....	.....	.....	.....	.....	28	23	85	141	143	103	27	16
Spooler tenders, female: 105 establishments	1916	3,695	57.3	.136	7.70	1,101	569	270	1,747	.....	8	.....	65	121	161	251	305	635	497	515	460	326	329	30
Warper tenders, male: 29 establishments	1916	81	59.5	.175	10.39	7	.....	.....	74	.....	.....	.....	.....	.....	.....	.....	.....	3	9	27	17	7	9	9
Warper tenders, female: 83 establishments	1916	578	56.1	.181	10.13	237	143	57	139	.....	2	.....	.....	.....	.....	.....	2	28	75	72	120	108	140	33
Beamer tenders, male: 24 establishments	1916	338	56.0	.269	14.93	208	18	.....	112	.....	.....	.....	.....	.....	1	.....	.....	7	.....	9	28	29	51	213
Beamer tenders, female: 6 establishments	1916	94	54.8	.222	12.17	35	56	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	9	7	51	21
Slasher tenders, male: 35 establishments	1907	159	60.3	.183	11.03	.....	.....	77	29	25	7	21	.....	.....	.....	.....	1	30	16	7	9	8	82	6
	1908	158	59.6	.183	10.91	.....	.....	75	69	.....	1	13	.....	.....	.....	.....	.....	12	32	17	8	29	36	24
	1909	167	59.4	.180	10.69	.....	.....	82	73	.....	1	11	.....	.....	.....	.....	.....	10	33	21	6	34	48	15
	1910	166	58.1	.181	10.52	.....	72	34	52	.....	1	7	.....	.....	.....	.....	.....	9	28	20	13	38	49	9
57 establishments	1910	276	58.4	.178	10.33	.....	116	53	72	14	4	17	.....	.....	.....	.....	.....	9	63	28	16	79	72	9
	1911	303	58.5	.178	10.32	.....	122	55	81	25	4	16	.....	.....	.....	.....	.....	10	63	38	20	82	81	9

85 establishments	1911	455	58.5	.194	11.26	.....	149	144	106	25	6	25	.....	.....	6	.....	.....	10	68	56	26	110	111	68
	1912	447	57.4	.215	12.28	140	17	153	131	.....	1	5	.....	.....	.....	.....	.....	8	36	58	34	13	195	103
85 establishments	1912	449	57.4	.216	12.34	140	17	153	133	.....	1	5	.....	.....	.....	.....	.....	10	36	58	34	13	195	103
	1913	472	57.6	.212	12.12	132	15	154	166	.....	2	3	.....	.....	.....	.....	.....	25	25	91	35	16	172	108
87 establishments	1913	485	57.5	.212	12.09	144	15	154	167	.....	2	3	.....	.....	.....	.....	.....	25	25	92	35	16	184	108
	1914	528	56.8	.211	11.81	176	118	29	204	.....	1	.....	.....	.....	.....	.....	.....	32	37	103	30	14	191	121
78 establishments	1914	499	56.6	.214	11.99	174	118	29	177	.....	1	.....	.....	.....	.....	.....	.....	30	31	83	30	14	192	119
	1916	499	56.6	.244	13.62	178	115	30	175	.....	1	.....	.....	.....	.....	.....	.....	27	26	51	44	16	70	265
98 establishments	1916	572	56.7	.243	13.60	196	123	46	206	.....	1	.....	.....	.....	.....	.....	.....	27	33	57	46	20	98	291
Drawers-in, female:																								
89 establishments	1916	934	56.1	.190	10.56	401	227	67	236	.....	3	.....	.....	4	5	8	16	82	110	83	111	118	242	155
Loom fixers, male:																								
36 establishments	1907	631	60.8	.207	12.59	.....	.....	277	105	95	21	133	.....	.....	.....	.....	.....	2	16	144	75	29	222	143
	1908	619	59.7	.202	12.06	.....	.....	278	270	.....	13	58	.....	.....	.....	.....	.....	.....	7	69	155	69	206	113
	1909	680	59.8	.197	11.78	.....	.....	304	286	.....	23	67	.....	.....	.....	.....	.....	2	9	70	194	87	234	84
	1910	728	58.3	.202	11.78	.....	323	133	207	.....	17	48	.....	.....	.....	.....	.....	.....	9	68	175	100	213	163
59 establishments	1910	1,267	58.7	.200	11.64	.....	528	232	293	56	46	112	.....	.....	.....	.....	.....	.....	14	221	240	111	503	178
	1911	1,314	58.6	.203	11.81	.....	574	226	296	60	46	112	.....	.....	.....	.....	.....	.....	12	213	236	112	544	197
88 establishments	1911	2,200	58.6	.203	11.80	.....	729	659	543	60	51	158	.....	.....	.....	.....	.....	.....	12	335	398	144	1,054	257
	1912	2,273	57.7	.224	12.91	566	191	701	762	.....	4	49	.....	.....	.....	.....	.....	.....	.....	135	478	152	662	846
88 establishments	1912	2,290	57.7	.224	12.84	566	191	701	779	.....	4	49	.....	.....	.....	.....	.....	.....	.....	148	480	154	662	846
	1913	2,321	57.6	.226	12.93	600	178	692	811	.....	4	36	.....	.....	.....	.....	.....	.....	.....	69	516	170	599	967
90 establishments	1913	2,370	57.6	.227	12.96	643	178	692	817	.....	4	36	.....	.....	.....	.....	.....	.....	.....	69	521	170	600	1,010
	1914	2,491	56.8	.233	13.09	833	591	151	889	.....	5	22	.....	.....	.....	.....	.....	.....	.....	64	478	263	497	1,189
87 establishments	1914	2,441	56.7	.234	13.17	833	591	151	821	.....	23	22	.....	.....	.....	.....	.....	.....	.....	60	433	263	496	1,189
	1916	2,486	56.9	.268	15.10	821	567	154	868	49	4	23	.....	.....	.....	.....	.....	.....	.....	11	220	157	593	1,505
104 establishments	1916	2,804	56.9	.269	15.15	904	639	208	977	49	4	23	.....	.....	.....	.....	.....	.....	.....	13	253	168	656	1,714
Weavers, male:																								
36 establishments	1907	2,769	60.3	.161	9.71	.....	.....	1,397	502	321	76	473	.....	.....	6	61	149	333	433	372	474	454	415	72
	1908	2,848	59.6	.160	9.54	.....	.....	1,424	1,006	115	81	222	.....	.....	1	40	113	418	462	437	402	456	479	40
	1909	3,123	59.8	.151	9.03	.....	.....	1,497	1,156	.....	147	323	.....	.....	5	47	147	517	573	671	534	293	303	33
	1910	3,037	58.3	.154	8.98	.....	1,489	337	925	.....	119	167	.....	.....	1	24	129	430	581	632	542	318	348	32
58 establishments	1910	5,334	58.8	.151	8.83	.....	2,190	703	1,440	299	272	430	.....	.....	8	59	211	845	1,119	1,125	900	535	491	41
	1911	5,012	58.8	.155	9.07	.....	2,069	670	1,225	434	236	378	.....	.....	4	51	172	612	961	1,169	902	556	540	45
88 establishments	1911	8,855	58.6	.156	9.08	.....	3,129	2,366	2,195	434	244	487	.....	.....	9	90	278	1,048	1,709	1,904	1,672	1,133	945	67
	1912	9,751	57.5	.169	9.67	2,937	766	2,322	3,590	.....	2	134	.....	.....	.....	50	203	900	1,452	1,565	1,839	1,545	1,911	286

TABLE A.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN THE UNITED STATES, BY YEARS, 1907 TO 1916—Concluded.

MANUFACTURING—Continued.

[In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Weavers, male—Concl.																							
88 establishments	1912	9,775	57.5	$0.169	$9.67	2,937	766	2,322	3,614	.....	2	134	.....	.....	.....	49	201	921	1,445	1,580	1,850	1,537	1,906	286
	1913	9,316	57.7	.169	9.71	2,539	607	2,200	3,889	.....	3	78	.....	.....	1	34	205	923	1,345	1,425	1,697	1,509	1,913	264
89 establishments	1913	9,485	57.6	.170	9.73	2,708	607	2,200	3,889	.....	3	78	.....	.....	1	34	206	933	1,349	1,430	1,723	1,538	1,997	274
	1914	9,755	56.8	.176	9.93	3,372	1,965	436	3,974	.....	8	.....	.....	4	10	54	225	710	1,156	1,490	1,654	1,583	2,392	477
86 establishments	1914	9,518	56.7	.176	9.96	3,372	1,965	436	3,737	.....	8	.....	.....	4	10	53	219	673	1,077	1,445	1,609	1,564	2,387	477
	1916	9,027	56.8	.202	11.37	3,245	1,663	471	3,645	.....	3	.....	.....	.....	1	1	7	448	752	1,047	1,142	1,111	2,664	1,854
102 establishments	1916	10,410	56.8	.204	11.51	3,699	1,944	674	4,090	.....	3	.....	.....	.....	2	1	7	480	827	1,190	1,299	1,299	3,029	2,276
Weavers, female:																								
36 establishments	1907	3,724	59.5	.151	8.98	.....	.....	2,267	809	172	185	291	.....	.....	12	84	165	516	646	707	821	505	257	11
	1908	3,903	59.0	.152	8.97	.....	.....	2,473	1,197	31	29	173	.....	.....	3	59	151	593	768	779	796	486	252	16
	1909	3,930	59.1	.144	8.51	.....	.....	2,363	1,345	.....	34	188	.....	.....	.....	69	181	689	863	1,009	725	228	153	13
	1910	3,905	57.6	.151	8.70	.....	2,065	1,052	625	.....	37	126	.....	.....	.....	45	162	704	851	1,011	664	292	166	10
59 establishments	1910	6,334	57.8	.147	8.47	.....	3,210	1,676	849	189	130	280	.....	.....	3	96	278	1,213	1,423	1,583	960	498	267	13
	1911	6,242	57.8	.144	8.31	.....	3,198	1,590	830	236	120	268	.....	.....	7	74	268	1,118	1,482	1,531	1,019	437	292	14
88 establishments	1911	10,792	57.9	.148	8.54	.....	4,216	4,442	1,422	236	149	327	.....	.....	12	124	438	1,689	2,381	2,460	1,929	1,100	619	40
	1912	10,980	56.9	.163	9.26	3,890	626	4,464	1,890	.....	24	86	.....	.....	.....	91	283	1,109	1,611	2,081	2,222	1,798	1,647	138
88 establishments	1912	10,998	56.9	.163	9.26	3,980	626	4,464	1,908	.....	24	86	.....	.....	.....	94	284	1,124	1,610	2,086	2,218	1,797	1,647	138
	1913	11,105	56.8	.164	9.29	4,206	571	4,355	1,877	.....	34	62	.....	.....	8	54	249	1,130	1,648	2,071	2,251	1,786	1,764	144
89 establishments	1913	11,236	56.7	.164	9.30	4,340	571	4,355	1,874	.....	34	62	.....	.....	8	54	247	1,132	1,650	2,076	2,293	1,830	1,803	143
	1914	11,188	55.8	.167	9.30	4,792	3,286	736	2,337	.....	37	.....	2	7	10	68	290	1,095	1,452	1,887	2,218	1,799	2,081	279

86 establishments	1914	11,066	55.8	.168	9.31	4,792	3,286	736	2,215	.....	37	.....	2	7	10	66	285	1,052	1,410	1,868	2,210	1,797	2,080	279
	1916	10,505	55.7	.199	11.05	4,734	3,108	628	2,011	.....	24	.....	.....	.....	.....	2	5	518	805	1,014	1,194	1,550	3,897	1,520
103 establishments	1916	11,590	55.7	.200	11.10	5,132	5,416	793	2,225	.....	24	.....	.....	.....	.....	2	5	568	870	1,147	1,325	1,685	4,207	1,781
Trimmers or inspectors, female:																								
30 establishments	1907	251	60.4	.102	6.16	.....	.....	102	70	40	.....	39	7	26	31	2	40	92	24	24	5	.....	.....	.....
	1908	261	60.0	.101	6.06	.....	.....	103	120	.....	7	31	.....	13	41	22	77	49	29	15	15	.....	.....	.....
	1909	285	59.6	.099	5.90	.....	.....	115	147	.....	6	17	.....	5	45	15	108	81	2	21	7	1	.....	.....
	1910	297	58.1	.101	5.87	.....	127	76	73	.....	9	12	1	4	40	16	88	120	.....	21	5	2	.....	.....
46 establishments	1910	408	58.3	.099	5.78	.....	161	100	109	4	12	22	4	10	49	38	109	159	6	25	6	2	.....	.....
	1911	474	58.7	.102	5.94	.....	167	119	128	9	14	37	4	12	56	27	121	177	32	41	3	.....	1	.....
75 establishments	1911	712	58.7	.103	6.02	.....	226	202	205	9	19	51	11	12	90	62	145	236	89	48	16	2	1	.....
	1912	703	58.0	.112	6.45	204	22	194	266	.....	.....	17	.....	6	61	66	61	257	148	53	41	7	3	.....
77 establishments	1912	708	57.7	.112	6.41	204	22	194	271	.....	.....	17	.....	6	74	65	60	254	145	53	41	7	3	.....
	1913	687	57.9	.111	6.39	185	31	176	270	.....	5	20	.....	4	73	45	41	283	160	56	23	2	.....	.....
74 establishments	1913	698	57.8	.112	6.41	196	30	181	266	.....	5	20	.....	4	70	45	41	283	174	57	22	2	.....	.....
	1914	720	57.2	.113	6.41	239	77	101	303	.....	.....	.....	.....	8	61	67	48	291	145	55	27	7	11	.....
73 establishments	1914	717	57.2	.113	6.42	239	77	101	300	.....	.....	.....	.....	8	57	67	48	292	145	55	27	7	11	.....
	1916	844	56.9	.129	7.27	279	131	134	290	.....	10	.....	4	7	32	91	51	162	184	142	66	69	35	1
87 establishments	1916	992	56.7	.129	7.21	332	165	169	316	.....	10	.....	4	7	32	103	56	172	274	167	72	69	35	1
Other employees, male:																								
88 establishments	1914	29,861	57.5	.151	8.59	8,038	7,084	1,496	12,334	11	115	783	742	525	952	741	1,024	5,207	4,936	5,338	3,185	1,904	3,151	2,156
	1916	24,532	57.7	.174	9.98	6,198	5,607	1,326	10,473	21	98	809	451	272	410	439	533	3,908	2,709	2,407	3,857	3,720	3,274	3,570
106 establishments	1916	27,582	57.7	.175	10.03	7,047	6,133	1,973	11,430	21	98	880	472	283	446	458	609	4,203	3,148	2,915	4,257	2,996	3,720	4,075
Other employees, female:																								
88 establishments	1914	12,143	56.3	.123	6.89	4,683	2,897	802	3,722	.....	39	.....	903	492	769	698	780	2,105	2,138	1,644	1,295	789	468	62
	1916	5,175	55.7	.138	7.62	2,059	1,626	249	1,213	.....	28	.....	366	157	179	188	258	552	963	892	498	681	375	66
105 establishments	1916	5,976	55.7	.140	7.75	2,522	1,753	303	1,370	.....	28	.....	383	164	200	213	278	681	1,051	974	553	910	478	91

TABLE B.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916.

MANUFACTURING—Continued.

CARD STRIPPERS: Male.

[In this table the figures for both years are for identical establishments.]

State and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Alabama:																							
8 establishments	1914	23	60.1	$0.112	$6.75	.....	.....	.....	22	.....	1	.....	.....	.....	4	.....	.....	11	7	.....	1	.....	.....	.....
	1916	29	60.6	.119	7.24	.....	.....	.....	23	.....	6	.....	.....	.....	.....	.....	.....	22	4	.....	3	.....	.....	.....
Georgia:																							
12 establishments	1914	73	60.0	.127	7.63	.....	.....	.....	73	.....	.....	.....	.....	.....	.....	.....	.....	18	38	14	3	.....	.....	.....
	1916	102	60.0	.134	8.05	.....	.....	.....	102	.....	.....	.....	.....	.....	.....	.....	.....	19	46	30	6	1	.....	.....
Maine:																							
5 establishments	1914	60	58.0	.137	7.94	.....	.....	60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	7	5	3	.....	.....
	1916	54	58.0	.163	9.48	.....	.....	54	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	37	5	7	5	.....
Massachusetts:																							
18 establishments	1914	283	54.0	.151	8.17	283	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	26	195	54	7	.....	.....
	1916	241	54.2	.188	10.18	234	.....	.....	5	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	5	69	119	48	.....
New Hampshire:																							
5 establishments	1914	220	55.1	.156	8.61	.....	214	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	1	47	97	75	.....	.....	.....
	1916	148	55.2	.186	9.60	.....	141	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	8	87	27	.....
New York:																							
2 establishments	1914	29	54.8	.179	9.83	25	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	16	7	3	.....
	1916	27	54.4	.209	11.38	25	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	18	2
North Carolina:																							
13 establishments	1914	47	60.0	.122	7.34	.....	.....	.....	47	.....	.....	.....	.....	.....	.....	.....	.....	14	28	2	3	.....	.....	.....
	1916	62	60.0	.128	7.69	.....	.....	.....	62	.....	.....	.....	.....	.....	.....	.....	.....	17	28	14	3	.....	.....	.....
Rhode Island:																							
3 establishments	1914	37	54.0	.155	8.38	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	11	14	.....	.....	.....
	1916	34	54.4	.198	10.76	32	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	16	7	4
South Carolina:																							
19 establishments	1914	77	60.0	.120	7.23	.....	.....	.....	77	.....	.....	.....	.....	.....	.....	.....	5	39	15	17	1	.....	.....	.....
	1916	80	60.0	.126	7.58	.....	.....	.....	80	.....	.....	.....	.....	.....	.....	.....	.....	31	25	18	6	.....	.....	.....

Other States:																								
3 establishments	1914	20	54.9	.146	8.00	3	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	17	.....	1	.....	.....
	1916	15	54.5	.161	8.77	7	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	11	.....	1	.....
Total:																								
88 establishments	1914	869	56.1	.145	8.11	348	231	60	229	.....	1	.....	.....	.....	4	.....	5	85	219	363	172	18	3	.....
	1916	792	56.7	.166	9.23	298	149	54	283	.....	8	.....	.....	.....	.....	.....	.....	89	105	133	118	235	108	6

DRAWING-FRAME TENDERS: Male.

Alabama:																								
5 establishments	1914	49	60.2	$0.094	$5.64	.....	.....	.....	45	4	.....	.....	.....	2	2	10	10	25	.....	.....	.....	.....	.....	.....
	1916	56	60.2	.101	6.10	.....	.....	.....	52	4	.....	.....	.....	.....	5	4	2	40	5	.....	.....	.....	.....	.....
Georgia:																								
11 establishments	1914	81	60.0	.107	6.42	.....	.....	.....	81	.....	.....	.....	.....	.....	8	4	7	40	18	4	.....	.....	.....	.....
	1916	101	60.0	.107	6.44	.....	.....	.....	101	.....	.....	.....	.....	.....	6	11	2	54	28	.....	.....	.....	.....	.....
Maine:																								
5 establishments	1914	36	58.0	.112	6.49	.....	.....	36	.....	.....	.....	.....	.....	.....	.....	.....	10	9	17	.....	.....	.....	.....	.....
	1916	37	58.0	.133	7.71	.....	.....	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	21	2	3	.....	1	.....
Massachusetts:																								
13 establishments	1914	154	54.0	.133	7.19	154	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	84	28	11	3	.....	.....
	1916	112	54.3	.164	8.91	107	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	16	20	54	16	6	.....
New Hampshire:																								
2 establishments	1914	33	55.0	.148	8.13	.....	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	11	15	5	1	.....	.....
	1916	31	55.0	.181	9.94	.....	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4	5	17	4	.....
North Carolina:																								
13 establishments	1914	108	60.0	.119	7.14	.....	.....	.....	108	.....	.....	.....	.....	.....	.....	.....	1	51	39	9	7	.....	1	.....
	1916	88	60.0	.128	7.67	.....	.....	.....	88	.....	.....	.....	.....	.....	.....	.....	4	21	43	11	6	3	.....	.....
Rhode Island:																								
2 establishments	1914	25	54.0	.131	7.06	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	19	4	.....	.....	.....	.....
	1916	20	54.9	.154	8.46	17	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	14	4	1	.....	.....
South Carolina:																								
19 establishments	1914	139	60.0	.102	6.14	.....	.....	.....	139	.....	.....	.....	.....	1	28	14	22	37	21	14	1	1	.....	.....
	1916	178	60.0	.101	6.09	.....	1	.....	177	.....	.....	.....	1	1	36	26	16	52	19	25	2	.....	.....	.....
Other States:																								
4 establishments	1914	24	54.8	.133	7.33	16	6	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	7	5	10	.....	1	1	.....
	1916	39	55.1	.155	8.55	23	11	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	3	11	2	20	1	2	.....
Total:																								
74 establishments	1914	649	57.8	.117	6.75	195	39	36	375	4	.....	.....	.....	3	38	28	50	200	214	84	24	6	2	.....
	1916	662	58.2	.127	7.32	147	43	37	431	4	.....	.....	1	1	47	41	24	180	145	78	94	38	13	.....

TABLE B.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Continued.

MANUFACTURING—Continued.

DRAWING-FRAME TENDERS: Female.

[In this table the figures for both years are for identical establishments.]

State and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Alabama:																							
4 establishments	1914	26	60.0	$0.069	$4.11	.....	.....	.....	26	.....	.....	.....	10	6	1	2	6	1	.....	.....	.....	.....	.....
	1916	37	60.0	.081	4.86	.....	.....	.....	37	.....	.....	.....	.....	10	15	1	3	5	2	.....	1	.....	.....
Georgia:																							
5 establishments	1914	32	60.0	.104	6.25	.....	.....	.....	32	.....	.....	.....	.....	.....	2	.....	6	14	10	.....	.....	.....	.....
	1916	35	60.0	.107	6.43	.....	.....	.....	35	.....	.....	.....	.....	.....	.....	.....	10	15	9	1	.....	.....	.....
Maine:																							
3 establishments	1914	62	58.0	.108	6.24	.....	.....	62	.....	.....	.....	.....	.....	.....	.....	.....	25	25	7	5	.....	.....	.....
	1916	47	58.0	.126	7.33	.....	.....	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	10	5	8	.....	.....
Massachusetts:																							
10 establishments	1914	222	53.8	.118	6.35	222	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12	126	73	10	1	.....	.....
	1916	179	54.0	.149	8.05	179	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55	100	22	2	.....
New Hampshire:																							
5 establishments	1914	175	55.0	.131	7.19	.....	175	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	47	83	17	21	4	1	.....
	1916	179	55.0	.156	8.59	.....	179	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	28	106	15	15	9	3
Other States:																							
4 establishments	1914	52	54.4	.120	6.55	40	10	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	17	35	.....	.....	.....	.....
	1916	49	54.3	.153	8.32	40	8	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	2	8	21	18	.....	.....
Total:																							
31 establishments	1914	569	55.3	.118	6.51	262	185	62	60	.....	.....	.....	10	6	3	4	49	230	208	32	22	4	1	.....
	1916	526	55.5	.142	7.86	219	187	47	73	.....	.....	.....	.....	10	15	1	13	49	112	233	64	17	9	3

SPEEDER TENDERS: Male.

Alabama:																							
5 establishments	1914	56	60.0	$0.137	$8.19				56					1			3	12	16	14	7		3	
	1916	141	60.0	.149	8.95				141							3	4	19	30	28	33	18	6	
Georgia:																								
11 establishments	1914	152	60.0	.152	9.14				152								3	12	32	53	27	15	10	
	1916	208	60.0	.156	9.36				208					2		4	2	5	31	79	47	29	7	2
Massachusetts:																								
5 establishments	1914	78	54.0	.156	8.44	78										1	1	7	22	11	20	15	1	
	1916	80	54.0	.218	11.76	80													3	1	16	3	40	17
North Carolina:																								
13 establishments	1914	148	60.0	.157	9.40				148							1	2	9	39	33	29	16	19	
	1916	231	60.0	.159	9.53				231								2	11	50	63	52	30	23	
South Carolina:																								
19 establishments	1914	338	60.0	.151	9.06				338					1	2	1	3	25	79	102	83	36	6	
	1916	484	60.0	.149	8.93		6		477	1			1		2	2	7	43	105	173	101	39	11	
Other States:																								
5 establishments	1914	27	56.6	.172	9.75	7	6	10	4								1	3	7	2	3	4	3	4
	1916	141	55.4	.225	12.44	31	88	12	10								1		2	1	10	14	79	34
Total:																								
58 establishments	1914	799	59.3	.153	9.04	85	6	10	698					2	2	3	13	68	195	215	169	86	42	4
	1916	1,285	59.1	.164	9.67	111	94	12	1,067	1			1	2	2	9	16	78	221	345	259	133	166	53

SPEEDER TENDERS: Female.

Alabama:																							
8 establishments	1914	103	60.2	$0.123	$7.42				97	6				2		2	4	40	34	12	8	1		
	1916	137	60.1	.139	8.37				133	4					3	5	6	41	41	26	11	4		
Connecticut:																								
2 establishments	1914	35	55.0	.147	8.10		35											3	5	23	3	1		
	1916	40	55.0	.175	9.62		40												4	4	8	23	1	
Georgia:																								
9 establishments	1914	108	60.0	.135	8.07				108					1		1	4	23	31	32	15	1		
	1916	119	60.0	.152	9.11				119						1	2	3	13	27	40	16	12	5	
Maine:																								
5 establishments	1914	191	58.0	.154	8.96			191							1	4	2	3	31	79	53	11	7	
	1916	244	58.0	.188	10.92			244							1			3	3	25	80	42	84	6
Massachusetts:																								
18 establishments	1914	755	54.0	.160	8.63	755										2	1	18	89	279	263	65	35	3
	1916	1,005	54.0	.195	10.55	1,005												9	16	50	204	314	376	36
New Hampshire:																								
5 establishments	1914	347	55.0	.167	9.18		347									1		10	39	78	122	60	35	2
	1916	504	55.0	.202	11.12		504							1				2	13	38	57	118	242	33
New York:																								
2 establishments	1914	119	54.0	.173	9.36	119												1	4	10	62	40	1	1
	1916	147	54.0	.204	10.99	147							1						1	1	2	49	94	

TABLE B.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Continued.

MANUFACTURING—Continued.

SPEEDER TENDERS: Female—Concluded.

[In this table the figures for both years are for identical establishments.]

State and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
North Carolina:																								
7 establishments	1914	54	60.0	$0.119	$7.16	.....	.....	.....	54	.....	.....	.....	.....	.....	.....	3	12	18	8	8	5	.....	.....	.....
	1916	34	60.0	.143	8.55	.....	.....	.....	34	.....	.....	.....	.....	.....	.....	1	1	7	5	10	7	2	1	.....
Rhode Island:																								
3 establishments	1914	108	54.0	.167	9.01	108	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	4	3	30	39	17	13	.....
	1916	164	54.0	.197	10.65	164	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	2	6	14	71	64	4
South Carolina:																								
16 establishments	1914	145	60.0	.130	7.83	.....	.....	.....	145	.....	.....	.....	.....	.....	1	2	6	54	25	32	23	2	.....	.....
	1916	153	60.0	.134	8.02	.....	1	.....	152	.....	.....	.....	.....	.....	.....	3	12	42	37	31	16	10	2	.....
Other States:																								
1 establishment	1914	22	54.0	.154	8.31	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	6	7	3	.....	.....
	1916	31	54.0	.156	8.44	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	12	1	8	1	.....
Total:																								
76 establishments	1914	1,987	55.8	.155	8.62	1,004	382	191	404	6	.....	.....	.....	3	2	15	31	174	275	589	600	201	91	6
	1916	2,578	55.6	.187	10.33	1,347	545	244	438	4	.....	.....	.....	1	5	11	22	120	158	243	416	653	870	79

SPINNERS, MULE: Male.

Maine:																								
3 establishments	1914	43	58.0	$0.253	$14.66	.....	.....	43	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2	8	7	25
	1916	39	58.0	.292	16.94	.....	.....	39	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	34
Massachusetts:																								
5 establishments	1914	119	54.0	.339	18.28	119	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	91
	1916	113	54.0	.394	21.27	113	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	112

Rhode Island:																								
2 establishments	1914	39	54.0	.249	13.46	39																21	18	
	1916	36	54.0	.282	15.22	36																2	34	
Other States:																								
1 establishment	1914	14	55.0	.196	10.79		14														1	9	4	
	1916	8	55.0	.229	12.62		8																7	1
Total:																								
11 establishments	1914	215	54.9	.296	16.20	158	14	43										1		3	17	60	134	
	1916	196	54.8	.346	18.94	149	8	39													1	14	181	

SPINNERS, FRAME: Male.

Massachusetts:																								
11 establishments	1914	198	53.8	$0.157	$8.46	198							1	1	3	7	18	28	43	44	34	19		
	1916	210	54.0	.189	10.21	210											8	15	30	37	26	83	11	
New Hampshire:																								
5 establishments	1914	164	55.0	.154	8.48		164									3	17	21	49	49	18	7		
	1916	98	55.0	.206	11.32		98										1	1	3	13	23	39	18	
South Carolina:																								
8 establishments	1914	46	52.4	.109	5.54	10			36					2	6	6	20	3	8	1				
	1916	54	60.0	.091	5.45				54				9	6	6	5	5	14	7	2				
Other States:																								
14 establishments	1914	75	58.1	.145	8.42	18		18	39					1	1	3	5	20	9	8	8	7	13	
	1916	185	59.4	.149	8.82	14		11	160				2	10	14	9	11	20	34	15	12	16	25	17
Total:																								
38 establishments	1914	483	54.7	.150	8.18	226	164	18	75					2	4	12	21	75	61	108	102	59	39	
	1916	547	56.6	.169	9.47	224	98	11	214				11	16	20	14	16	43	57	50	62	65	147	46

SPINNERS, FRAME: Female.

Alabama:																								
8 establishments	1914	454	60.1	$0.098	$5.91				438	16			7	59	103	83	140	42	20					
	1916	587	60.1	.105	6.29				558	29		34	34	44	62	112	111	128	40	20	1	1		
Connecticut:																								
2 establishments	1914	88	55.0	.154	8.48		88									3	5	15	39	5	11	9	1	
	1916	59	55.0	.179	9.83		59										3	3	12	16	13	10	2	
Georgia:																								
12 establishments	1914	703	60.0	.108	6.50				703				48	48	69	95	199	161	54	16	11	2		
	1916	789	60.0	.114	6.87				789			10	39	55	54	83	204	189	104	30	18	3		
Maine:																								
5 establishments	1914	349	58.0	.142	8.21			349							6	18	42	105	92	51	33	2		
	1916	362	58.0	.170	9.83			362					1			4	20	37	87	50	100	61	2	
Massachusetts:																								
18 establishments	1914	1,745	53.9	.150	8.11	1,745								4	9	27	100	325	808	310	113	49		
	1916	1,634	53.9	.182	9.83	1,634								2		1	24	50	160	481	544	367	5	

TABLE B.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Continued.

MANUFACTURING—Continued.

SPINNERS, FRAME; Female—Concluded.

[In this table the figures for both years are for identical establishments.]

State and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
New Hampshire:																								
5 establishments	1914	1,297	55.0	$0.154	$8.46	.....	1,297	.....	.....	.....	.....	.....	.....	.....	1	4	26	94	153	423	485	91	20	.....
	1916	1,202	55.0	.188	10.32	.....	1,202	.....	.....	.....	.....	.....	.....	.....	1	1	1	14	51	74	144	673	217	26
New York:																								
2 establishments	1914	228	54.0	.152	8.21	228	.....	.....	.....	.....	.....	.....	.....	3	1	.....	5	42	36	45	43	48	5	.....
	1916	215	54.0	.183	9.89	215	.....	.....	.....	.....	.....	.....	.....	.....	2	1	3	5	12	27	43	66	55	1
North Carolina:																								
13 establishments	1914	473	60.0	.110	6.63	.....	.....	.....	473	.....	.....	.....	.....	3	23	57	53	198	87	47	4	1	.....	.....
	1916	565	60.0	.108	6.46	.....	.....	.....	565	.....	.....	.....	19	39	44	46	47	173	131	60	4	1	1	.....
Rhode Island:																								
3 establishments	1914	228	54.0	.151	8.17	228	.....	.....	.....	.....	.....	.....	.....	1	1	2	10	31	41	47	59	21	14	1
	1916	211	54.0	.190	10.26	211	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	22	14	43	43	69	14
South Carolina:																								
19 establishments	1914	1,120	60.0	.106	6.37	.....	.....	.....	1,120	.....	.....	.....	.....	4	49	139	210	497	174	38	6	2	1	.....
	1916	1,321	60.0	.103	6.20	.....	11	.....	1,310	.....	.....	.....	53	81	118	144	154	396	289	68	12	5	1	.....
Other States:																								
1 establishment	1914	81	54.0	.118	6.39	81	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	32	33	6	.....	.....	.....	.....
	1916	67	54.0	.134	7.25	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	33	20	6	.....	2	.....
Total:																								
88 establishments	1914	6,766	56.8	.132	7.47	2,282	1,385	349	2,734	16	.....	.....	.....	66	186	389	540	1,380	1,172	1,619	979	331	102	2
	1916	7,012	57.2	.147	8.32	2,127	1,272	362	3,222	29	.....	.....	116	194	266	308	405	962	945	666	849	1,464	787	50

SLASHER TENDERS: Male.

Alabama:																									
6 establishments	1914	15	60.2	$0.144	$8.70	.....	.....	.....	14	1	.....	.....	.....	.....	.....	.....	.....	5	2	3	4	.....	1	.....
	1916	7	60.4	.206	12.47	.....	.....	.....	6	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	5	.....
Georgia:																									
12 establishments	1914	64	60.0	.147	8.79	.....	.....	.....	64	.....	.....	.....	.....	.....	.....	.....	.....	12	1	33	13	5	.....	.....
	1916	73	60.0	.149	8.93	.....	.....	.....	73	.....	.....	.....	.....	.....	.....	.....	.....	14	2	30	19	6	2	.....
Maine:																									
5 establishments	1914	29	58.0	.205	11.91	.....	.....	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	25	.....
	1916	30	58.0	.235	13.65	.....	.....	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	2
Massachusetts:																									
17 establishments	1914	138	53.9	.240	12.95	138	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	108	30
	1916	139	54.0	.282	15.21	139	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	119
New Hampshire:																									
5 establishments	1914	112	55.0	.292	16.07	.....	112	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	37	75
	1916	108	55.0	.332	18.28	.....	108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	106
North Carolina:																									
9 establishments	1914	31	60.0	.153	9.15	.....	.....	.....	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	26	4	.....	.....	.....
	1916	30	60.0	.188	11.25	.....	.....	.....	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	16	3	10	.....
South Carolina:																									
17 establishments	1914	67	60.0	.133	7.95	.....	.....	.....	67	.....	.....	.....	.....	.....	.....	.....	.....	13	27	21	6	.....	.....	.....
	1916	66	60.0	.137	8.20	.....	.....	.....	66	.....	.....	.....	.....	.....	.....	.....	.....	13	24	20	8	.....	1	.....
Other States:																									
7 establishments	1914	43	54.3	.232	12.59	36	6	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	5	21	14
	1916	46	54.2	.272	14.76	39	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	3	38
Total:																									
78 establishments	1914	499	56.6	.214	11.99	174	118	29	177	1	.....	.....	.....	.....	.....	.....	.....	30	31	83	30	14	192	119
	1916	499	56.6	.244	13.62	178	115	30	175	1	.....	.....	.....	.....	.....	.....	.....	27	26	51	44	16	70	265

LOOM FIXERS: Male.

Alabama:																									
8 establishments	1914	169	60.1	$0.188	$11.28	.....	.....	.....	164	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	22	125	19	1
	1916	179	60.1	.197	11.85	.....	.....	.....	175	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	17	31	129	.....
Connecticut:																									
2 establishments	1914	27	55.0	.261	14.35	.....	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	9	17
	1916	26	55.0	.306	16.84	.....	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26
Georgia:																									
12 establishments	1914	191	60.0	.183	10.98	.....	.....	.....	191	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	121	16	54	.....
	1916	205	60.0	.193	11.56	.....	.....	.....	205	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	66	9	130	.....
Maine:																									
5 establishments	1914	151	58.0	.258	14.97	.....	.....	151	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	113	38
	1916	154	58.0	.282	16.36	.....	.....	154	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	146
Massachusetts:																									
18 establishments	1914	592	54.0	.264	14.24	592	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	142	450
	1916	603	54.0	.312	16.83	603	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	600

TABLE B.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Continued.

MANUFACTURING—Continued.

LOOM FIXERS: Male—Concluded.

[In this table the figures for both years are for identical establishments.]

State and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
New Hampshire:																								
5 establishments	1914	541	55.0	$0.264	$14.54	.....	541	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	81	460
	1916	518	55.0	.325	17.87	.....	518	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	497
New York:																								
2 establishments	1914	59	54.3	.266	14.47	56	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	7	50
	1916	67	54.9	.302	16.60	57	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	60
North Carolina:																								
12 establishments	1914	149	60.0	.170	10.20	.....	.....	.....	149	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	144	2	3	.....
	1916	156	60.0	.188	11.29	.....	.....	.....	156	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	52	67	25	7
Rhode Island:																								
3 establishments	1914	185	54.0	.276	14.92	185	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	172
	1916	161	54.0	.332	17.91	161	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	159
South Carolina:																								
19 establishments	1914	354	60.8	.177	10.78	.....	.....	.....	314	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	54	144	116	40	.....
	1916	397	60.7	.194	11.80	.....	3	.....	322	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	83	46	257	7
Other States:																								
1 establishment	1914	23	55.0	.199	10.95	.....	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	2	1	15	1
	1916	20	55.0	.218	11.98	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	11	3
Total:																								
87 establishments	1914	2,441	56.7	.234	13.17	833	591	151	821	45	.....	.....	.....	.....	.....	.....	.....	.....	.....	60	433	263	496	1,189
	1916	2,486	56.9	.268	15.10	821	567	154	868	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	11	220	157	593	1,506

WEAVERS: Male.

Alabama:																							
8 establishments	1914	531	60.0	$0.146	$8.74				523	8					8	9	52	80	90	98	94	55	36	98
	1916	520	60.0	.160	9.60				517	3						1	5	90	88	86	89	79	65	17
Connecticut:																								
2 establishments	1914	84	55.0	.197	10.86		84										2	3	2	9	7	8	48	5
	1916	84	55.0	.237	13.02		84											2	4	1	3	4	29	41
Georgia:																								
12 establishments	1914	710	60.0	.159	9.55				710							8	15	63	130	166	129	91	99	9
	1916	782	60.0	.161	9.64				782						1			62	175	166	165	110	94	9
Maine:																								
5 establishments	1914	436	58.0	.197	11.42			436								6	7	15	25	52	44	69	170	48
	1916	471	58.0	.240	13.94			471										1	6	23	31	41	145	224
Massachusetts:																								
18 establishments	1914	2,517	54.0	.186	10.04	2,517									1	2	34	98	155	312	524	500	771	120
	1916	2,435	53.9	.220	11.86	2,435												19	49	136	198	362	1,074	597
New Hampshire:																								
5 establishments	1914	1,881	55.0	.196	10.75		1,881									2	10	49	99	157	273	419	741	131
	1916	1,565	55.0	.235	12.95		1,565										2	6	22	29	71	120	757	558
New York:																								
2 establishments	1914	205	54.8	.208	11.43	177			28						1				2	18	23	37	105	19
	1916	260	55.7	.229	12.76	186			74									1	2	14	13	31	106	93
North Carolina:																								
12 establishments	1914	847	60.0	.156	9.37				847							6	13	68	145	253	208	87	61	6
	1916	861	60.0	.167	10.12				861									59	102	201	236	152	99	12
Rhode Island:																								
3 establishments	1914	646	54.0	.201	10.88	646										1	7	24	46	62	56	112	225	113
	1916	599	54.0	.245	13.24	599												5	16	20	35	45	182	296
South Carolina:																								
18 establishments	1914	1,629	60.0	.148	8.85				1,629						2	2	19	79	272	374	309	246	181	129	16
	1916	1,425	60.0	.154	9.21		14		1,411										202	287	368	295	162	105	6
Other States:																								
1 establishment	1914	32	54.0	.160	8.66	32													1	9	9	5	5	2	1
	1916	25	54.0	.188	10.17	25													1	1	3	6	5	8	1
Total:																								
86 establishments	1914	9,518	56.7	.176	9.96	3,372	1,965	436	3,737	8					4	10	53	219	673	1,077	1,445	1,609	1,564	2,387	477
	1916	9,027	56.8	.202	11.37	3,245	1,663	471	3,645	3					1	1	7	448	752	1,047	1,142	1,111	2,664	1,854

WEAVERS: Female.

Alabama:																							
8 establishments	1914	377	60.3	$0.132	$7.98				340	37				6	5	15	34	99	81	51	45	26	14	1
	1916	347	60.2	.146	8.80				323	24						2	4	67	85	89	49	26	23	2
Connecticut:																								
2 establishments	1914	129	55.0	.144	7.90		129									4	7	23	23	28	31	5	8	
	1916	117	55.0	.196	10.79		117											4	7	14	22	20	31	1

TABLE B.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Continued.

MANUFACTURING—Continued.

WEAVERS: Female—Concluded.

[In this table the figures for both years are for identical establishments.]

State and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Georgia:																								
12 establishments	1914	624	60.0	$0.140	$8.37	.....	.....	.....	624	.....	.....	.....	.....	.....	.....	10	40	125	155	139	95	36	23	1
	1916	561	60.0	.144	8.67	.....	.....	.....	561	.....	.....	.....	.....	.....	.....	.....	.....	103	182	113	101	42	19	1
Maine:																								
5 establishments	1914	736	58.0	.166	9.63	.....	.....	736	.....	.....	.....	.....	.....	.....	.....	4	25	61	85	192	122	102	122	23
	1916	628	58.0	.204	11.82	.....	.....	628	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	24	51	115	102	229	94
Massachusetts:																								
18 establishments	1914	3,889	54.0	.168	9.09	3,889	.....	.....	.....	.....	.....	.....	.....	.....	1	4	57	259	435	699	1,032	784	570	48
	1916	3,789	53.9	.204	10.98	3,789	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	71	131	243	448	815	1,661	420
New Hampshire:																								
5 establishments	1914	3,157	55.0	.188	10.36	.....	3,157	.....	.....	.....	.....	.....	1	.....	.....	1	23	110	186	392	573	610	1,091	170
	1916	2,988	55.0	.226	12.42	.....	2,988	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	15	38	112	181	327	1,557	757
New York:																								
2 establishments	1914	252	54.0	.181	9.76	252	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	11	12	23	66	78	57	2
	1916	226	54.0	.211	11.41	226	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3	16	17	45	105	37
North Carolina:																								
12 establishments	1914	483	60.0	.139	8.32	.....	.....	.....	483	.....	.....	.....	.....	.....	.....	9	36	88	115	114	88	28	5	.....
	1916	492	60.0	.152	9.12	.....	.....	.....	492	.....	.....	.....	.....	.....	.....	.....	.....	70	99	152	75	74	20	2
Rhode Island:																								
3 establishments	1914	518	54.0	.181	9.76	518	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	9	38	57	69	69	85	162	28
	1916	604	54.0	.224	12.07	604	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	20	42	63	51	226	181
South Carolina:																								
18 establishments	1914	768	60.0	.130	7.81	.....	.....	.....	768	.....	.....	.....	1	1	3	18	44	219	238	137	62	23	21	1
	1916	638	60.0	.140	8.40	.....	3	.....	635	.....	.....	.....	.....	.....	.....	.....	.....	141	206	154	93	31	13	.....
Other States:																								
1 establishment	1914	133	54.0	.155	8.35	133	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	7	19	23	24	27	20	7	5
	1916	115	54.0	.170	9.19	115	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	10	28	30	17	13	7
Total:																								
86 establishments	1914	11,066	55.8	.168	9.31	4,792	3,286	736	2,215	37	.....	.....	2	7	10	66	285	1,052	1,410	1,868	2,210	1,707	2,080	270
	1916	10,505	55.7	.199	11.05	4,734	3,108	628	2,011	24	.....	.....	.....	.....	.....	.....	5	518	805	1,014	1,194	1,550	3,89.	1,529

TRIMMERS OR INSPECTORS: Female.

Alabama:																							
8 establishments	1914	70	60.0	$0.095	$5.68				70					3	11	8	10	35	3				
	1916	68	60.4	.096	5.82				58	10				4	19	11	27	7					
Georgia:																							
8 establishments	1914	67	60.0	.104	6.21				67					2		14	15	20	8	5	2	1	
	1916	80	59.8	.097	5.80			8	72					5	3	23	15	28	3	2			1
Maine:																							
5 establishments	1914	101	58.0	.106	6.14			101										96	5				
	1916	126	58.0	.118	6.83			126										63	56	7			
Massachusetts:																							
18 establishments	1914	190	54.0	.128	6.91	190											1	76	72	34	7		
	1916	219	53.9	.154	8.28	219												2	72	71	34	35	4	1
New Hampshire:																							
5 establishments	1914	68	55.0	.149	8.18		68											9	27	10	11	1	10	
	1916	123	55.0	.171	9.42		123												21	27	21	30	24	
North Carolina:																							
6 establishments	1914	26	60.0	.101	6.06				26					3	6		16	1					
	1916	26	60.0	.110	6.57				26					1	3	1	10	11					
Rhode Island:																							
2 establishments	1914	30	54.0	.155	8.38	30												1	13	3	7	5	1	
	1916	38	54.0	.167	9.02	38														22	6	4	6	
South Carolina:																							
16 establishments	1914	137	60.0	.085	5.09				137					3	43	39	22	29	1				
	1916	134	60.0	.086	5.18				134				4	2	24	46	24	32	2				
Other States:																							
5 establishments	1914	28	54.3	.125	6.82	19	9											10	15	3			
	1916	30	54.3	.147	7.96	22	8												12	13	5		
Total:																							
73 establishments	1914	717	57.2	.113	6.42	239	77	101	300					8	57	67	48	292	145	55	27	7	11	
	1916	844	56.9	.129	7.27	279	131	134	290	10			4	7	32	91	51	162	184	142	66	69	35	

OTHER EMPLOYEES: Male.

Alabama:																							
8 establishments	1914	2,377	60.5	$0.114	$6.90				2,235		102	40	188	154	157	67	197	699	385	246	96	35	101	52
	1916	2,181	60.4	.134	8.12				2,078		73	30	56	64	86	48	88	794	391	228	141	48	112	125
Connecticut:																							
2 establishments	1914	343	55.4	.171	9.50		331		7			5	4	1	3	1	6	18	57	115	34	25	39	40
	1916	238	55.7	.198	11.02		224		7			7				1	2	3	15	22	61	29	53	52
Georgia:																							
12 establishments	1914	3,053	60.3	.125	7.54				3,018	1		34	101	93	160	107	116	935	747	268	239	48	152	87
	1916	2,670	60.2	.135	8.12				2,636			34	60	46	72	92	106	800	693	250	195	27	173	156
Maine:																							
5 establishments	1914	1,498	58.4	.159	9.31			1,458	2			38	6	8	34	33	43	148	377	205	201	147	189	104
	1916	1,328	58.3	.192	11.22			1,301	1		3	23				2	2	63	176	258	228	148	225	226

TABLE B.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Concluded.

MANUFACTURING—Continued.

OTHER EMPLOYEES: Male—Concluded.

[In this table the figures for both years are for identical establishments.]

State and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						54 or under.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cts. and over.
Massachusetts:																								
18 establishments	1914	6,393	54.6	$0.172	$9.37	6,156	1	25	12	7	2	190	47	24	37	64	116	482	1,218	1,498	676	647	825	759
	1916	4,982	54.8	.206	11.28	4,731	3	9	13	5	12	209	13	4	16	27	54	100	286	567	1,078	861	901	1,075
New Hampshire:																								
5 establishments	1914	7,101	55.8	.181	10.12	.....	6,752	11	41	.....	.....	297	38	40	28	47	26	247	860	1,852	1,139	720	1,292	812
	1916	5,804	56.0	.215	12.07	.....	5,361	5	147	4	5	282	3	21	3	14	3	22	147	312	1,437	1,244	1,231	1,367
New York:																								
2 establishments	1914	602	55.8	.173	9.66	511	.....	.....	56	.....	.....	35	.....	.....	.....	2	4	7	123	174	93	53	94	52
	1916	542	56.1	.208	11.65	445	.....	.....	63	.....	4	30	.....	.....	.....	.....	1	.....	18	119	143	66	83	112
North Carolina:																								
13 establishments	1914	2,108	60.2	.118	7.08	2	.....	.....	2,080	.....	.....	26	52	67	199	95	49	748	397	241	127	31	81	21
	1916	1,908	60.5	.126	7.60	2	1	11	1,827	2	1	64	72	39	93	51	33	648	499	188	130	17	83	35
Rhode Island:																								
3 establishments	1914	1,160	54.5	.176	9.56	1,139	.....	.....	.....	.....	.....	21	11	1	8	4	20	83	195	176	262	100	169	131
	1916	872	54.7	.213	11.65	840	.....	.....	14	.....	.....	18	4	1	3	6	4	15	47	125	98	167	174	228
South Carolina:																								
19 establishments	1914	4,985	60.3	.114	6.86	6	.....	2	4,883	3	11	80	295	137	326	317	426	1,797	552	509	278	91	180	77
	1916	3,827	60.5	.125	7.53	2	18	.....	3,687	10	.....	110	243	97	137	198	240	1,453	413	316	293	70	218	149
Other States:																								
1 establishment	1914	241	55.3	.156	8.61	224	.....	.....	.....	.....	.....	17	.....	.....	.....	4	21	43	25	54	37	7	29	21
	1916	180	54.2	.182	9.88	178	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	10	24	22	53	25	21	25
Total:																								
88 establishments	1914	29,861	57.5	.151	8.59	8,038	7,084	1,496	12,334	11	115	783	742	525	952	741	1,024	5,207	4,936	5,338	3,185	1,904	3,151	2,156
	1916	24,532	57.7	.174	9.98	6,198	5,607	1,326	10,473	21	98	809	451	272	410	439	533	3,908	2,709	2,407	3,857	2,702	3,274	3,570

OTHER EMPLOYEES: Female.

Alabama:																							
8 establishments	1914	836	60.1	$0.080	$4.83	.....	.....	.....	797	.....	39	.....	271	105	72	69	82	129	71	23	5	7	2	.....
	1916	312	60.3	.080	4.82	.....	.....	.....	284	.....	28	.....	64	48	58	25	44	51	15	6	.....	.....	1	.....
Connecticut:																								
2 establishments	1914	131	55.0	.121	6.66	.....	131	.....	.....	.....	.....	.....	13	4	4	3	5	27	40	15	12	4	4	.....
	1916	62	55.0	.136	7.49	.....	62	.....	.....	.....	.....	.....	5	.....	3	.....	3	7	6	12	11	9	5	2
Georgia:																								
12 establishments	1914	785	60.0	.098	5.86	.....	.....	.....	785	.....	.....	.....	111	51	83	74	72	174	146	58	5	6	3	2
	1916	210	60.0	.097	5.81	.....	.....	.....	210	.....	.....	.....	36	9	22	24	14	57	31	9	1	4	3	.....
Maine:																								
5 establishments	1914	802	58.0	.126	7.33	.....	.....	802	.....	.....	.....	.....	7	7	53	54	46	171	166	183	81	24	9	1
	1916	249	58.0	.138	7.99	.....	.....	249	.....	.....	.....	.....	4	1	5	6	18	57	47	48	22	19	22	.....
Massachusetts:																								
18 establishments	1914	3,655	53.7	.135	7.27	3,655	.....	.....	.....	.....	.....	.....	63	37	140	152	209	672	826	624	502	267	144	19
	1916	1,661	53.3	.151	8.03	1,661	.....	.....	.....	.....	.....	.....	26	16	18	45	91	127	296	426	223	253	118	22
New Hampshire:																								
5 establishments	1914	2,766	55.0	.148	8.12	.....	2,766	.....	.....	.....	.....	.....	60	53	77	79	77	279	461	529	526	367	227	31
	1916	1,565	55.0	.166	9.13	1	1,564	.....	.....	.....	.....	.....	6	40	10	7	8	44	357	287	206	376	193	31
New York:																								
2 establishments	1914	264	54.0	.145	7.81	264	.....	.....	.....	.....	.....	.....	3	1	1	8	10	64	32	38	48	34	25	.....
	1916	113	54.0	.148	8.00	113	.....	.....	.....	.....	.....	.....	.....	.....	1	4	.....	.....	57	18	21	3	3	6
North Carolina:																								
13 establishments	1914	607	60.0	.090	5.42	.....	.....	.....	607	.....	.....	.....	79	47	94	74	77	148	59	24	3	2	.....	.....
	1916	276	60.0	.087	5.22	.....	.....	.....	276	.....	.....	.....	75	21	11	22	32	72	29	11	2	1	.....	.....
Rhode Island:																								
3 establishments	1914	546	54.0	.140	7.55	546	.....	.....	.....	.....	.....	.....	11	25	5	27	21	78	128	79	72	56	38	6
	1916	183	54.0	.145	7.83	183	.....	.....	.....	.....	.....	.....	3	2	10	5	12	15	40	48	8	8	27	5
South Carolina:																								
19 establishments	1914	1,533	60.0	.089	5.37	.....	.....	.....	1,533	.....	.....	.....	282	162	236	150	148	316	154	45	22	7	9	2
	1916	443	60.0	.080	4.82	.....	.....	.....	443	.....	.....	.....	147	19	41	47	34	100	34	17	2	.....	2	.....
Other States:																								
1 establishment	1914	218	54.0	.129	6.94	218	.....	.....	.....	.....	.....	.....	3	.....	4	8	33	47	55	26	19	15	7	1
	1916	101	54.0	.130	7.05	101	.....	.....	.....	.....	.....	.....	.....	1	.....	3	3	22	51	10	2	8	1	.....
Total:																								
88 establishments	1914	12,143	56.3	.123	6.89	4,683	2,897	802	3,722	.....	39	.....	903	492	769	698	780	2,105	2,138	1,644	1,295	789	468	62
	1916	5,175	55.7	.138	7.62	2,059	1,626	249	1,213	.....	28	.....	366	157	179	188	258	552	963	892	498	681	375	66

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916.

MANUFACTURING—Continued.

CARD STRIPPERS: Male.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—						Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Alabama	Time..	8	29	60.6	$0.119	$7.24	.....	.....	.....	23	.....	6	.....	.....	.....	.....	.....	.....	22	4	.....	3	.....	.....	.....
Georgia	Time..	12	102	60.0	.134	8.05	.....	.....	.....	102	.....	.....	.....	.....	.....	.....	.....	.....	19	46	30	6	1	.....	.....
Maine	Time..	5	89	58.0	.160	9.27	.....	.....	89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	69	5	7	8	.....
Massachusetts	Time..	20	255	54.2	.189	10.24	248	.....	.....	5	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	5	70	120	60	.....
New Hampshire	Time..	5	148	55.2	.186	9.60	.....	141	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	8	87	27	.....
New York	Time..	2	27	54.4	.209	11.38	25	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	18	2
North Carolina	Piece..	3	13	60.0	.139	8.35	.....	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	3	1	9	.....	.....	.....	.....
	Time..	22	74	60.0	.127	7.63	.....	.....	.....	74	.....	.....	.....	.....	.....	.....	.....	.....	18	44	6	3	2	1	.....
	Total..	22	87	60.0	.129	7.74	.....	.....	.....	87	.....	.....	.....	.....	.....	.....	.....	.....	21	45	15	3	2	1	.....
Rhode Island	Time..	3	34	54.4	.198	10.76	32	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	16	7	4
South Carolina	Piece..	4	18	60.0	.137	8.22	.....	.....	.....	18	.....	.....	.....	.....	.....	.....	.....	.....	4	5	9	.....	.....	.....	.....
	Time..	19	65	60.0	.124	7.41	.....	.....	.....	65	.....	.....	.....	.....	.....	.....	.....	.....	27	23	9	6	.....	.....	.....
	Total .	20	83	60.0	.126	7.59	.....	.....	.....	83	.....	.....	.....	.....	.....	.....	.....	.....	31	28	18	6	.....	.....	.....
Other States	Time..	9	49	54.6	.189	10.30	22	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	13	19	12	2
All States	Piece..	7	31	60.0	.138	8.27	.....	.....	.....	31	.....	.....	.....	.....	.....	.....	.....	.....	7	6	18	.....	.....	.....	.....
	Time..	105	872	56.6	.168	9.30	327	168	89	280	.....	8	.....	.....	.....	.....	.....	.....	86	119	148	121	257	133	8
	Total..	106	903	56.7	.167	9.27	327	168	89	311	.....	8	.....	.....	.....	.....	.....	.....	93	125	166	121	257	133	8

DRAWING FRAME TENDERS: Male.

Alabama	Time..	5	56	60.2	$0.101	$6.10	.....	.....	.....	52	.....	4	.....	.....	.....	5	4	2	40	5	.....	.....	.....	.....	.....
Georgia	Piece..	1	8	60.0	.078	4.67	.....	.....	.....	8	.....	.....	.....	.....	.....	5	3	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	10	93	60.0	.110	6.59	.....	.....	.....	93	.....	.....	.....	.....	.....	1	8	2	54	28	.....	.....	.....	.....	.....
	Total..	11	101	60.0	.107	6.44	.....	.....	.....	101	.....	.....	.....	.....	.....	6	11	2	54	28	.....	.....	.....	.....	.....
Maine	Piece..	1	3	58.0	.126	7.31	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....
	Time..	5	38	58.0	.131	7.60	.....	.....	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	18	2	3	.....	1	.....
	Total..	5	41	58.0	.131	7.58	.....	.....	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	21	2	3	.....	1	.....
Massachusetts	Piece..	1	1	54.0	.216	11.66	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
	Time..	14	118	54.3	.164	8.90	113	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	16	26	54	16	5	1
	Total..	14	119	54.3	.164	8.92	114	.....	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	16	26	54	16	6	1
New Hampshire	Piece..	2	10	55.0	.181	9.96	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	2	1	3	.....
	Time..	2	22	55.0	.179	9.87	.....	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	3	16	1	.....
	Total..	3	32	55.0	.180	9.90	.....	32	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	5	17	4	.....
North Carolina	Piece..	3	41	60.0	.144	8.65	.....	.....	.....	41	.....	.....	.....	.....	.....	.....	.....	.....	2	20	9	7	3	.....	.....
	Time..	19	89	60.0	.118	7.10	.....	.....	.....	89	.....	.....	.....	.....	.....	.....	2	6	30	43	4	4	.....	.....	.....
	Total..	22	130	60.0	.126	7.59	.....	.....	.....	130	.....	.....	.....	.....	.....	.....	2	6	32	63	13	11	3	.....	.....
Rhode Island	Time..	3	24	54.8	.157	8.59	21	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	14	8	1	.....	.....
South Carolina	Piece..	3	13	60.0	.135	8.08	.....	.....	.....	13	.....	.....	.....	.....	.....	.....	2	1	.....	2	6	2	.....	.....	.....
	Time..	18	169	60.0	.100	5.97	.....	1	.....	168	.....	.....	.....	1	1	36	24	15	52	21	19	.....	.....	.....	.....
	Total..	20	182	60.0	.102	6.12	.....	1	.....	181	.....	.....	.....	1	1	36	26	16	52	23	25	2	.....	.....	.....
Other States	Time..	6	51	55.0	.161	8.88	23	23	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	4	11	2	25	2	7	.....
All States	Piece..	11	76	59.2	.141	8.29	1	10	3	62	.....	.....	.....	.....	.....	5	5	1	2	25	19	11	4	4	.....
	Time..	82	660	58.1	.127	7.29	157	46	38	415	.....	4	.....	1	1	42	38	25	194	144	68	97	35	14	1
	Total..	89	736	58.2	.128	7.39	158	56	41	477	.....	4	.....	1	1	47	43	26	196	169	87	108	39	18	1

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

DRAWING-FRAME TENDERS: Female.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Alabama	Time..	6	51	60.0	$0.086	$5.18	.....	.....	.....	51	.....	.....	.....	.....	10	18	4	3	10	5	.....	1	.....	.....	.....
Georgia	Time..	7	48	60.0	.100	6.01	.....	.....	.....	48	.....	.....	.....	.....	.....	6	6	11	15	9	1	.....	.....	.....	.....
Maine	Piece..	1	8	58.0	.136	7.90	.....	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	2	.....	.....	.....
	Time..	3	78	58.0	.103	5.98	.....	.....	78	.....	.....	.....	.....	.....	.....	.....	.....	.....	63	4	5	6	.....	.....	.....
	Total..	3	86	58.0	.106	6.16	.....	.....	86	.....	.....	.....	.....	.....	.....	.....	.....	.....	63	10	5	8	.....	.....	.....
Massachusetts	Time..	14	210	53.9	.149	8.03	[1] 210	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	55	130	23	2	.....	.....
New Hampshire	Piece..	2	72	55.0	.173	9.54	.....	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	31	15	10	9	3
	Time..	4	107	55.0	.144	7.94	.....	107	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	24	75	.....	5	.....	.....
	Total..	5	179	55.0	.156	8.59	.....	179	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	28	106	15	15	9	3
Other States	Time..	10	93	54.5	.141	7.69	58	33	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	11	33	31	18	.....	.....	.....
All States	Piece..	3	80	55.3	.170	9.37	.....	72	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	31	17	10	9	3
	Time..	44	587	55.8	.131	7.28	[1] 268	140	78	101	.....	.....	.....	.....	10	24	10	14	102	130	242	48	7	.....	.....
	Total..	45	667	55.7	.136	7.53	[1] 268	212	86	101	.....	.....	.....	.....	10	24	10	14	102	140	273	65	17	9	3

SLUBBER TENDERS: Male.

Alabama	Piece	7	68	60.0	$0.151	$9.05				68						1		9	13	23	14	4	4
	Time	2	8	61.9	.125	7.75				3		5						3	4		1		
	Total	8	76	60.2	.148	8.91				71		5				1		12	17	23	15	4	4
Connecticut	Piece	4	16	55.0	.238	13.06		16														2	11	3
	Time	1	4	55.0	.252	13.86		4															2	2
	Total	4	20	55.0	.240	13.22		20														2	13	5
Georgia	Piece	12	103	60.0	.153	9.19				103				1		1	1	12	16	22	33	11	6	
Maine	Piece	5	76	58.0	.223	12.95			76										1	2	2	6	53	12
	Time	2	6	58.0	.171	9.89			6										4		1			1
	Total	5	82	58.0	.219	12.72			82										5	2	3	6	53	13
Massachusetts	Piece	18	142	54.0	.239	12.92	142											1	1	3	3	9	74	51
	Time	7	24	54.0	.204	11.03	24														3	7	13	1
	Total	20	166	54.0	.234	12.65	166											1	1	3	6	16	87	52
New Hampshire	Piece	5	138	55.0	.254	13.99		138									1		1	5	3	4	41	83
North Carolina	Piece	17	80	60.0	.162	9.73				80							1	8	6	20	25	13	7	
	Time	7	10	60.0	.123	7.40				10				1				3	3	3				
	Total	22	90	60.0	.158	9.47				90				1			1	11	9	23	25	13	7	
Rhode Island	Piece	3	22	54.0	.244	13.15	22															2	10	10
South Carolina	Piece	19	121	60.0	.148	8.85		1		120						1	1	13	32	36	26	8	4	
	Time	3	8	60.0	.132	7.92				8								1	5	2				
	Total	20	129	60.0	.147	8.79		1		128						1	1	14	37	38	26	8	4	
Other States	Piece	2	13	54.9	.223	12.23	11			2												2	8	3
All States	Piece	92	779	57.5	.199	11.32	175	155	76	373				1		3	4	43	70	111	106	61	218	162
	Time	22	60	57.3	.170	9.65	24	4	6	21		5			1			7	16	5	5	7	15	4
	Total	101	839	57.5	.197	11.20	199	159	82	394		5		1	1	3	4	50	86	116	111	68	233	166

[1] Including 3 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

SLUBBER TENDERS: Female.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Massachusetts	Piece..	6	23	54.0	$0.196	$10.59	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	3	5	11	.....
Pennsylvania	Piece..	4	16	54.0	.170	9.18	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	6	4	4	.....	1
	Time..	2	9	54.0	.145	7.81	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	6	.....	.....	1	.....
	Total..	5	25	54.0	.161	8.69	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	12	4	4	1	1
Other States	Piece..	6	22	54.9	.202	11.04	13	6	2	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2	.....	7	10	2
All States	Piece..	16	61	54.3	.191	10.38	52	6	2	1	.....	.....	.....	.....	.....	.....	.....	.....	2	4	8	7	16	21	3
	Time..	2	9	54.0	.145	7.81	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	6	.....	.....	1	.....
	Total..	17	70	54.3	.185	10.05	61	6	2	1	.....	.....	.....	.....	.....	.....	.....	.....	3	5	14	7	16	22	3

SPEEDER TENDERS: Male.

Alabama	Piece..	6	160	60.0	$0.147	$8.79	.....	.....	.....	160	.....	.....	.....	.....	.....	.....	4	6	23	37	32	33	19	6	.....
	Time..	1	4	63.0	.123	7.72	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	3	1	.....	.....	.....	.....	.....
	Total..	7	164	60.1	.146	8.77	.....	.....	.....	160	.....	4	.....	.....	.....	.....	4	6	26	38	32	33	19	6	.....
Georgia	Piece..	12	211	60.0	.155	9.33	.....	.....	.....	211	.....	.....	.....	.....	2	.....	5	2	5	33	79	47	29	7	2
Massachusetts	Piece..	17	174	54.0	.237	12.79	174	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	4	5	7	100	57
	Time..	4	31	54.0	.185	9.99	31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	17	1	6	3
	Total..	19	205	54.0	.229	12.37	205	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	5	22	8	106	60

North Carolina...	Piece..	20	339	60.0	.162	9.73	.....	.....	.....	339	.....	.....	.....	.....	.....	.....	.....	3	17	40	106	90	45	38	.....
	Time..	5	42	60.0	.129	7.75	.....	.....	.....	42	.....	.....	.....	.....	.....	.....	.....	.....	3	33	6	.....	.....	.....	.....
	Total..	22	381	60.0	.159	9.51	.....	.....	.....	381	.....	.....	.....	.....	.....	.....	.....	3	20	73	112	90	45	38	.....
South Carolina...	Piece..	20	486	60.0	.149	8.94	.....	6	.....	478	.....	.....	2	1	.....	2	2	7	42	107	174	101	39	11	.....
	Time..	1	2	60.0	.100	6.00	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....
	Total..	20	488	60.0	.149	8.92	.....	6	.....	480	.....	.....	2	1	.....	2	2	7	44	107	174	101	39	11	.....
Other States.....	Piece..	18	308	55.6	.222	12.31	58	182	54	14	.....	.....	.....	.....	.....	.....	.....	1	.....	2	2	17	41	196	49
	Time..	1	11	55.0	.288	15.86	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11
	Total..	18	319	55.5	.224	12.43	58	193	54	14	.....	.....	.....	.....	.....	.....	.....	1	.....	2	2	17	41	196	60
All States.....	Piece..	93	1,678	58.6	.175	10.15	232	188	54	1,202	.....	.....	2	1	2	2	11	19	88	219	397	293	180	358	108
	Time..	12	90	57.5	.167	9.47	31	11	.....	44	.....	4	.....	.....	.....	.....	.....	.....	8	37	7	17	1	6	14
	Total..	98	1,768	58.5	.174	10.12	263	199	54	1,246	.....	4	2	1	2	2	11	19	96	256	404	310	181	364	122

SPEEDER TENDERS: Female.

Alabama.....	Piece..	7	133	60.0	$0.140	$8.39	.....	.....	.....	133	.....	.....	.....	.....	.....	3	5	6	37	41	26	11	4	.....	.....
	Time..	1	4	63.0	.119	7.50	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....
	Total..	8	137	60.1	.139	8.37	.....	.....	.....	133	.....	4	.....	.....	.....	3	5	6	41	41	26	11	4	.....	.....
Connecticut.....	Piece..	4	174	55.0	.203	11.16	.....	174	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	8	15	66	56	24
Georgia.....	Piece..	10	120	60.0	.152	9.10	.....	.....	.....	120	.....	.....	.....	.....	.....	1	2	3	13	28	40	16	12	5	.....
Maine.....	Piece..	5	313	58.0	.189	10.97	.....	.....	313	.....	.....	.....	.....	.....	.....	1	.....	.....	3	2	30	99	66	104	8
	Time..	1	1	58.0	.138	8.00	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
	Total..	5	314	58.0	.189	10.96	.....	.....	314	.....	.....	.....	.....	.....	.....	1	.....	.....	3	3	30	99	66	104	8
Massachusetts....	Piece..	19	1,006	54.0	.197	10.65	1,006	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	16	48	194	310	378	51
	Time..	5	35	53.8	.188	10.13	[1] 35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	11	6	16	.....
	Total..	20	1,041	54.0	.197	10.64	[1] 1,041	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	16	50	205	316	394	51
New Hampshire..	Piece..	5	489	55.0	.204	11.21	.....	489	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	11	28	54	118	242	33
	Time..	2	15	55.0	.151	8.28	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	10	3	.....	.....	.....
	Total..	5	504	55.0	.202	11.12	.....	504	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	13	38	57	118	242	33

[1] Including 1 under 54 hours

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

SPEEDER TENDERS: Female—Concluded.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
New York	Piece..	2	147	54.0	$0.204	$10.99	147	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2	49	94	.....
North Carolina	Piece..	16	62	60.0	.145	8.67	.....	.....	.....	62	.....	.....	.....	1	.....	1	1	1	7	11	22	12	5	1	.....
	Time..	2	2	60.0	.117	6.99	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....
	Total..	18	64	60.0	.144	8.62	.....	.....	.....	64	.....	.....	.....	1	.....	1	1	1	8	12	22	12	5	1	.....
Rhode Island	Piece..	3	164	54.0	.197	10.65	164	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	2	6	14	71	64	4
South Carolina	Piece..	19	163	60.0	.134	8.03	.....	1	.....	162	.....	.....	.....	.....	.....	.....	3	12	44	41	34	17	10	2	.....
	Time..	1	1	60.0	.100	6.00	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
	Total..	19	164	60.0	.134	8.02	.....	1	.....	163	.....	.....	.....	.....	.....	.....	3	12	45	41	34	17	10	2	.....
Other States	Piece..	4	66	53.9	.158	8.54	[1] 66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	15	24	8	12	5	.....
	Time..	2	7	54.0	.160	8.65	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	.....	1	.....	.....
	Total..	5	73	53.9	.159	8.55	[1] 73	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	15	30	8	13	5	.....
All States	Piece..	94	2,837	55.7	.188	10.42	[1] 1,383	664	313	477	.....	.....	.....	1	1	6	11	22	120	173	267	442	723	951	120
	Time..	14	65	55.0	.168	9.19	[2] 42	15	1	3	.....	4	.....	.....	.....	.....	.....	.....	6	4	18	14	7	16	.....
	Total..	99	2,902	55.7	.187	10.39	[3] 1,425	679	314	480	.....	4	.....	1	1	6	11	22	126	177	285	456	730	967	120

SPINNERS, MULE: Male.

Maine	Piece	3	39	58.0	$0.292	$16.94			39															5	34
Massachusetts	Piece	7	148	54.0	.395	21.31	148																	1	2	145
	Time	1	7	54.0	.407	21.98	7																			7
	Total	7	155	54.0	.395	21.34	155																	1	2	152
Rhode Island	Piece	3	52	54.0	.286	15.44	52																		2	50
Other States	Piece	4	70	54.8	.304	16.66	14	56																	12	58
	Time	1	18	55.0	.362	19.89		18																		18
	Total	4	88	54.8	.316	17.32	14	74																	12	76
All States	Piece	17	309	54.7	.343	18.72	214	56	39															1	21	287
	Time	2	25	54.7	.374	20.47	7	18																		25
	Total	17	334	54.7	.345	18.85	221	74	39															1	21	312

SPINNERS, FRAME: Male.

Massachusetts	Piece	1	54	54.0	$0.219	$11.82	54											2	1			6	43	2
	Time	15	175	54.0	.180	9.70	175											6	14	30	41	32	43	9
	Total	16	229	54.0	.189	10.20	229											8	15	30	41	38	86	11
New Hampshire	Piece	3	52	55.0	.202	11.14		52												3	5	13	28	3
	Time	2	46	55.0	.210	11.53		46										1	1		8	10	11	15
	Total	5	98	55.0	.206	11.32		98										1	1	3	13	23	39	18
South Carolina	Time	17	127	60.0	.088	5.30				127				20	22	15	14	13	24	9	10				
Other States	Piece	1	31	60.0	.206	12.34				31					1					4	3	6	12	5
	Time	26	222	59.0	.133	7.76	32	2	18	168		2		8	14	26	11	13	32	40	18	12	14	22	12
	Total	26	253	59.1	.142	8.32	32	2	18	199		2		8	15	26	11	13	32	40	22	15	20	34	17
All States	Piece	5	137	55.7	.210	11.68	54	52		31					1				2	1	7	8	25	83	10
	Time	60	570	57.3	.143	8.11	207	48	18	295		2		28	36	41	25	26	63	64	58	61	56	76	36
	Total	64	707	57.0	.156	8.80	261	100	18	326		2		28	37	41	25	26	65	65	65	69	81	159	46

[1] Including 2 under 54 hours. [2] Including 1 under 54 hours. [3] Including 3 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

SPINNERS, FRAME: Female.

State.	Pieceworkers or timeworkers.	Number of establishments	Number of employees	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over
Alabama	Time..	8	587	60.1	$0.105	$6.29	.....	.....	.....	558	.....	29	.....	34	34	44	62	112	111	128	40	20	1	1	.....
Connecticut	Piece..	1	42	55.0	.167	9.17	.....	42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3	11	11	13	1	.....
	Time..	3	130	55.0	.188	10.34	.....	130	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	2	17	30	31	42	4
	Total..	4	172	55.0	.183	10.05	.....	172	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	5	28	41	44	43	4
Georgia	Time..	12	789	60.0	.114	6.87	.....	.....	.....	789	.....	.....	.....	10	39	55	54	83	204	189	104	30	18	3	.....
Maine	Time..	5	544	58.0	.174	10.11	.....	.....	544	.....	.....	.....	.....	.....	1	.....	.....	6	21	50	113	63	184	104	2
Massachusetts	Piece..	3	129	54.0	.207	11.17	129	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	1	7	34	82	1
	Time..	20	1,610	53.9	.183	9.87	[1] 1,610	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1	21	54	160	478	510	380	4
	Total..	20	1,739	53.9	.185	9.96	[1] 1,739	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	1	24	55	161	485	544	462	5
New Hampshire	Piece..	3	965	55.0	.188	10.32	.....	965	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	30	58	94	613	148	13
	Time..	2	237	55.0	.187	10.31	.....	237	.....	.....	.....	.....	.....	.....	.....	1	1	1	5	21	16	50	60	69	13
	Total..	5	1,202	55.0	.188	10.32	.....	1,202	.....	.....	.....	.....	.....	.....	.....	1	1	1	14	51	74	144	673	217	26
New York	Time..	2	215	54.0	.183	9.89	215	.....	.....	.....	.....	.....	.....	.....	.....	2	1	3	5	12	27	43	66	55	1
North Carolina	Piece..	1	20	60.0	.115	6.90	.....	.....	.....	20	.....	.....	.....	.....	.....	.....	.....	1	12	7	.....	.....	.....	.....	.....
	Time..	21	833	60.0	.111	6.64	.....	.....	.....	833	.....	.....	.....	31	48	57	60	74	240	192	100	23	7	1	.....
	Total..	22	853	60.0	.111	6.65	.....	.....	.....	853	.....	.....	.....	31	48	57	60	75	252	199	100	23	7	1	.....

Rhode Island	Time	3	211	54.0	.190	10.26	211												6	22	14	43	43	69	14
South Carolina	Time	20	1,345	60.0	.103	6.19		11		1,334				54	82	120	149	161	401	292	68	12	5	1	
Other States	Piece	1	15	54.0	.135	7.30	15									1			3	1	10				
	Time	3	103	54.0	.142	7.67	103												6	39	36	16	4	2	
	Total	4	118	54.0	.141	7.63	118									1			9	40	46	16	4	2	
All States	Piece	9	1,171	55.0	.187	10.28	144	1,007		20						1		1	30	42	80	112	660	231	14
	Time	99	6,604	57.6	.142	8.06	[1] 2,139	378	544	3,514		29		129	204	281	327	441	1,024	1,001	695	808	929	727	38
	Total	105	7,775	57.2	.148	8.39	[1] 2,283	1,385	544	3,534		29		129	204	282	327	442	1,054	1,043	775	920	1,589	958	52

DOFFERS: Male.

Alabama	Piece	4	115	60.0	$0.121	$7.27				115				6	2	3	2	17	26	26	20	7	4	2	
	Time	5	209	60.3	.099	5.96				191		18		5	17	38	24	17	81	13	8	2	4		
	Total	8	324	60.2	.107	6.42				306		18		11	19	41	26	34	107	39	28	9	8	2	
Connecticut	Piece	1	10	55.0	.174	9.59		10													2	6		2	
	Time	4	71	55.0	.168	9.21		71												2	22	28	17	2	
	Total	4	81	55.0	.168	9.26		81												2	24	34	17	4	
Georgia	Piece	4	133	60.0	.130	7.81				133				1		2	11	18	23	18	34	23	2	1	
	Time	9	364	60.0	.122	7.30				364				7	6	25	18	32	108	50	66	28	5	17	2
	Total	12	497	60.0	.124	7.44				497				8	6	27	29	50	131	68	100	51	7	18	2
Maine	Time	3	129	58.0	.158	9.07			129							2	2	9	3	9	50	24	17	12	1
Massachusetts	Piece	6	130	52.9	.200	10.60	[2] 130													1	25	21	39	23	21
	Time	17	361	53.5	.177	9.48	[3] 361											1	10	7	65	112	124	40	2
	Total	20	491	53.3	.183	9.78	[4] 491											1	10	8	90	133	163	63	23
New Hampshire	Piece	4	278	55.0	.187	10.28		278											5	5	6	87	104	70	1
	Time	3	64	55.0	.170	9.36		64												5	2	44	7	6	
	Total	4	342	55.0	.184	10.11		342											5	10	8	131	111	76	1
New York	Piece	1	12	60.0	.208	12.45				12										1			3	6	2
	Time	2	80	54.0	.192	10.34	80											1	1	1	5	29	16	18	9
	Total	2	92	54.8	.194	10.62	80			12								1	1	2	5	29	19	24	11

[1] Including 14 under 54 hours. [2] Including 17 under 54 hours. [3] Including 20 under 54 hours. [4] Including 37 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

DOFFERS: Male—Concluded.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
North Carolina	Piece..	13	231	60.0	$0.125	$7.47	.....	.....	.....	231	.....	.....	.....	2	2	16	16	10	45	57	70	10	3	.....	.....
	Time..	16	280	60.0	.088	5.26	.....	.....	.....	280	.....	.....	.....	3	30	69	54	15	86	22	1	.....	.....	.....	.....
	Total..	22	511	60.0	.104	6.26	.....	.....	.....	511	.....	.....	.....	5	32	85	70	25	131	79	71	10	3	.....	.....
Rhode Island	Piece..	2	50	54.0	.206	11.10	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	17	4	23	5
	Time..	1	33	54.0	.184	9.94	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	6	2	10	13	.....
	Total..	3	83	54.0	.197	10.64	83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	2	6	19	14	36	5
South Carolina	Piece..	8	186	60.0	.113	6.80	.....	.....	.....	186	.....	.....	.....	9	10	4	10	29	44	48	23	3	6	.....	.....
	Time..	15	498	59.9	.096	5.76	.....	6	.....	492	.....	.....	.....	4	34	51	75	54	227	39	13	1	.....	.....	.....
	Total..	20	684	60.0	.101	6.04	.....	6	.....	678	.....	.....	.....	13	44	55	85	83	271	87	36	4	6	.....	.....
Other States	Time..	2	12	51.2	.121	6.20	[1] 12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	4	2	.....	.....	.....	.....
All States	Piece..	43	1,145	57.7	.152	8.65	[2] 180	288	.....	677	.....	.....	.....	18	14	25	39	75	143	156	180	174	165	127	29
	Time..	77	2,101	58.1	.127	7.29	[3] 486	141	129	1,327	.....	18	.....	19	87	185	173	129	522	154	240	270	200	108	14
	Total..	100	3,246	57.9	.136	7.77	[4] 666	429	129	2,004	.....	18	.....	37	101	210	212	204	665	310	420	444	365	235	43

DOFFERS: Female.

Maine	Piece..	1	1	58.0	$0.108	$6.26	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
	Time..	4	178	58.0	.150	8.69	.....	.....	178	.....	.....	.....	.....	.....	.....	.....	.....	28	.....	35	51	42	16	6	.....
	Total..	4	179	58.0	.150	8.67	.....	.....	179	.....	.....	.....	.....	.....	.....	.....	.....	28	1	35	51	42	16	6	.....

Massachusetts	Piece..	2	77	51.1	.162	8.29	[5]77												1	6	33	28	4	3	2
	Time..	7	118	52.9	.168	8.88	[6]118												7	6	27	31	37		
	Total..	9	195	52.2	.165	8.65	[7]195												8	12	60	59	51	3	2
New Hampshire..	Piece..	1	95	55.0	.197	10.83		95													8	24	35	14	14
	Time..	2	49	55.0	.144	7.95		49												22	12	15			
	Total..	3	144	55.0	.179	9.85		144												22	20	39	35	14	14
Pennsylvania	Piece..	1	9	54.0	.134	7.24	9													5	4				
	Time..	4	21	53.6	.122	6.56	[8]21												14	3	3	1			
	Total..	4	30	53.7	.126	6.76	[8]30												14	8	7	1			
Other States	Piece..	1	7	54.0	.200	10.82	7															2	1	4	
	Time..	2	11	54.3	.136	7.40	8	3												8	3				
	Total..	3	18	54.2	.161	8.73	15	3												8	3	2	1	4	
All States	Piece..	6	189	53.3	.179	9.60	[5]93	95	1										2	11	45	54	40	21	16
	Time..	19	377	55.7	.153	8.49	[2]147	52	178										28	21	74	96	89	63	6
	Total..	23	566	54.9	.162	8.86	[9]240	147	179										28	23	85	141	143	103	27	16

SPOOLER TENDERS: Female.

Alabama	Piece..	6	248	60.1	$0.098	$5.89				240		8		11	19	33	35	25	87	30	6	2			
	Time..	2	66	60.0	.097	5.83				66					3	5	9	17	31	1					
	Total..	8	314	60.1	.098	5.88				306		8		11	22	38	44	42	118	31	6	2			
Connecticut	Piece..	3	82	55.0	.168	9.26		82										1	5	7	22	17	18	12	
	Time..	1	18	55.0	.135	7.40		18												15	1	1	1		
	Total..	4	100	55.0	.162	8.92		100										1	5	22	23	18	19	12	
Georgia	Piece..	11	372	60.0	.104	6.26				372				17	23	31	49	64	93	47	33	9	3	1	2
	Time..	1	8	60.0	.125	7.50				8										7	1				
	Total..	12	380	60.0	.105	6.29				380				17	23	31	49	64	93	54	34	9	3	1	2
Maine	Piece..	4	238	58.0	.152	8.81			238						1	2	6	1	23	37	75	57	26	9	1
	Time..	3	32	58.0	.161	9.35			32										1	4	20		6	1	
	Total..	5	270	58.0	.153	8.87			270						1	2	6	1	24	41	95	57	32	10	1

[1] Including 9 under 54 hours.
[2] Including 17 under 54 hours.
[3] Including 29 under 54 hours.
[4] Including 46 under 54 hours.
[5] Including 26 under 54 hours.
[6] Including 15 under 54 hours.
[7] Including 41 under 54 hours.
[8] Including 2 under 54 hours.
[9] Including 43 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

SPOOLER TENDERS: Female—Concluded.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—						Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Massachusetts	Piece..	20	814	53.9	$0.169	$9.11	[1] 814	.....	.....	.....	.....	.....	.....	1	.....	.....	3	4	59	92	195	187	114	142	17
	Time..	4	31	53.2	.168	8.94	[2] 31	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	10	7	3	6	.....
	Total..	20	845	53.8	.169	9.11	[3] 845	.....	.....	.....	.....	.....	.....	1	.....	.....	3	4	59	97	205	194	117	148	17
New Hampshire..	Piece..	5	461	55.0	.178	9.78	.....	461	.....	.....	.....	.....	.....	.....	.....	.....	1	3	16	40	69	94	113	120	5
	Time..	1	3	55.0	.167	9.17	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	1	.....
	Total..	5	464	55.0	.178	9.77	.....	464	.....	.....	.....	.....	.....	.....	.....	.....	1	3	16	40	71	94	113	121	5
New York	Piece..	2	75	54.0	.191	10.30	75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	9	12	20	24	4
	Time..	1	2	54.0	.153	8.26	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....
	Total..	2	77	54.0	.190	10.25	77	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	11	12	20	24	4
North Carolina	Piece..	22	462	60.0	.110	6.58	.....	.....	.....	462	.....	.....	.....	8	17	26	39	67	151	106	35	12	1	.....	.....
Pennsylvania	Piece..	2	26	54.0	.148	8.00	26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	6	12	6	.....	.....	.....
	Time..	3	31	53.9	.118	6.38	[4] 31	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	6	22	1	.....	.....	.....	.....
	Total..	4	57	53.9	.132	7.12	[4] 57	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	8	28	13	6	.....	.....	.....
Rhode Island	Piece..	2	80	54.0	.158	8.54	80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	19	8	22	19	4	.....
	Time..	1	42	54.0	.174	9.37	42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	30	2	9	.....
	Total..	3	122	54.0	.163	8.83	122	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	20	8	52	21	13	.....

South Carolina...	Piece..	19	597	60.0	.094	5.65	.....	5	.....	592	.....	.....	.....	28	58	64	108	118	148	54	14	4	.....	.....	1
	Time..	2	7	60.0	.098	5.91	.....	.....	.....	7	.....	.....	.....	.....	.....	.....	.....	4	3	.....	.....	.....	.....	.....	.....
	Total..	20	604	60.0	.094	5.65	.....	5	.....	599	.....	.....	.....	28	58	64	108	122	151	54	14	4	.....	.....	1
All States.....	Piece..	96	3,455	57.3	.136	7.71	[1] 995	548	238	1,666	.....	8	.....	65	118	156	241	283	594	442	478	422	314	312	30
	Time..	19	240	56.5	.136	7.63	[5] 106	21	32	81	.....	.....	.....	.....	3	5	10	22	41	55	37	38	12	17	.....
	Total..	105	3,695	57.3	.136	7.70	[6] 1,101	569	270	1,747	.....	8	.....	65	121	161	251	305	635	497	515	460	326	329	30

WARPER TENDERS: Male.

North Carolina...	Piece..	6	25	60.0	$0.172	$10.34	.....	.....	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	6	5	5	5	.....
	Time..	13	28	60.0	.150	9.01	.....	.....	.....	28	.....	.....	.....	.....	.....	.....	.....	.....	2	4	15	5	.....	2	.....
	Total..	18	53	60.0	.161	9.64	.....	.....	.....	53	.....	.....	.....	.....	.....	.....	.....	.....	2	8	21	10	5	7	.....
Other States.....	Piece..	4	8	60.0	.241	14.47	.....	.....	.....	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	1	4
	Time..	7	20	57.9	.188	10.74	7	.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	1	1	5	6	1	1	5
	Total..	11	28	58.5	.203	11.80	7	.....	.....	21	.....	.....	.....	.....	.....	.....	.....	.....	1	1	6	7	2	2	9
All States.....	Piece..	10	33	60.0	.189	11.34	.....	.....	.....	33	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	7	6	6	6	4
	Time..	20	48	59.1	.166	9.73	7	.....	.....	41	.....	.....	.....	.....	.....	.....	.....	.....	3	5	20	11	1	3	5
	Total..	29	81	59.5	.175	10.39	7	.....	.....	74	.....	.....	.....	.....	.....	.....	.....	.....	3	9	27	17	7	9	9

WARPER TENDERS: Female.

Alabama.....	Piece..	6	20	60.3	$0.158	$9.53	.....	.....	.....	18	.....	2	.....	.....	.....	.....	.....	.....	4	3	4	3	6	.....	.....
	Time..	3	11	60.0	.119	7.15	.....	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	5	6	.....	.....	.....	.....	.....
	Total..	7	31	60.2	.144	8.68	.....	.....	.....	29	.....	2	.....	.....	.....	.....	.....	.....	9	9	4	3	6	.....	.....
Connecticut.....	Piece..	3	19	55.0	.214	11.79	.....	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	7	1	3	6
	Time..	1	6	55.0	.160	8.82	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	.....	.....	.....
	Total..	4	25	55.0	.201	11.08	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	12	1	3	6
Georgia.....	Piece..	4	20	60.0	.156	9.37	.....	.....	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	1	6	6	4	2	.....	1
	Time..	7	23	60.0	.131	7.88	.....	.....	.....	23	.....	.....	.....	.....	.....	.....	.....	.....	6	10	2	5	.....	.....	.....
	Total..	11	43	60.0	.143	8.57	.....	.....	.....	43	.....	.....	.....	.....	.....	.....	.....	.....	7	16	8	9	2	.....	1

[1] Including 12 under 54 hours.
[2] Including 3 under 54 hours.
[3] Including 15 under 54 hours.
[4] Including 1 under 54 hours.
[5] Including 4 under 54 hours.
[6] Including 16 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

WARPER TENDERS: Female—Concluded.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Maine	Piece..	2	48	58.0	$9.187	$10.83	.....	.....	48	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	5	14	13	14	.....
	Time..	2	9	58.0	.153	8.90	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	2	.....	2	.....	.....
	Total..	4	57	58.0	.182	10.53	.....	.....	57	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	6	7	14	15	14	.....
Massachusetts	Piece..	13	103	54.0	.199	10.77	103	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	16	13	22	32	13
	Time..	9	83	54.0	.183	9.90	83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	40	30	11	.....
	Total..	20	186	54.0	.192	10.38	186	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	18	53	52	43	13
New Hampshire	Piece..	5	103	55.0	.205	11.27	.....	103	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	10	9	20	50	10
	Time..	2	14	55.0	.174	9.57	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	8	2	1	.....
	Total..	5	117	55.0	.201	11.06	.....	117	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	13	17	22	51	10
New York	Piece..	2	16	54.0	.224	12.09	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	11	2
North Carolina	Piece..	3	6	60.0	.136	8.17	.....	.....	.....	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3	.....	.....	.....	.....
	Time..	5	11	60.0	.127	7.64	.....	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	1	.....	.....	.....	.....
	Total..	7	17	60.0	.130	7.82	.....	.....	.....	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	4	.....	.....	.....	.....
Pennsylvania	Piece..	1	9	54.0	.147	7.93	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	4	2	.....	.....	.....
	Time..	2	3	54.0	.148	8.01	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....	.....
	Total..	2	12	54.0	.147	7.95	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	5	3	.....	.....	.....

Rhode Island	Piece	3	23	54.0	.214	11.57	23															1	6	15	1
South Carolina	Piece	12	28	60.0	.154	9.26				28								3	5	9	7	1	3		
	Time	7	23	59.8	.120	7.18		1		22							1	8	12	1	1				
	Total	18	51	59.9	.139	8.32		1		50							1	11	17	10	8	1	3		
All States	Piece	54	395	55.9	.192	10.71	151	122	48	72		2					1	9	31	59	60	74	128	33	
	Time	38	183	56.5	.158	8.86	86	21	9	67							1	19	44	13	60	34	12		
	Total	83	578	56.1	.181	10.13	237	143	57	139		2					2	28	75	72	120	108	140	33	

BEAMER TENDERS: Male.

Massachusetts	Piece	6	189	54.0	$0.316	$17.07	189															1	2	4	182
	Time	3	9	54.0	.257	13.88	9															1	1	2	
	Total	8	198	54.0	.313	16.92	198															2	3	6	187
North Carolina	Piece	6	78	60.0	.193	11.61				78						1			1		8	16	17	32	3
	Time	2	11	60.0	.175	10.53				11											1	6	3	1	
	Total	7	89	60.0	.191	11.47				89						1			1		9	22	20	33	3
Other States	Piece	6	37	57.6	.225	12.83	3	14		20									6			1	6	9	15
	Time	4	14	55.6	.259	14.31	7	4		3												3		3	8
	Total	9	51	57.1	.234	13.24	10	18		23									6			4	6	12	23
All States	Piece	18	304	56.0	.274	15.15	192	14		98						1			7		8	18	25	45	200
	Time	9	34	56.6	.232	12.97	16	4		14											1	10	4	6	13
	Total	24	338	56.0	.269	14.93	208	18		112						1			7		9	28	29	51	213

BEAMER TENDERS: Female.

All States	Piece	5	91	54.8	$0.224	$12.28	32	56		3										1	3	8	7	51	21
	Time	1	3	54.0	.162	8.75	3														2	1			
	Total	6	94	54.8	.222	12.17	35	56		3										1	5	9	7	51	21

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

SLASHER TENDERS: Male.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Alabama	Time..	7	8	60.4	$0.221	$13.35	.....	.....	.....	7	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	5	1
Georgia	Time..	12	73	60.0	.149	8.93	.....	.....	.....	73	.....	.....	.....	.....	.....	.....	.....	.....	14	2	30	19	6	2	.....
Maine	Time..	5	46	58.0	.237	13.74	.....	.....	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	44	2
Massachusetts	Piece..	2	10	54.0	.316	17.06	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
	Time..	20	146	54.0	.284	15.36	146	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	126
	Total..	20	156	54.0	.286	15.47	156	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20	136
New Hampshire	Piece..	1	70	55.0	.368	20.23	.....	70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	68
	Time..	4	38	55.0	.267	14.68	.....	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	38
	Total..	5	108	55.0	.332	18.28	.....	108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	106
North Carolina	Piece..	2	2	60.0	.191	11.46	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....
	Time..	17	46	60.0	.190	11.37	.....	.....	.....	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	17	7	20	.....
	Total..	19	48	60.0	.190	11.38	.....	.....	.....	48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	18	7	21	.....
South Carolina	Time..	20	78	60.0	.136	8.19	.....	.....	.....	78	.....	.....	.....	.....	.....	.....	.....	.....	13	31	25	8	.....	1	.....
Other States	Time..	10	55	54.3	.274	14.86	40	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	4	46
All States	Piece..	5	82	55.0	.357	19.63	10	70	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2	78
	Time..	95	490	57.0	.224	12.59	186	53	46	204	.....	1	.....	.....	.....	.....	.....	.....	27	33	57	45	19	96	213
	Total..	98	572	56.7	.243	13.60	196	123	46	206	.....	1	.....	.....	.....	.....	.....	.....	27	33	57	46	20	98	291

DRAWERS-IN: Female.

Alabama	Piece..	3	19	60.0	$0.115	$6.87	.....	.....	.....	19	.....	.....	.....	.....	.....	3	1	2	6	5	1	.....	.....	1	.....
	Time..	5	16	60.6	.133	8.05	.....	.....	.....	13	.....	3	.....	.....	.....	.....	.....	.....	3	9	3	.....	.....	1	.....
	Total..	8	35	60.3	.123	7.41	.....	.....	.....	32	.....	3	.....	.....	.....	3	1	2	9	14	4	.....	.....	2	.....
Connecticut	Piece..	4	45	55.0	.237	13.06	.....	45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	3	5	4	11	20
	Time..	1	4	55.0	.169	9.28	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	1	1	.....
	Total..	4	49	55.0	.232	12.75	.....	49	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	4	5	5	12	20
Georgia	Piece..	6	32	60.0	.142	8.51	.....	.....	.....	32	.....	.....	.....	.....	.....	1	1	4	8	6	2	2	4	2	2
	Time..	7	27	60.0	.118	7.08	.....	.....	.....	27	.....	.....	.....	.....	.....	.....	1	.....	8	17	1	.....	.....	.....	.....
	Total..	11	59	60.0	.131	7.86	.....	.....	.....	59	.....	.....	.....	.....	.....	1	2	4	16	23	3	2	4	2	2
Maine	Piece..	3	42	58.0	.191	11.08	.....	.....	42	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	7	4	12	13	3
	Time..	3	25	58.0	.160	9.29	.....	.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	1	.....	18	2	.....	.....
	Total..	5	67	58.0	.180	10.41	.....	.....	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	3	7	22	14	13	3
Massachusetts	Piece..	16	290	53.9	.218	11.74	[1] 290	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	11	21	35	42	104	71
	Time..	5	17	54.0	.163	8.82	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	1	5	2	2	.....
	Total..	19	307	53.9	.215	11.58	[1] 307	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	18	22	40	44	106	71
New Hampshire	Piece..	5	178	55.0	.214	11.77	.....	178	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3	13	18	36	63	42
North Carolina	Piece..	8	26	60.0	.125	7.50	.....	.....	.....	26	.....	.....	.....	.....	.....	.....	2	2	7	9	3	2	.....	1	.....
	Time..	6	19	60.0	.132	7.90	.....	.....	.....	19	.....	.....	.....	.....	.....	.....	.....	.....	2	10	7	.....	.....	.....	.....
	Total..	12	45	60.0	.128	7.66	.....	.....	.....	45	.....	.....	.....	.....	.....	.....	2	2	9	19	10	2	.....	1	.....
Pennsylvania	Piece..	1	27	54.0	.182	9.84	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	6	6	8	.....
	Time..	2	8	54.0	.136	7.34	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	1	3	1	.....	.....	.....
	Total..	3	35	54.0	.172	9.27	35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	3	8	7	6	8	.....
Rhode Island	Piece..	3	49	54.0	.213	11.49	49	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	2	.....	7	5	20	12
South Carolina	Piece..	8	64	60.0	.143	8.56	.....	.....	.....	64	.....	.....	.....	.....	4	1	3	7	8	11	10	8	2	7	3
	Time..	11	36	60.0	.119	7.15	.....	.....	.....	36	.....	.....	.....	.....	.....	.....	.....	.....	20	12	2	.....	.....	2	.....
	Total..	18	100	60.0	.134	8.05	.....	.....	.....	100	.....	.....	.....	.....	4	1	3	7	28	23	12	8	2	9	3
Other States	Piece..	1	10	54.0	.231	12.47	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	6	2
All States	Piece..	58	782	55.6	.200	11.07	[1] 376	223	42	141	.....	.....	.....	.....	4	5	7	16	42	52	65	87	113	236	155
	Time..	40	152	58.6	.136	7.93	25	4	25	95	.....	3	.....	.....	.....	.....	1	.....	40	58	18	24	5	6	.....
	Total .	89	934	56.1	.190	10.56	[1] 401	227	67	236	.....	3	.....	.....	4	5	8	16	82	110	83	111	118	242	155

[1] Including 2 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

LOOM FIXERS: Male.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Alabama	Time..	8	179	60.1	$0.197	$11.85	.....	.....	.....	175	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	2	17	31	129	.....
Connecticut	Time..	4	98	55.0	.337	18.56	.....	98	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	98
Georgia	Time..	12	205	60.0	.193	11.56	.....	.....	.....	205	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	66	9	130	.....
Maine	Time..	5	208	58.0	.278	16.13	.....	.....	208	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	200
Massachusetts	Piece..	1	7	54.0	.332	17.94	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
	Time..	20	663	54.0	.314	16.98	663	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	660
	Total..	20	670	54.0	.315	16.99	670	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	667
New Hampshire	Time..	5	518	55.0	.325	17.87	.....	518	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	497
New York	Time..	2	67	54.9	.302	16.60	57	.....	.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	60
North Carolina	Piece..	1	4	60.0	.157	9.39	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	.....	.....	.....
	Time..	21	255	60.0	.190	11.40	.....	.....	.....	255	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	78	77	88	7
	Total..	21	259	60.0	.189	11.36	.....	.....	.....	259	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	80	77	88	7
Rhode Island	Time..	3	161	54.0	.332	17.91	161	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	159
South Carolina	Piece..	3	38	60.0	.197	11.81	.....	.....	.....	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	15	4	14	4
	Time..	19	365	60.7	.194	11.78	.....	3	.....	290	49	.....	23	.....	.....	.....	.....	.....	.....	.....	3	73	43	243	3
	Total..	20	403	60.7	.194	11.78	.....	3	.....	328	49	.....	23	.....	.....	.....	.....	.....	.....	.....	4	88	47	257	7
Other States	Time..	4	36	54.6	.248	13.50	16	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	4	11	19
All States	Piece..	5	49	59.1	.213	12.48	7	.....	.....	42	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	17	4	14	11
	Time..	103	2,755	56.8	.270	15.20	897	639	208	935	49	4	23	.....	.....	.....	.....	.....	.....	.....	10	236	164	642	1,703
	Total..	104	2,804	56.9	.269	15.15	904	639	208	977	49	4	23	.....	.....	.....	.....	.....	.....	.....	13	253	168	656	1,714

WEAVERS: Male.

Alabama	Piece..	8	400	60.0	$0.173	$10.38	.....	.....	.....	397	.....	3	.....	.....	.....	.....	.....	2	19	56	73	89	79	65	17
	Time..	7	120	60.0	.117	7.01	.....	.....	.....	120	.....	.....	.....	.....	.....	.....	1	3	71	32	13	.....	.....	.....	.....
	Total..	8	520	60.0	.160	9.60	.....	.....	.....	517	.....	3	.....	.....	.....	.....	1	5	90	88	86	89	79	65	17
Connecticut	Piece..	4	365	55.0	.250	13.73	.....	365	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	7	6	13	18	125	194
Georgia	Piece..	12	710	60.0	.164	9.85	.....	.....	.....	710	.....	.....	.....	.....	.....	.....	.....	.....	53	126	157	161	110	94	9
	Time..	5	72	60.0	.128	7.54	.....	.....	.....	72	.....	.....	.....	.....	.....	1	.....	.....	9	49	9	4	.....	.....	.....
	Total..	12	782	60.0	.161	9.64	.....	.....	.....	782	.....	.....	.....	.....	.....	1	.....	.....	62	175	166	165	110	94	9
Maine	Piece..	5	611	58.0	.231	13.42	.....	.....	611	.....	.....	.....	.....	.....	.....	1	.....	.....	3	13	30	45	60	237	222
	Time..	1	63	58.0	.267	15.48	.....	.....	63	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	.....	2	.....	.....	3	58
	Total..	5	674	58.0	.235	13.61	.....	.....	674	.....	.....	.....	.....	.....	.....	1	.....	.....	3	13	32	45	60	240	280
Massachusetts	Piece..	20	2,774	53.9	.226	12.20	[1]2,774	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	57	134	223	364	1,162	806
	Time..	6	70	54.0	.192	10.37	70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	14	6	25	24	.....
	Total..	20	2,844	53.9	.225	12.16	[1]2,844	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28	58	148	229	389	1,186	806
New Hampshire	Piece..	5	1,561	55.0	.236	12.96	.....	1,561	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	22	29	71	118	756	558
	Time..	2	4	55.0	.176	9.69	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	1	.....
	Total..	5	1,565	55.0	.235	12.95	.....	1,565	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	6	22	29	71	120	757	558
New York	Piece..	2	260	55.7	.229	12.76	186	.....	.....	74	.....	.....	.....	.....	.....	.....	.....	.....	1	2	14	13	31	106	93
North Carolina	Piece..	21	1,216	60.0	.168	10.18	.....	.....	.....	1,216	.....	.....	.....	.....	.....	.....	.....	.....	65	137	276	320	265	139	14
	Time..	9	50	60.0	.132	7.93	.....	.....	.....	50	.....	.....	.....	.....	.....	.....	.....	.....	10	11	27	2	.....	.....	.....
	Total..	21	1,266	60.0	.167	10.09	.....	.....	.....	1,266	.....	.....	.....	.....	.....	.....	.....	.....	75	148	303	322	265	139	14
Rhode Island	Piece..	3	581	54.0	.246	13.28	581	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	15	20	34	44	169	294
	Time..	2	18	54.0	.219	11.82	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	13	2
	Total..	3	599	54.0	.245	13.24	599	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	16	20	35	45	182	296
South Carolina	Piece..	20	1,334	59.9	.156	9.33	.....	14	.....	1,320	.....	.....	.....	.....	.....	.....	.....	.....	176	258	328	291	165	110	6
	Time..	8	131	60.0	.137	8.25	.....	.....	.....	131	.....	.....	.....	.....	.....	.....	.....	.....	26	36	51	13	4	1	.....
	Total..	20	1,465	60.0	.154	9.24	.....	14	.....	1,451	.....	.....	.....	.....	.....	.....	.....	.....	202	294	379	304	169	111	6

[1] Including 19 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

WEAVERS: Male—Concluded.

State	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were— 54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Employees whose rates of wages per hour were— Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Other States	Piece..	2	69	53.8	$0.188	$10.14	[1] 69	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	4	7	13	13	24	3
	Time..	1	1	54.0	.105	5.67	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....
	Total..	2	70	53.8	.187	10.08	[1] 70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	4	7	13	13	24	3
All States	Piece..	102	9,881	56.7	.207	11.64	[2] 3,610	1,940	611	3,717	.....	3	.....	.....	.....	1	.....	4	362	697	1,074	1,273	1,267	2,987	2,216
	Time..	41	529	58.7	.157	9.11	89	4	63	373	.....	.....	.....	.....	.....	1	1	3	118	130	116	26	32	42	60
	Total..	102	10,410	56.8	.204	11.51	[2] 3,699	1,944	674	4,090	.....	3	.....	.....	.....	2	1	7	480	827	1,190	1,299	1,299	3,029	2,276

WEAVERS: Female.

Alabama	Piece..	8	284	60.2	$0.152	$9.17	.....	.....	.....	261	.....	23	.....	.....	.....	.....	1	3	34	67	79	49	26	23	2
	Time..	6	63	60.0	.118	7.09	.....	.....	.....	62	.....	1	.....	.....	.....	.....	1	1	33	18	10	.....	.....	.....	.....
	Total..	8	347	60.2	.146	8.80	.....	.....	.....	323	.....	24	.....	.....	.....	.....	2	4	67	85	89	49	26	23	2
Connecticut	Piece..	4	425	55.0	.222	12.20	.....	425	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	11	35	51	49	148	127
Georgia	Piece..	12	532	60.0	.145	8.70	.....	.....	.....	532	.....	.....	.....	.....	.....	.....	.....	.....	95	173	104	98	42	19	1
	Time..	4	29	60.0	.134	8.06	.....	.....	.....	29	.....	.....	.....	.....	.....	.....	.....	.....	8	9	9	3	.....	.....	.....
	Total..	12	561	60.0	.144	8.67	.....	.....	.....	561	.....	.....	.....	.....	.....	.....	.....	.....	103	182	113	101	42	19	1

Maine	Piece	5	768	58.0	.204	11.84			768										13	27	62	148	123	284	111
	Time	2	25	58.0	.209	12.13			25														4	21	
	Total	5	793	58.0	.204	11.85			793										13	27	62	148	127	305	111
Massachusetts	Piece	20	4,036	53.9	.207	11.14	[3] 4,036												77	140	243	451	826	1,744	555
	Time	6	60	53.9	.187	10.05	[4] 60												1	1	11	7	25	15	
	Total	20	4,096	53.9	.206	11.13	[5] 4,096												78	141	254	458	851	1,759	555
New Hampshire	Piece	5	2,971	55.0	.226	12.45		2,971										1	15	38	97	181	325	1,557	757
	Time	2	17	55.0	.148	8.13		17													15		2		
	Total	5	2,988	55.0	.226	12.42		2,988										1	15	38	112	181	327	1,557	757
New York	Piece	2	226	54.0	.211	11.41	226												3	3	16	17	45	105	37
North Carolina	Piece	21	662	60.0	.152	9.13				662									92	132	202	108	98	28	2
	Time	7	27	60.0	.123	7.35				27									13	6	8				
	Total	21	689	60.0	.151	9.06				689									105	138	210	108	98	28	2
Rhode Island	Piece	3	584	54.0	.225	12.12	584												19	20	42	60	50	212	181
	Time	2	20	54.0	.196	10.59	20												2			3	1	14	
	Total	3	604	54.0	.224	12.07	604												21	20	42	63	51	226	181
South Carolina	Piece	20	590	60.0	.142	8.50		3		587									129	178	144	92	33	14	
	Time	8	65	60.0	.129	7.75				65									14	28	19	4			
	Total	20	655	60.0	.140	8.43		3		652									143	206	163	96	33	14	
Other States	Piece	3	201	53.9	.170	9.19	[6] 201												11	19	51	53	36	23	
	Time	1	5	54.0	.105	5.67	5												5						
	Total	3	206	53.9	.169	9.11	[6] 206												16	19	51	53	36	23	
All States	Piece	103	11,279	55.7	.202	11.17	[7] 5,047	3,399	768	2,042		23					1	4	492	808	1,075	1,308	1,653	4,157	1,781
	Time	38	311	57.9	.149	8.58	[4] 85	17	25	183		1					1	1	76	62	72	17	32	50	
	Total	103	11,590	55.7	.200	11.10	[8] 5,132	3,416	793	2,225		24					2	5	568	870	1,147	1,325	1,685	4,207	1,781

[1] Including 3 under 54 hours.
[2] Including 22 under 54 hours.
[3] Including 24 under 54 hours.
[4] Including 1 under 54 hours.
[5] Including 25 under 54 hours.
[6] Including 4 under 54 hours.
[7] Including 22 under 54 hours.
[8] Including 29 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

TRIMMERS OR INSPECTORS: Female.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
Alabama	Time..	8	68	60.4	$0.096	$5.82	.....	.....	.....	58	.....	10	.....	.....	.....	4	19	11	27	7	.....	.....	.....	.....	.....
Georgia	Piece..	2	20	60.0	.116	6.96	.....	.....	.....	20	.....	.....	.....	.....	.....	2	2	2	8	3	2	.....	.....	1	.....
	Time..	9	68	59.8	.091	5.44	.....	.....	8	60	.....	.....	.....	.....	5	1	21	18	23	.....	.....	.....	.....	.....	.....
	Total..	11	88	59.8	.097	5.78	.....	.....	8	80	.....	.....	.....	.....	5	3	23	20	31	3	2	.....	.....	1	.....
Maine	Time..	5	161	58.0	.118	6.86	.....	.....	161	.....	.....	.....	.....	.....	.....	.....	.....	.....	64	89	8	.....	.....	.....	.....
Massachusetts	Piece..	2	21	54.0	.181	9.76	21	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	.....	3	4	1
	Time..	19	246	53.4	.147	7.86	[1] 246	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	120	58	34	32	.....	.....
	Total..	20	267	53.5	.150	8.01	[1] 267	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	120	71	34	35	4	1
New Hampshire	Piece..	1	47	55.0	.194	10.67	.....	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	3	18	24	.....
	Time..	4	76	55.0	.157	8.65	.....	76	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	25	18	12	.....	.....
	Total..	5	123	55.0	.171	9.42	.....	123	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	27	21	30	24	.....
North Carolina	Piece..	1	9	60.0	.099	5.96	.....	.....	.....	9	.....	.....	.....	.....	.....	1	2	.....	5	1	.....	.....	.....	.....	.....
	Time..	12	35	60.0	.101	6.03	.....	.....	.....	35	.....	.....	.....	.....	.....	.....	13	1	11	10	.....	.....	.....	.....	.....
	Total..	12	44	60.0	.100	6.02	.....	.....	.....	44	.....	.....	.....	.....	.....	1	15	1	16	11	.....	.....	.....	.....	.....
Rhode Island	Piece..	1	16	54.0	.192	10.39	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	4	6	.....
	Time..	2	22	54.0	.149	8.03	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	.....	.....	.....	.....
	Total..	2	38	54.0	.167	9.02	38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22	6	4	6	.....

South Carolina.	Piece..	1	12	60.0	.094	5.66				12						5	3	4							
	Time..	16	122	60.0	.085	5.13				122				4	2	24	41	21	28	2					
	Total..	16	134	60.0	.086	5.18				134				4	2	24	46	24	32	2					
Other States.....	Time..	8	69	54.6	.145	7.92	27	42												21	37	11			
All States.....	Piece..	8	125	56.3	.163	9.07	37	47		41						3	9	5	17	4	17	9	25	35	1
	Time..	83	867	56.8	.124	6.95	[1] 295	118	169	275		10		4	7	29	94	51	155	270	150	63	44		
	Total..	87	992	56.7	.129	7.21	[1] 332	165	169	316		10		4	7	32	103	56	172	274	167	72	69	35	1

OTHER EMPLOYEES: Male.

Alabama.....	Piece..	6	79	60.0	$0.128	$7.69				79				7	3	12	4	5	9	8	14		5	10	2
	Time..	8	2,102	60.4	.135	8.14				1,999		73	30	49	61	74	44	83	785	383	214	141	43	102	123
	Total..	8	2,181	60.4	.134	8.12				2,078		73	30	56	64	86	48	88	794	391	228	141	48	112	125
Connecticut.....	Piece..	4	19	55.0	.191	10.50		19						1		1	1	3	1	2	1	1	1	2	5
	Time..	4	762	55.7	.212	11.79		731		8			23					4	9	37	51	173	135	167	186
	Total..	4	781	55.7	.211	11.76		750		8			23	1		1	1	7	10	39	52	174	136	169	191
Georgia.....	Piece..	7	102	60.0	.102	6.12				102				12	11	2	13	14	20	17	5	3	5		
	Time..	12	2,568	60.2	.136	8.20				2,534			34	48	35	70	79	92	780	676	245	192	22	173	156
	Total..	12	2,670	60.2	.135	8.12				2,636			34	60	46	72	92	106	800	693	250	195	27	173	156
Maine.....	Piece..	2	31	58.0	.155	8.99			31							1			2	2	15	9	2		
	Time..	5	1,956	58.3	.189	11.00			1,917	1		3	35		1	2	2	2	78	261	470	344	192	307	297
	Total..	5	1,987	58.3	.188	10.97			1,948	1		3	35		1	3	2	2	80	263	485	353	194	307	297
Massachusetts....	Piece..	20	361	53.1	.183	9.70	[2] 361							14	2	16	22	28	21	34	31	33	17	78	65
	Time..	20	5,302	54.9	.209	11.47	[3] 5,035	3	9	13	5	12	225	5	3	8	6	36	91	273	623	1,151	949	952	1,205
	Total..	20	5,663	54.7	.207	11.36	[4] 5,396	3	9	13	5	12	225	19	5	24	28	64	112	307	654	1,184	966	1,030	1,270
New Hampshire..	Piece..	3	375	55.0	.202	11.10		375						2	20		5	3	9	34	34	53	69	57	89
	Time..	5	5,429	56.1	.216	12.14		4,986	5	147	4	5	282	1	1	3	9		13	113	278	1,384	1,175	1,174	1,278
	Total..	5	5,804	56.0	.215	12.07		5,361	5	147	4	5	282	3	21	3	14	3	22	147	312	1,437	1,244	1,231	1,367
New York.....	Piece..	2	6	54.0	.216	11.65	6															1	2	1	2
	Time..	2	536	56.1	.208	11.65	439			63		4	30					1		18	119	142	64	82	110
	Total..	2	542	56.1	.208	11.65	445			63		4	30					1		18	119	143	66	83	112

[1] Including 16 under 54 hours. [2] Including 39 under 54 hours. [3] Including 177 under 54 hours. [4] Including 216 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

MANUFACTURING—Continued.

OTHER EMPLOYEES: Male—Concluded.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
North Carolina...	Piece..	20	147	60.1	$0.130	$7.79	.....	.....	2	144	.....	.....	1	16	3	5	10	13	4	32	27	20	5	10	2
	Time..	22	2,682	60.5	.131	7.93	[1] 3	1	9	2,585	2	1	81	67	45	109	58	62	873	743	300	151	27	129	118
	Total..	22	2,829	60.5	.131	7.92	[1] 3	1	11	2,729	2	1	82	83	48	114	68	75	877	775	327	171	32	139	120
Rhode Island.....	Piece..	2	57	54.0	.255	13.78	57	.....	.....	.....	.....	.....	.....	2	1	2	.....	2	1	2	.....	2	2	9	34
	Time..	3	815	54.7	.210	11.50	783	.....	.....	14	.....	.....	18	2	.....	1	6	2	14	45	125	96	165	165	194
	Total..	3	872	54.7	.213	11.65	840	.....	.....	14	.....	.....	18	4	1	3	6	4	15	47	125	98	167	174	228
South Carolina....	Piece..	17	163	60.0	.097	5.83	.....	.....	.....	163	.....	.....	.....	50	8	13	10	5	20	26	12	9	5	4	1
	Time..	20	3,716	60.5	.126	7.62	[1] 2	18	.....	3,575	10	.....	111	195	89	127	188	248	1,439	396	313	285	66	216	154
	Total..	20	3,879	60.5	.125	7.55	[1] 2	18	.....	3,738	10	.....	111	245	97	140	198	253	1,459	422	325	294	71	220	155
Other States.....	Piece..	1	7	53.5	.169	9.03	[2] 7	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	1	1	.....	.....	1	.....	1	2
	Time..	5	367	54.6	.186	10.17	[3] 354	.....	.....	3	.....	.....	10	.....	.....	.....	1	5	33	46	38	66	45	81	52
	Total..	5	374	54.6	.186	10.15	[4] 361	.....	.....	3	.....	.....	10	1	.....	.....	1	6	34	46	38	67	45	82	54
All States.....	Piece..	84	1,347	56.3	.165	9.20	[5] 431	394	33	488	.....	.....	1	105	48	52	65	74	88	157	139	132	113	172	202
	Time..	106	26,235	57.8	.176	10.08	[6] 6,616	5,739	1,940	10,942	21	98	879	367	235	394	393	535	4,115	2,991	2,776	4,125	2,883	3,548	3,873
	Total..	106	27,582	57.7	.175	10.03	[7] 7,047	6,133	1,973	11,430	21	98	880	472	283	446	458	609	4,203	3,148	2,915	4,257	2,996	3,720	4,075

OTHER EMPLOYEES: Female.

Alabama	Piece	8	61	60.2	$0.085	$5.12	.....	.....	.....	57	.....	4	.....	17	5	3	4	9	13	9	1	.....	.....	.....
	Time	8	251	60.3	.079	4.75	.....	.....	.....	227	.....	24	.....	47	43	55	21	35	38	6	5	.....	.....	1
	Total	8	312	60.3	.080	4.82	.....	.....	.....	284	.....	28	.....	64	48	58	25	44	51	15	6	.....	.....	1
Connecticut	Piece	3	78	55.0	.150	8.24	.....	78	.....	.....	.....	.....	.....	8	.....	5	2	5	7	8	7	8	17	10
	Time	4	111	55.0	.155	8.55	.....	111	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	12	9	24	25	21	18
	Total	4	189	55.0	.153	8.42	.....	189	.....	.....	.....	.....	.....	8	.....	5	2	6	19	17	31	33	38	28
Georgia	Piece	8	94	60.0	.097	5.82	.....	.....	.....	94	.....	.....	.....	22	3	11	12	11	16	7	6	.....	4	2
	Time	12	116	60.0	.097	5.81	.....	.....	.....	116	.....	.....	.....	14	6	11	12	3	41	24	3	1	.....	1
	Total	12	210	60.0	.097	5.81	.....	.....	.....	210	.....	.....	.....	36	9	22	24	14	57	31	9	1	4	3
Maine	Piece	4	20	58.0	.108	6.28	.....	.....	20	.....	.....	.....	.....	5	.....	4	2	2	.....	.....	2	1	3	1
	Time	5	283	58.0	.142	8.25	.....	.....	283	.....	.....	.....	.....	.....	1	4	5	16	60	61	52	23	40	21
	Total	5	303	58.0	.140	8.12	.....	.....	303	.....	.....	.....	.....	5	1	8	7	18	60	61	54	24	43	22
Massachusetts	Piece	19	580	53.5	.170	9.13	[8] 580	.....	.....	.....	.....	.....	.....	20	16	20	27	25	29	25	38	72	147	130	31
	Time	20	1,418	53.3	.151	8.07	[9] 1,418	.....	.....	.....	.....	.....	.....	7	2	.....	19	67	122	276	415	160	275	61	14
	Total	20	1,998	53.3	.157	8.38	[10] 1,998	.....	.....	.....	.....	.....	.....	27	18	20	46	92	151	301	453	232	422	191	45
New Hampshire	Piece	5	565	55.0	.177	9.75	.....	565	.....	.....	.....	.....	.....	6	40	8	5	8	23	53	61	90	128	117	26
	Time	5	1,000	55.0	.160	8.77	[1] 1	999	.....	.....	.....	.....	.....	.....	.....	2	2	.....	21	304	226	116	248	76	5
	Total	5	1,565	55.0	.166	9.13	[1] 1	1,564	.....	.....	.....	.....	.....	6	40	10	7	8	44	357	287	206	376	193	31
New York	Piece	1	5	54.0	.085	4.58	5	.....	.....	.....	.....	.....	.....	.....	.....	1	4	.....	.....	.....	.....	.....	.....	.....	.....
	Time	2	108	54.0	.151	8.16	108	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	57	18	21	3	3	6
	Total	2	113	54.0	.148	8.00	113	.....	.....	.....	.....	.....	.....	.....	.....	1	4	.....	.....	57	18	21	3	3	6
North Carolina	Piece	17	158	60.0	.093	5.61	.....	.....	.....	158	.....	.....	.....	45	7	9	10	23	29	22	11	2	.....	.....	.....
	Time	21	275	60.0	.093	5.61	.....	.....	.....	275	.....	.....	.....	37	19	16	32	16	103	30	16	5	1	.....	.....
	Total	22	433	60.0	.093	5.61	.....	.....	.....	433	.....	.....	.....	82	26	25	42	39	132	52	27	7	1	.....	.....
Rhode Island	Piece	3	39	54.0	.127	6.88	39	.....	.....	.....	.....	.....	.....	3	2	8	4	5	1	2	6	.....	1	5	2
	Time	3	144	54.0	.150	8.09	144	.....	.....	.....	.....	.....	.....	.....	.....	2	1	7	14	38	42	8	7	22	3
	Total	3	183	54.0	.145	7.83	183	.....	.....	.....	.....	.....	.....	3	2	10	5	12	15	40	48	8	8	27	5

[1] Under 54 hours.
[2] Including 1 under 54 hours.
[3] Including 23 under 54 hours.
[4] Including 24 under 54 hours.
[5] Including 40 under 54 hours.
[6] Including 205 under 54 hours.
[7] Including 245 under 54 hours.
[8] Including 33 under 54 hours.
[9] Including 118 under 54 hours.
[10] Including 151 under 54 hours.

TABLE C.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Concluded.

MANUFACTURING—Continued.

OTHER EMPLOYEES: Female—Concluded.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							54.	Over 54 and under 57.	57 and under 60.	60.	Over 60 and under 63.	63 and under 66.	66 and over.	Under 6 cts.	6 and under 7 cts.	7 and under 8 cts.	8 and under 9 cts.	9 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 cents and over.
South Carolina...	Piece..	17	183	60.0	$0.068	$4.06	.....	.....	.....	183	.....	.....	.....	113	6	4	9	6	19	16	8	1	.....	1	.....
	Time..	18	260	60.0	.089	5.36	.....	.....	.....	260	.....	.....	.....	34	13	37	38	28	81	18	9	1	.....	1	.....
	Total..	19	443	60.0	.080	4.82	.....	.....	.....	443	.....	.....	.....	147	19	41	47	34	100	34	17	2	.....	2	.....
Other States.....	Piece..	4	57	53.8	.159	8.57	[1] 57	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	4	5	8	4	14	9	7	2
	Time..	5	170	54.0	.124	6.71	[2] 170	.....	.....	.....	.....	.....	.....	5	1	.....	.....	7	47	78	20	5	6	1	.....
	Total..	5	227	53.9	.133	7.18	[3] 227	.....	.....	.....	.....	.....	.....	5	1	.....	4	11	52	86	24	19	15	8	2
All States.....	Piece..	89	1,840	55.9	.146	8.06	[4] 681	643	20	492	.....	4	.....	239	79	73	83	98	142	150	144	188	309	273	62
	Time..	103	4,136	55.6	.138	7.61	[5] 1,841	1,110	283	878	.....	24	.....	144	85	127	130	180	539	901	830	365	601	205	29
	Total..	105	5,976	55.7	.140	7.75	[6] 2,522	1,753	303	1,370	.....	28	.....	383	164	200	213	278	681	1,051	974	553	910	478	91

[1] Including 3 under 54 hours.
[2] Including 2 under 54 hours.
[3] Including 5 under 54 hours.
[4] Including 36 under 54 hours.
[5] Including 121 under 54 hours.
[6] Including 157 under 54 hours.

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**.

MANUFACTURING—Continued.

CARD STRIPPERS: Male.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'k'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Georgia	Time..	9	94	60.0	46.5	$8.15	$6.38	5	11	12	37	11	18	14	2	2	12	19	15	18	11	1	....	....	....	....	....	....	....
Maine	Time..	5	89	58.0	50.6	9.27	8.14	3	7	8	7	64	....	7	3	3	1	3	4	48	8	....	7	5	....	....	....	....	....
Massachusetts	Time..	20	255	54.2	54.5	10.24	10.37	4	13	12	9	133	84	6	8	2	3	8	1	14	63	48	38	40	10	14	....	....	....
New Hampshire	Time..	3	83	55.0	55.3	10.53	10.60	1	4	1	4	47	26	2	1	....	2	1	....	2	4	35	17	19	....	....	....	....	....
New York	Time..	2	27	54.4	48.4	11.38	10.27	1	2	4	....	20	....	1	1	1	....	....	1	3	1	6	8	3	....	2	....	....	....
North Carolina	Piece..	1	9	60.0	52.2	8.91	7.75	....	....	2	3	4	....	....	....	1	....	1	2	5	....	....	....	....	....	....	....	....	....
	Time..	11	33	60.0	51.5	7.57	6.46	....	3	3	11	14	2	2	....	3	5	11	6	4	....	....	1	1	....	....	....	....	....
	Total..	11	42	60.0	51.6	7.86	6.74	....	3	5	14	18	2	2	....	4	5	12	8	9	....	....	1	1	....	....	....	....	....
Rhode Island	Time..	3	34	54.4	51.3	10.76	10.09	....	3	1	2	22	6	....	1	....	1	1	1	2	7	15	3	2	....	1	....	....	....
South Carolina	Piece..	4	18	60.0	48.0	8.22	6.62	....	1	4	11	2	....	1	....	1	5	2	5	2	2	....	....	....	....	....	....	....	....
	Time..	19	65	60.0	49.2	7.41	6.15	....	5	17	23	16	4	4	4	7	13	18	9	4	4	1	1	....	....	....	....	....	....
	Total..	20	83	60.0	49.0	7.59	6.26	....	6	21	34	18	4	5	4	8	18	20	14	6	6	1	1	....	....	....	....	....	....
Other States	Time..	8	40	56.5	51.6	9.38	8.65	1	1	3	8	25	2	2	....	1	1	8	2	3	6	15	....	1	1	....	....	....	....
All States	Piece..	5	27	60.0	49.4	8.45	7.00	....	1	6	14	6	....	1	....	2	5	3	7	7	2	....	....	....	....	....	....	....	....
	Time..	80	720	56.5	51.9	9.52	8.93	15	49	61	101	352	142	38	20	19	38	69	39	98	104	121	75	71	11	17	....	....	....
	Total..	81	747	56.6	51.8	9.48	8.86	15	50	67	115	358	142	39	20	21	43	72	46	105	106	121	75	71	11	17	....	....	....

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

DRAWING-FRAME TENDERS: Male.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'k'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25	$25 and over.
Alabama	Time..	2	38	60.0	43.7	$5.86	$4.27	5	2	9	16	3	3	7	6	10	10	5	....	....	....	....	....	....	....	....	....	....	....
Georgia	Time..	8	85	60.0	43.4	6.71	4.87	8	10	16	33	5	13	16	10	15	15	15	12	2	....	....	....	....	....	....	....	....	....
Maine	Piece..	1	3	58.0	58.0	7.31	7.30	....	....	....	....	3	....	....	....	....	....	....	3	....	....	....	....	....	....	....	....	....	....
	Time..	5	38	58.0	54.1	7.60	7.15	....	3	2	....	33	....	3	2	....	....	9	5	15	3	....	....	1	....	....	....	....	....
	Total..	5	41	58.0	54.4	7.58	7.16	....	3	2	....	36	....	3	2	....	....	9	8	15	3	....	....	1	....	....	....	....	....
Massachusetts	Piece..	1	1	54.0	54.0	11.66	11.68	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....
	Time..	14	118	54.3	51.5	8.90	8.49	5	6	5	3	73	26	7	4	....	1	9	20	24	20	23	5	2	1	2	....	....	....
	Total..	14	119	54.3	51.6	8.92	8.52	5	6	5	3	74	26	7	4	....	1	9	20	24	20	23	6	2	1	2	....	....	....
North Carolina	Piece..	1	14	60.0	44.0	7.92	5.78	1	1	3	7	2	....	2	....	1	2	6	3	....	....	....	....	....	....	....	....	....	....
	Time..	10	36	60.0	52.7	7.59	6.60	1	1	5	11	14	4	2	....	3	3	15	7	3	3	....	....	....	....	....	....	....	....
	Total..	11	50	60.0	50.2	7.68	6.37	2	2	8	18	16	4	4	....	4	5	21	10	3	3	....	....	....	....	....	....	....	....
South Carolina	Piece..	3	13	60.0	47.4	8.08	6.32	....	....	5	6	2	....	....	....	4	3	....	3	2	1	....	....	....	....	....	....	....	....
	Time..	18	169	60.0	45.3	5.97	4.53	6	13	57	59	33	1	30	45	34	19	23	12	5	1	....	....	....	....	....	....	....	....
	Total..	20	182	60.0	45.5	6.12	4.66	6	13	62	65	35	1	30	45	38	22	23	15	7	2	....	....	....	....	....	....	....	....

Other States...	Piece..	1	1	55.0	55.0	8.53	8.53	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
	Time..	8	62	55.1	48.7	9.19	8.11	2	1	13	7	38	1	2	....	5	1	9	10	13	11	5	4	2	....	....	....	....	....	....
	Total..	9	63	55.1	48.8	9.18	8.12	2	1	13	7	39	1	2	....	5	1	9	10	14	11	5	4	2	....	....	....	....	....	....
All States.....	Piece..	7	32	59.5	47.3	8.06	6.41	1	1	8	13	9	....	2	....	5	5	6	9	3	1	....	1	....	....	....	....	....	....	....
	Time..	65	546	58.1	47.7	7.30	6.15	27	36	107	129	199	48	67	67	67	49	85	66	62	38	28	9	5	1	2	....	....	....	....
	Total..	69	578	58.1	47.7	7.34	6.16	28	37	115	142	208	48	69	67	72	54	91	75	65	39	28	10	5	1	2	....	....	....	....

DRAWING-FRAME TENDERS: Female.

Connecticut...	Time..	2	33	55.0	53.3	$6.65	$6.45	....	1	1	....	31	....	1	1	....	8	22	....	1	....	....	....	....	....	....	....	....	....	....
Georgia.....	Time..	5	35	60.0	46.8	6.43	5.00	1	4	10	8	7	5	4	8	6	3	10	4	....	....	....	....	....	....	....	....	....	....	....
Maine.....	Piece..	1	8	58.0	50.1	7.90	6.89	....	1	1	1	5	....	1	....	....	2	....	3	....	2	....	....	....	....	....	....	....	....	....
	Time..	3	78	58.0	45.7	5.98	5.42	8	7	10	11	41	1	15	2	9	4	36	4	5	3	....	....	....	....	....	....	....	....	....
	Total..	3	86	58.0	46.1	6.16	5.56	8	8	11	12	46	1	16	2	9	6	36	7	5	5	....	....	....	....	....	....	....	....	....
Massachusetts.	Time..	14	210	53.9	50.7	8.03	7.57	3	8	10	12	177	....	6	6	4	2	12	88	73	17	2	....	....	....	....	....	....	....	....
New Hampshire.	Piece..	1	19	55.0	53.7	8.58	8.38	....	....	1	....	18	....	....	....	1	....	....	....	17	1	....	....	....	....	....	....	....	....	....
	Time..	2	68	55.0	51.8	7.90	7.44	1	2	3	7	55	....	1	1	3	2	5	25	31	....	....	....	....	....	....	....	....	....	....
	Total..	3	87	55.0	52.2	8.05	7.65	1	2	4	7	73	....	1	1	4	2	5	25	48	1	....	....	....	....	....	....	....	....	....
Other States...	Time..	8	59	55.5	47.7	7.63	6.77	2	3	8	11	35	....	7	4	3	4	4	8	17	12	....	....	....	....	....	....	....	....	....
All States.....	Piece..	2	27	55.9	52.6	8.38	7.94	....	1	2	1	23	....	1	....	1	2	....	3	17	3	....	....	....	....	....	....	....	....	....
	Time..	34	483	55.4	49.6	7.42	6.84	15	25	42	49	346	6	34	22	25	23	89	129	127	32	2	....	....	....	....	....	....	....	....
	Total..	35	510	55.4	49.7	7.47	6.90	15	26	44	50	369	6	35	22	26	25	89	132	144	35	2	....	....	....	....	....	....	....	....

SLUBBER TENDERS: Male.

Alabama.....	Piece..	2	12	60.0	46.6	$9.53	$7.49	....	2	1	5	2	2	2	....	....	1	....	3	2	2	2	....	....	....	....	....	....	....	....
	Time..	1	3	60.0	48.9	6.00	4.92	....	....	1	1	1	....	....	1	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....
	Total..	2	15	60.0	47.0	8.82	6.97	....	2	2	6	3	2	2	1	....	2	1	3	2	2	2	....	....	....	....	....	....	....	....
Connecticut...	Piece..	4	16	55.0	54.4	13.06	12.92	....	....	....	2	14	....	....	....	....	....	....	....	....	....	2	3	8	1	2	....	....	....	....
	Time..	1	4	55.0	55.0	13.86	13.85	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....	2	2	....	....	....	....	....
	Total..	4	20	55.0	54.5	13.22	13.11	....	....	....	2	18	....	....	....	....	....	....	....	....	....	2	3	10	3	2	....	....	....	....

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

SLUBBER TENDERS: Male—Concluded.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wk'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.																
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Georgia	Piece..	9	82	60.0	48.3	$9.45	$7.81	8	6	10	23	31	4	11	....	4	7	5	12	4	14	11	8	6	....	....	....	....	.....
Maine	Piece..	5	76	58.0	50.9	12.95	11.46	7	2	3	6	58	.....	7	2	....	1	.....	2	2	.....	5	9	34	12	2	.....	.....	.....
	Time..	2	6	58.0	44.8	9.89	8.07	1	....	1	1	3	.....	1	....	....	1	1	.....	1	.....	1	....	.....	.....	1	.....	.....	.....
	Total..	5	82	58.0	50.5	12.72	11.21	8	2	4	7	61	.....	8	2	....	2	1	2	3	.....	6	9	34	12	3	.....	.....	.....
Massachusetts	Piece..	18	112	54.0	52.6	12.92	12.78	3	6	8	9	77	39	3	2	2	2	2	3	2	9	6	20	39	31	11	6	3	1
	Time..	7	24	54.0	52.8	11.03	10.63	1	4	1	2	9	7	1	1	1	2	1	.....	2	1	.....	3	6	5	1	.....	.....	.....
	Total..	20	166	54.0	52.6	12.65	12.47	4	10	9	11	86	46	4	3	3	4	3	3	4	10	6	23	45	36	12	6	3	1
New Hampshire	Piece..	3	51	55.0	47.7	13.40	13.32	4	3	4	2	38	.....	3	2	2	.....	1	1	2	2	4	5	14	13	2	.....	.....	.....
North Carolina	Piece..	7	22	60.0	58.2	10.93	10.66	.....	.....	.....	6	16	.....	.....	.....	.....	1	1	2	1	3	4	4	5	1	.....	.....	.....	.....
	Time..	4	6	60.0	55.5	7.04	7.41	.....	.....	.....	3	3	.....	.....	.....	1	.....	1	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	11	28	60.0	57.6	10.10	9.96	.....	.....	.....	9	19	.....	.....	.....	1	1	2	3	3	4	4	4	5	1	.....	.....	.....	.....
Rhode Island	Piece..	3	22	54.0	48.2	13.15	11.93	1	....	3	2	16	.....	1	.....	.....	1	.....	.....	.....	4	.....	3	9	3	.....	.....	1	.....
South Carolina	Piece..	19	121	60.0	47.3	8.85	7.07	6	7	32	41	34	1	9	4	11	8	23	21	14	14	12	3	2	.....	.....	.....	.....	.....
	Time..	3	8	60.0	47.8	7.92	6.28	....	1	3	.....	4	.....	.....	.....	3	1	1	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	20	129	60.0	47.3	8.79	7.02	6	8	35	41	38	1	9	4	14	9	24	23	14	15	12	3	2	....	....	....	....	.....

Other States...	Piece..	2	13	54.9	51.2	12.23	11.27	....	....	3	1	9	.....	.....	....	....	.....	.....	.....	.....	.....	4	6	8	....	....	....	....	.....
All States.....	Piece..	72	557	57.2	50.1	11.42	10.42	29	26	64	97	295	46	36	10	19	21	32	44	27	48	50	61	120	61	17	6	4	1
	Time..	18	51	56.5	51.3	9.86	9.18	2	5	6	7	24	7	2	2	5	5	5	3	5	3	1	3	8	7	2	....	....	.....
	Total..	79	608	57.2	50.2	11.29	10.31	31	31	70	104	319	53	38	12	24	26	37	47	32	51	51	64	128	68	19	6	4	1

SLUBBER TENDERS: Female.

All States.....	Piece..	12	43	54.3	48.6	$10.65	$9.73	1	3	4	5	30	.....	2	1	....	2	5	1	1	5	9	8	8	1	....	....	....	.....

SPEEDER TENDERS: Male.

Georgia.....	Piece..	9	155	60.0	47.7	$9.62	$7.76	8	21	19	34	67	6	19	6	5	9	10	14	23	38	14	13	4	.....	....	....	....	.....
Massachusetts.	Piece..	17	174	54.0	49.5	12.79	11.80	7	11	17	25	78	36	7	2	4	5	4	5	4	9	14	34	44	19	13	9	1	.....
	Time..	4	31	54.0	53.6	9.99	10.08	1	....	.....	3	23	4	1	....	.....	.....	1	2	17	1	.....	3	3	....	1	1	1	.....
	Total..	19	205	54.0	50.1	12.37	11.54	8	11	17	28	101	40	8	2	4	5	5	7	21	10	14	37	47	19	14	10	2	.....
New Hampshire.	Piece..	3	67	55.0	55.0	11.89	11.89	3	1	2	2	43	16	3	....	1	.....	.....	1	1	3	6	18	22	6	5	1	....	.....
North Carolina.	Piece..	9	141	60.0	52.8	9.91	8.75	2	10	14	32	77	6	4	7	4	5	12	13	19	27	24	13	13	....	....	....	....	.....
	Time..	4	40	60.0	54.1	7.77	7.02	....	2	3	15	16	4	1	....	4	2	10	10	11	1	1	....	.....	....	....	....	....	.....
	Total..	11	181	60.0	53.1	9.43	8.37	2	12	17	47	93	10	5	7	8	7	22	23	30	28	25	13	13	....	....	....	....	.....
South Carolina.	Piece..	20	486	60.0	46.8	8.94	7.00	16	45	114	171	138	2	32	32	35	60	74	70	77	54	33	11	6	2	....	....	....	.....
	Time..	1	2	60.0	57.0	6.00	5.70	....	....	.....	1	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	....	....	....	.....
	Total..	20	488	60.0	46.8	8.92	6.99	16	45	114	172	139	2	32	32	35	61	75	70	77	54	33	11	6	2	....	....	....	.....
Other States...	Piece..	14	193	56.9	48.9	11.58	10.21	8	12	27	27	115	4	13	6	4	6	8	9	17	11	17	41	44	6	5	6	....	.....
	Time..	1	11	55.0	54.0	15.86	15.53	....	....	.....	1	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	7	3	....	....	.....
	Total..	14	204	56.8	49.1	11.82	10.49	8	12	27	28	125	4	13	6	4	6	8	9	17	11	17	41	45	13	8	6	....	.....
All States.....	Piece..	72	1,216	58.4	48.8	10.27	8.76	44	100	193	291	518	70	78	53	53	85	108	112	141	142	108	130	133	33	23	16	1	.....
	Time..	10	84	57.1	54.0	9.61	9.23	1	2	3	20	50	8	2	....	4	3	12	12	28	2	1	3	4	7	4	1	1	.....
	Total..	76	1,300	58.3	49.1	10.23	8.80	45	102	196	311	568	78	80	53	57	88	120	124	169	144	109	133	137	40	27	17	2	.....

TABLE **D.**—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

SPEEDER TENDERS: Female.

State.	Pieceworkers or timeworkers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wk'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Alabama	Piece..	2	32	60.0	48.2	$7.70	$6.27	....	1	12	13	5	1	1	1	4	9	9	1	5	2	....	....	....	....	....	....	....	....
Connecticut	Time..	4	174	55.0	53.0	11.16	10.77	3	2	4	7	158	....	5	....	....	....	2	9	9	15	60	36	20	18	....	....	....	....
Georgia	Time..	9	115	60.0	47.9	9.17	7.06	3	12	24	31	41	4	10	3	8	17	15	23	11	16	2	6	4	....	....	....	....	....
Maine	Piece..	5	313	58.0	51.9	10.97	9.86	7	13	41	31	221	....	10	7	3	8	13	18	28	38	60	64	58	5	1	....	....	....
	Time..	1	1	58.0	58.0	8.00	8.00	....	....	....	....	1	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....
	Total..	5	314	58.0	52.1	10.96	9.86	7	13	41	31	222	....	10	7	3	8	13	18	29	38	60	64	58	5	1	....	....	....
Massachusetts	Piece..	19	1,006	54.0	50.7	10.65	10.00	11	36	55	65	839	....	17	12	14	30	28	33	86	211	249	182	116	23	4	1	....	....
	Time..	5	35	53.8	48.1	10.13	9.09	2	....	3	6	24	....	2	....	....	2	2	5	2	5	6	11	....	....	....	....	....	....
	Total..	20	1,041	54.0	50.6	10.64	9.97	13	36	58	71	863	....	19	12	14	32	30	38	88	216	255	193	116	23	4	1	....	....
New Hampshire	Piece..	3	128	55.0	54.2	10.71	10.53	1	....	2	3	122	....	1	....	....	....	1	6	7	18	41	41	13	....	....	....	....	....
	Time..	1	11	55.0	53.0	8.06	7.77	....	....	1	....	10	....	....	....	1	....	....	2	7	1	....	....	....	....	....	....	....	....
	Total..	3	139	55.0	54.1	10.50	10.31	1	....	3	3	132	....	1	....	1	....	1	8	14	19	41	41	13	....	....	....	....	....
New York	Piece..	2	147	54.0	51.0	10.99	10.38	1	2	20	6	118	....	1	....	1	2	4	5	10	5	65	49	5	....	....	....	....	....
North Carolina	Piece..	7	24	60.0	52.0	9.22	8.07	....	2	3	6	13	....	....	3	....	1	3	4	4	5	2	2	....	....	....	....	....	....
	Time..	2	2	60.0	58.8	6.99	6.68	....	....	....	1	....	1	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....
	Total..	9	26	60.0	52.5	9.05	7.96	....	2	3	7	13	1	....	3	....	1	5	4	4	5	2	2	....	....	....	....	....	....

Rhode Island..	Piece..	3	164	54.0	50.8	10.65	9.95	3	2	12	12	135	.....	2	2	....	6	10	3	8	30	57	30	15	1	....	....	....	.....
South Carolina.	Piece..	19	163	60.0	46.3	8.03	6.18	3	18	41	59	42	.....	12	15	25	29	18	26	21	9	6	2	.....	.....	.....	.....	.....	.....	.....
	Time..	1	1	60.0	49.0	6.00	4.90	....	....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	19	164	60.0	46.3	8.02	6.18	3	18	41	60	42	.....	12	15	26	29	18	26	21	9	6	2	.....	.....	.....	.....	.....	.....	.....
Other States...	Piece..	1	7	54.0	38.0	9.22	6.57	1	1	1	1	3	.....	1	1	....	.....	.....	1	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....
All States.....	Piece..	74	2,273	55.6	50.7	10.44	9.59	33	89	215	234	1,697	5	60	44	55	102	104	129	191	350	542	412	231	47	5	1	....	.....	.....
	Time..	10	50	54.5	49.8	9.42	8.59	2	....	4	8	35	1	2	....	2	2	4	7	10	6	6	11	.....	.....	.....	.....	.....	.....	.....
	Total..	77	2,323	55.5	50.7	10.41	9.57	35	89	219	242	1,732	6	62	44	57	104	108	136	201	356	548	423	231	47	5	1	....	.....	.....

SPINNERS, MULE: Male.

Maine.....	Piece..	3	39	58.0	55.4	$16.94	$16.21	....	....	4	1	34	.....	.....	.....	.....	.....	.....	.....	1	.....	3	1	4	2	17	11	....	.....
Massachusetts.	Piece..	7	148	54.0	50.9	21.31	20.17	1	6	9	3	129	.....	1	....	2	1	.....	.....	.....	6	.....	2	8	24	12	6	49	37	
	Time..	1	7	54.0	54.0	21.98	22.00	....	....	.....	.....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7	.....	
	Total..	7	155	54.0	51.0	21.34	20.26	1	6	9	3	136	.....	1	....	2	1	.....	.....	.....	6	.....	2	8	24	12	6	56	37	
Rhode Island..	Piece..	3	52	54.0	49.0	15.44	14.01	....	6	3	1	42	.....	.....	.....	1	1	1	3	1	.....	1	2	5	28	7	2	....	.....	
Other States...	Piece..	4	70	54.8	50.6	16.66	15.42	2	2	4	6	49	7	1	2	....	1	.....	.....	1	1	.....	5	10	8	19	21	1	.....	
	Time..	1	18	55.0	53.6	19.89	19.41	....	....	1	.....	17	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	5	12	.....	
	Total..	4	88	54.8	51.2	17.32	16.24	2	2	5	6	66	7	1	2	....	1	.....	.....	1	2	.....	5	10	8	19	26	13	.....	
All States.....	Piece..	17	309	54.7	51.1	18.72	17.56	3	14	20	11	254	7	2	2	3	3	1	3	3	7	4	10	27	62	55	40	50	37	
	Time..	2	25	54.7	53.7	20.47	20.14	....	....	1	.....	24	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	5	19	.....	
	Total..	17	334	54.7	51.3	18.85	17.75	3	14	21	11	278	7	2	2	3	3	1	3	3	8	4	10	27	62	55	45	69	37	

SPINNERS, FRAME: Male.

Massachusetts.	Piece..	1	54	54.0	52.1	$11.82	$11.48	....	2	1	3	48	.....	1	....	1	1	.....	2	.....	.....	11	5	23	....	....	....	.....	.....	
	Time..	15	175	54.0	44.5	9.70	8.11	18	12	19	16	104	6	24	4	3	10	16	13	22	24	19	26	8	6	....	....	.....	.....	
	Total..	16	229	54.0	46.3	10.20	8.91	18	14	20	19	152	6	25	4	4	11	16	15	22	24	30	31	41	6	....	....	.....	.....	
New Hampshire.	Piece..	2	38	55.0	52.7	11.58	10.92	2	....	.....	4	28	4	2	....	.....	.....	.....	.....	1	5	5	17	7	....	....	1	.....	.....	
	Time..	1	45	55.0	50.6	11.59	10.87	2	1	3	3	35	1	2	....	2	.....	.....	2	2	6	8	6	13	4	....	....	.....	.....	
	Total..	3	83	55.0	51.5	11.59	10.89	4	1	3	7	63	5	4	....	2	.....	.....	2	3	11	13	23	20	4	....	1	.....		

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECE WORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

SPINNERS, FRAME: Male—Concluded.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wk'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
South Carolina.	Time..	17	127	60.0	48.9	$5.30	$4.27	3	12	24	36	52	.....	26	38	24	19	9	7	1	3	.....	.....	.....	.....	.....	.....	.....	.....
Other States...	Piece..	1	31	60.0	40.5	12.34	8.49	6	5	4	4	12	.....	5	3	2	3	1	1	.....	4	3	1	3	3	.....	2	.....	.....
	Time..	16	170	58.7	39.2	8.29	5.56	38	20	18	23	70	1	58	17	18	6	13	13	7	8	5	10	12	3	.....	.....	.....	.....
	Total..	16	201	58.9	39.4	8.91	6.01	44	25	22	27	82	1	63	20	20	9	14	14	7	12	8	11	15	6	.....	2	.....	.....
All States.....	Piece..	4	123	55.8	49.3	11.88	10.55	8	7	5	11	88	4	8	3	3	4	1	3	1	9	19	23	43	3	.....	3	.....	.....
	Time..	49	517	57.1	44.4	8.32	6.57	61	45	64	78	261	8	110	59	47	35	38	35	32	41	32	42	33	13	.....	.....	.....	.....
	Total..	52	640	56.8	45.3	9.01	7.33	69	52	69	89	349	12	118	62	50	39	39	38	33	50	51	65	76	16	.....	3	.....	.....

SPINNERS, FRAME: Female.

Alabama.....	Time..	2	141	60.0	50.2	$6.29	$5.27	2	9	25	59	46	.....	14	20	35	32	17	12	1	4	6	.....	.....	.....	.....	.....	.....	.....
Connecticut....	Piece..	1	42	55.0	53.1	9.17	8.84	.....	1	2	1	38	.....	.....	1	.....	2	4	3	13	10	8	.....	1	.....	.....	.....	.....	.....
	Time..	3	130	55.0	52.5	10.34	9.89	1	5	3	9	112	.....	2	2	2	1	5	4	21	22	28	21	20	2	.....	.....	.....	.....
	Total..	4	172	55.0	52.7	10.05	9.63	1	6	5	10	150	.....	2	3	2	3	9	7	34	32	36	21	21	2	.....	.....	.....	.....

Georgia	Time	9	616	60.0	43.7	7.33	5.36	50	73	131	243	107	12	98	64	92	96	118	71	33	29	7	7	1					
Maine	Time	4	492	58.0	49.1	10.22	8.60	21	27	87	62	295		27	11	16	28	39	61	84	52	57	56	61					
Massachusetts	Piece	3	129	54.0	50.1	11.17	10.39	1	6	9	10	103		2	2	1	5	6	3	5	22	22	22	39					
	Time	20	1,610	53.9	49.3	9.87	9.06	40	64	109	186	1,207	4	60	26	35	37	77	103	212	485	342	156	74	3				
	Total	20	1,739	53.9	49.4	9.96	9.16	41	70	118	196	1,310	4	62	28	36	42	83	106	217	507	364	178	113	3				
New Hampshire	Piece	2	314	55.0	50.2	10.69	9.72	9	16	14	27	248		13	8	5	5	7	16	36	49	57	80	32	6				
	Time	1	124	55.0	49.1	10.31	9.34	5	6	10	9	94		5	6	5	2	4	7	11	14	32	21	15	2				
	Total	3	438	55.0	49.9	10.58	9.61	14	22	24	36	342		18	14	10	7	11	23	47	63	89	101	47	8				
New York	Time	2	215	54.0	51.8	9.89	9.52	3	5	3	17	187		3	6	5	1	8	16	24	47	54	43	7	1				
North Carolina	Piece	1	20	60.0	46.5	6.90	5.42	2	1	3	6	8		3	2	1	3	8	3										
	Time	10	331	60.0	52.0	7.17	6.23	7	9	44	119	137	15	19	17	37	64	71	62	43	15	3							
	Total	11	351	60.0	51.7	7.15	6.18	9	10	47	125	145	15	22	19	38	67	79	65	43	15	3							
Rhode Island	Time	3	211	54.0	48.9	10.26	9.31	6	14	10	19	162		11	4	4	4	17	14	26	32	47	23	25	3	1			
South Carolina	Time	20	1,345	60.0	46.8	6.19	4.85	59	134	262	472	418		233	220	233	273	190	128	54	9	5							
Other States	Piece	1	15	54.0	41.0	7.30	5.74	3		1	6	5		3		1		6	1	4									
All States	Piece	8	520	54.9	50.0	10.44	9.53	15	24	29	50	402		21	13	8	15	31	26	58	81	87	102	72	6				
	Time	74	5,215	57.2	48.4	8.42	7.27	194	346	684	1,195	2,765	31	472	376	464	538	546	478	509	709	581	327	203	11	1			
	Total	79	5,735	57.0	48.5	8.61	7.47	209	370	713	1,245	3,167	31	493	389	472	553	577	504	567	790	668	429	275	17	1			

DOFFERS: Male.

Alabama	Piece	2	34	60.0	51.0	$6.92	$5.84	2		4	20	8		5	2	3	8	6	5	1	1	1	2						
	Time	1	41	60.0	40.1	7.64	4.89	5	6	7	21	2		8	3	8	8	7	7										
	Total	2	75	60.0	45.0	7.32	5.32	7	6	11	41	10		13	5	11	16	13	12	1	1	1	2						
Connecticut	Piece	1	10	55.0	57.0	9.59	9.91					6	4							2	2	4	2						
	Time	4	71	55.0	48.8	9.21	8.22	5	3	2	7	54		6	2	1	1	1	4	22	26	8							
	Total	4	81	55.0	49.8	9.26	8.43	5	3	2	7	60	4	6	2	1	1	1	4	24	28	12	2						
Georgia	Piece	2	84	60.0	44.0	8.94	6.58	5	14	11	36	17	1	9	8	9	7	8	15	10	15	1	2						
	Time	7	334	60.0	45.1	7.45	5.63	23	38	76	90	89	18	56	39	33	55	54	37	19	23	7	4	5	2				
	Total	9	418	60.0	44.9	7.75	5.82	28	52	87	126	106	19	65	47	42	62	62	52	29	38	8	6	5	2				
Maine	Time	3	129	58.0	52.9	9.07	8.38	1	5	13	16	94		5	2	6	12	7	14	16	38	14	9	5	1				
Massachusetts	Piece	6	130	52.9	47.2	10.60	9.39	6	4	11	18	91		6	2	3		10	15	11	17	36	13	11	4	2			
	Time	17	361	53.5	48.5	9.48	8.60	9	20	27	30	263	12	17	9	9	16	22	42	43	90	75	25	13					
	Total	20	491	53.3	48.1	9.78	8.81	15	24	38	48	354	12	23	11	12	16	32	57	54	107	111	38	24	4	2			

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

DOFFERS: Male—Concluded.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wk'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
New Hampshire	Piece..	2	73	55.0	53.4	$9.95	$9.64	....	....	5	2	63	3	.....	1	....	2	3	7	5	22	14	19	.....	.....	.....	.....	.....	.....
	Time..	1	11	55.0	53.2	9.84	9.49	....	....	.....	2	9	.....	.....	.....	.....	.....	.....	.....	2	6	3	.....	.....	.....	.....	.....	.....	.....
	Total..	2	84	55.0	53.4	9.94	9.62	....	....	5	4	72	3	.....	1	....	2	3	7	7	28	17	19	.....	.....	.....	.....	.....	.....
New York	Piece..	1	12	60.0	41.1	12.45	8.95	3	1	2	.....	6	.....	3	....	1	.....	.....	1	1	.....	.....	1	2	3	.....	.....	.....	.....
	Time..	2	80	54.0	52.8	10.34	10.10	....	1	1	5	72	1	.....	....	2	1	2	2	4	30	15	7	17	.....	.....	.....	.....	.....
	Total..	2	92	54.8	51.3	10.62	9.95	3	2	3	5	78	1	3	....	3	1	2	3	5	30	15	8	19	3	.....	.....	.....	.....
North Carolina	Piece..	5	53	60.0	51.1	7.39	6.29	2	2	6	17	26	.....	5	4	6	8	7	7	12	1	2	1	.....	.....	.....	.....	.....	.....
	Time..	8	167	60.0	53.8	5.47	4.97	4	4	19	41	80	19	21	24	33	28	45	11	4	1	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	11	220	60.0	53.2	5.93	5.28	6	6	25	58	106	19	26	28	39	36	52	18	16	2	2	1	.....	.....	.....	.....	.....	.....
Rhode Island	Piece..	2	50	54.0	48.3	11.10	9.98	4	1	2	2	41	.....	4	....	1	1	.....	2	1	13	8	8	10	2	.....	.....	.....	.....
	Time..	1	33	54.0	53.6	9.94	9.87	....	....	.....	2	31	.....	.....	.....	.....	.....	.....	6	3	5	7	12	.....	.....	.....	.....	.....	.....
	Total..	3	83	54.0	50.4	10.64	9.94	4	1	2	4	72	.....	4	....	1	1	.....	8	4	18	15	20	10	2	.....	.....	.....	.....
South Carolina	Piece..	8	186	60.0	45.2	6.80	5.20	7	20	44	75	39	1	29	26	28	42	25	15	12	5	2	2	.....	.....	.....	.....	.....	.....
	Time..	15	498	59.9	48.2	5.76	4.63	22	39	87	183	161	6	83	81	116	84	105	24	4	.....	1	....	.....	.....	.....	.....	.....	.....
	Total..	20	684	60.0	47.4	6.04	4.79	29	59	131	258	200	7	112	107	144	126	130	39	16	5	3	2	.....	.....	.....	.....	.....	.....

All States	Piece..	29	632	57.4	47.6	8.78	7.41	29	42	85	170	297	9	61	43	51	68	59	67	55	76	68	50	23	9	2			
	Time..	59	1,725	57.8	48.7	7.59	6.51	69	116	232	397	855	56	196	160	208	205	243	147	117	219	130	57	40	3				
	Total..	76	2,357	57.7	48.4	7.91	6.75	98	158	317	567	1,152	65	257	203	259	273	302	214	172	295	198	107	63	12	2			

DOFFERS: Female.

Maine	Piece..	1	1	58.0	47.5	$6.26	$5.15				1						1												
	Time..	4	178	58.0	50.6	8.69	7.51	7	8	23	22	118		7	5	10	37	8	33	15	30	27	3	3					
	Total..	4	179	58.0	50.6	8.67	7.50	7	8	23	23	118		7	5	10	38	8	33	15	30	27	3	3					
Massachusetts	Piece..	2	77	50.5	48.0	8.29	7.71	2	1	3	7	64		2	1		5	20	11	31	2	2	2	1					
	Time..	7	118	52.9	48.5	8.88	8.11	3	5	7	17	80	6	5	3	1	7	9	12	33	22	26							
	Total..	9	195	51.9	48.3	8.65	7.96	5	6	10	24	144	6	7	4	1	12	29	23	64	24	28	2	1					
Other States	Piece..	2	16	54.0	35.4	8.80	5.75	4	2	2	2	6		5	1			4	3		2			1					
	Time..	4	41	54.7	45.3	7.27	6.00	3	3	6	7	22		3	4	2	5	16	5	6									
	Total..	5	57	54.5	42.6	7.70	5.93	7	5	8	9	28		8	5	2	5	20	8	6	2			1					
All States	Piece..	5	94	51.1	45.8	8.35	7.35	6	3	5	10	70		7	2		6	24	14	31	4	2	2	2					
	Time..	15	337	55.8	49.2	8.58	7.54	13	16	36	46	220	6	15	12	13	49	33	50	54	52	53	3	3					
	Total..	18	431	54.8	48.5	8.53	7.50	19	19	41	56	290	6	22	14	13	55	57	64	85	56	55	5	5					

SPOOLER TENDERS: Female.

Alabama	Piece..	2	72	60.0	47.7	$5.46	$4.43	3	5	18	23	23		16	18	13	9	8	2	4		2							
Connecticut	Piece..	3	82	55.0	50.3	9.26	8.44	4	2	4	10	62		5	1	1	4	4	10	22	11	14	7	3					
	Time..	1	18	55.0	53.1	7.40	7.15			1	3	14					2	2	12	1		1							
	Total..	4	100	55.0	50.8	8.92	8.21	4	2	5	13	76		5	1	1	6	6	22	23	11	15	7	3					
Georgia	Piece..	8	286	60.0	46.8	6.55	5.11	15	31	50	95	88	7	48	48	40	61	31	26	16	9	4	2	1					
	Time..	1	8	60.0	38.9	7.50	4.89	2	1		3	2		3			1	2	1	1									
	Total..	9	294	60.0	46.6	6.57	5.11	17	32	50	98	90	7	51	48	40	62	33	27	17	9	4	2	1					
Maine	Piece..	4	238	58.0	53.1	8.81	8.04	4	9	19	25	181		7	7	16	7	30	35	46	51	20	15	4					
	Time..	3	32	58.0	46.6	9.35	7.45	2	1	7	9	13		2		2	3	4	8	4	6		3						
	Total..	5	270	58.0	52.3	8.87	7.97	6	10	26	34	194		9	7	18	10	34	43	50	57	20	18	4					

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

SPOOLER TENDERS: Female—Concluded.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wk'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Massachusetts.	Piece..	20	814	53.9	49.3	$9.11	$8.38	12	27	55	196	524	.....	27	16	23	49	84	113	182	126	82	53	51	8	.....	.....	.....	.....
	Time..	4	31	53.2	50.6	8.94	8.46	.....	.....	2	6	23	.....	.....	1	.....	4	1	4	12	4	.....	1	4	.....	.....	.....	.....	.....
	Total..	20	845	53.8	49.4	9.11	8.38	12	27	57	202	547	.....	27	17	23	53	85	117	194	130	82	54	55	8	.....	.....	.....	.....
New Hampshire.	Piece..	3	108	55.0	52.0	9.85	9.31	1	5	4	5	93	.....	1	2	3	4	5	7	18	24	16	17	9	2	.....	.....	.....	.....
	Time..	1	3	55.0	53.3	9.17	8.92	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....
	Total..	3	111	55.0	52.1	9.83	9.30	1	5	4	6	95	.....	1	2	3	4	5	8	19	24	16	18	9	2	.....	.....	.....	.....
New York.....	Piece..	2	75	54.0	51.8	10.30	9.88	.....	1	2	8	64	.....	1	.....	.....	4	7	3	6	17	13	10	11	3	.....	.....	.....	.....
	Time..	1	2	54.0	54.0	8.26	8.25	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	2	77	54.0	51.8	10.25	9.84	.....	1	2	8	66	.....	1	.....	.....	4	7	3	8	17	13	10	11	3	.....	.....	.....	.....
North Carolina	Piece..	11	187	60.0	46.9	6.74	5.29	7	19	42	45	73	1	33	15	36	21	36	32	10	3	1	.....	.....	.....	.....	.....	.....	.....
Rhode Island..	Piece..	2	80	54.0	50.5	8.54	7.99	1	4	4	4	67	.....	3	.....	3	6	12	16	5	25	8	1	1	.....	.....	.....	.....	.....
	Time..	1	42	54.0	50.4	9.37	8.76	.....	.....	4	8	30	.....	.....	.....	1	2	2	4	21	4	1	6	1	.....	.....	.....	.....	.....
	Total..	3	122	54.0	50.5	8.83	8.26	1	4	8	12	97	.....	3	.....	4	8	14	20	26	29	9	7	2	.....	.....	.....	.....	.....
South Carolina.	Piece..	19	597	60.0	43.9	5.65	4.36	29	65	118	200	185	.....	125	116	137	113	66	28	11	1	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	2	7	60.0	42.1	5.91	4.14	1	.....	2	4	.....	.....	1	.....	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	20	604	60.0	43.9	5.65	4.36	30	65	120	204	185	.....	126	116	142	114	66	28	11	1	.....	.....	.....	.....	.....	.....	.....	.....

Other States...	Piece..	1	4	54.0	49.3	8.42	7.68	....	....	.....	4	.....	.....	.....	....	....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	1	3	54.0	32.9	6.93	4.38	1	....	.....	2	.....	.....	1	....	....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	1	7	54.0	42.3	7.78	6.26	1	....	.....	6	.....	.....	1	....	....	1	1	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All States.....	Piece..	75	2,543	57.1	48.1	7.76	6.77	76	168	316	615	1,360	8	266	223	272	278	283	276	320	267	160	105	80	13	....	....	....	.....	.....	.....	.....
	Time..	15	146	55.5	48.7	8.69	7.68	6	2	16	36	86	.....	7	1	8	14	12	30	42	14	2	11	5	....	....	....	....	.....	.....	.....	.....
	Total..	80	2,689	57.0	48.2	7.81	6.82	82	170	332	651	1,446	8	273	224	280	292	295	306	362	281	162	116	85	13	....	....	....	.....	.....	.....	.....

WARPER TENDERS: Male.

All States.....	Piece..	7	11	60.0	52.1	$13.73	$11.72	....	....	2	6	3	.....	.....	....	....	.....	.....	.....	2	3	1	1	2	....	1	1	....	.....	.....	.....	.....
	Time..	9	17	60.0	58.6	9.20	9.00	....	1	.....	4	7	5	.....	....	1	.....	1	2	4	4	2	1	2	....	....	....	....	.....	.....	.....	.....
	Total..	16	28	60.0	56.1	10.98	10.07	....	1	2	10	10	5	.....	....	1	.....	1	2	6	7	3	2	4	....	1	1	....	.....	.....	.....	.....

WARPER TENDERS: Female.

Connecticut....	Piece..	3	19	55.0	51.9	$11.79	$11.20	....	1	1	1	16	.....	.....	1	....	.....	.....	.....	5	4	1	1	1	3	3	....	....	.....	.....	.....	.....
	Time..	1	6	55.0	49.2	8.82	7.88	....	1	.....	.....	5	.....	.....	1	....	.....	.....	.....	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	4	25	55.0	51.3	11.08	10.40	....	2	1	1	21	.....	.....	2	....	.....	.....	.....	9	5	1	1	1	3	3	....	....	.....	.....	.....	.....
Georgia.....	Piece..	3	16	60.0	38.8	9.69	6.12	3	3	3	2	5	.....	3	2	....	3	1	1	2	2	2	....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	5	18	60.0	38.9	8.24	5.43	3	4	2	5	.....	4	5	1	2	4	1	.....	2	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	8	34	60.0	38.9	8.92	5.75	6	7	5	7	5	4	8	3	2	7	2	1	4	4	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maine.....	Piece..	2	48	58.3	51.7	10.83	9.77	1	3	4	6	34	.....	3	....	1	.....	4	.....	5	8	13	6	5	3	....	....	....	.....	.....	.....	.....
	Time..	2	9	58.0	52.7	8.90	8.16	....	1	.....	1	7	.....	1	....	.....	.....	.....	1	5	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	4	57	58.0	51.9	10.53	9.52	1	4	4	7	41	.....	4	....	1	.....	4	1	10	8	13	8	5	3	....	....	....	.....	.....	.....	.....
Massachusetts.	Piece..	13	103	54.0	50.4	10.77	10.02	1	5	6	31	60	.....	2	1	2	2	2	15	8	17	19	12	17	3	1	2	....	.....	.....	.....	.....
	Time..	9	83	54.0	55.0	9.90	10.31	....	1	1	6	75	.....	.....	.....	1	.....	1	3	23	18	27	.....	10	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	20	186	54.0	52.5	10.38	10.15	1	6	7	37	135	.....	2	1	3	2	3	18	31	35	46	12	27	3	1	2	....	.....	.....	.....	.....
New Hampshire.	Piece..	3	27	55.0	51.5	10.74	10.09	....	2	1	.....	24	.....	1	....	1	1	2	1	3	1	6	3	6	2	....	....	....	.....	.....	.....	.....
	Time..	1	3	55.0	55.0	10.51	10.51	....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	3	30	55.0	51.8	10.72	10.13	....	2	1	.....	27	.....	1	....	1	1	2	1	3	3	6	3	7	2	....	....	....	.....	.....	.....	.....

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

WARPER TENDERS: Female—Concluded.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wk'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.																
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Rhode Island..	Piece..	3	23	54.0	51.0	$11.57	$10.96	....	1	1	2	19	.....	.....	....	1	.....	1	.....	2	1	6	4	7	1	....	....	....	.....
South Carolina.	Piece..	12	28	60.0	54.1	9.26	8.43	1	....	1	10	16	.....	1	....	....	1	5	3	9	4	1	1	3	....	....	....	....	.....
	Time..	7	23	59.8	42.0	7.18	5.02	1	5	3	9	5	.....	4	2	5	2	7	2	1	....	....	....	....	....	....	....	....	.....
	Total..	18	51	60.0	48.7	8.32	6.89	2	5	4	19	21	.....	5	2	5	3	12	5	10	4	1	1	3	....	....	....	....	.....
Other States...	Piece..	4	19	54.9	47.3	11.64	9.67	....	2	4	.....	13	.....	.....	....	....	2	.....	1	3	1	1	2	6	3	....	....	....	.....
	Time..	7	17	59.6	52.5	7.63	6.60	1	1	1	3	10	1	1	1	1	.....	3	9	2	....	....	....	....	....	....	....	....	.....
	Total..	10	36	57.2	49.7	9.75	8.22	1	3	5	3	23	1	1	1	3	.....	4	12	3	1	2	6	3	....	....	....	....	.....
All States.....	Piece..	43	283	55.8	50.4	10.76	9.74	6	17	21	52	187	.....	10	4	7	7	16	23	35	38	50	33	42	12	4	2	....	.....
	Time..	32	159	56.4	50.7	8.99	8.39	5	13	7	24	105	5	11	5	9	6	12	15	37	23	27	3	11	....	....	....	....	.....
	Total..	70	442	56.1	50.5	10.12	9.25	11	30	28	76	292	5	21	9	16	13	28	38	72	61	77	36	53	12	4	2	....	.....

BEAMER TENDERS: Male.

Massachusetts.	Piece..	6	189	54.0	48.3	$17.07	$15.24	1	3	57	13	111	4	1	....	....	.....	2	1	2	.....	8	3	49	28	68	26	1	.....
	Time..	3	9	54.0	54.0	13.88	13.87	....	....	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	1	1	1	1	.....	3	1	....	1	.....
	Total..	8	198	54.0	48.6	16.92	15.18	1	3	57	13	120	4	1	....	....	.....	2	1	3	1	9	4	49	31	69	26	2	.....

Other States...	Piece..	4	25	58.6	49.0	12.55	11.38	4	....	1	3	17	.....	4	....	1	1	.....	.....	.....	.....	.....	3	7	2	7	....	....	.....
	Time..	3	12	58.3	57.0	12.20	11.92	....	.....	.....	2	10	.....	.....	.....	.....	.....	.....	.....	.....	2	6	1	.....	.....	3	.....	.....	.....
	Total..	5	37	58.5	51.6	12.44	11.56	4	....	1	5	27	.....	4	....	1	1	.....	.....	.....	2	6	4	7	2	10	.....	.....	.....
All States.....	Piece..	10	214	54.5	48.4	16.54	14.79	5	3	58	16	128	4	5	....	1	1	2	1	2	.....	8	6	56	30	75	26	1	.....
	Time..	6	21	56.5	55.7	12.92	12.76	....	.....	.....	2	19	.....	.....	.....	.....	.....	.....	.....	1	3	7	2	.....	3	4	....	1	.....
	Total..	15	235	54.7	49.1	16.22	14.61	5	3	58	18	147	4	5	....	1	1	2	1	3	3	15	8	56	33	79	26	2	.....
BEAMER TENDERS: Female.																													
All States.....	Piece..	4	74	55.0	51.2	$12.81	$11.94	....	3	2	53	16	.....	.....	1	1	.....	1	.....	3	7	6	13	32	9	....	1	....	.....
	Time..	1	3	54.0	37.5	8.75	6.00	....	....	2	.....	1	.....	.....	....	1	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	5	77	55.0	50.7	12.65	11.71	....	3	4	53	17	.....	.....	1	2	1	1	.....	4	7	6	13	32	9	....	1	....	.....
SLASHER TENDERS: Male.																													
Georgia.....	Time..	9	57	60.0	55.5	$9.54	$8.92	1	3	8	12	14	19	1	1	2	1	4	8	9	16	1	9	5	....	....	....	....	.....
Maine.....	Time..	5	46	58.0	56.2	13.74	13.29	1	.....	.....	4	41	.....	1	....	.....	.....	.....	.....	.....	.....	.....	3	40	2	....	....	....	.....
Massachusetts.	Piece..	2	10	54.0	52.8	17.06	16.70	....	.....	.....	2	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	8	.....	.....	.....
	Time..	20	146	54.0	54.4	15.36	15.49	....	1	2	17	99	27	.....	.....	.....	.....	.....	1	.....	.....	1	3	31	69	22	11	7	1
	Total..	20	156	54.0	54.3	15.47	15.57	....	1	2	19	107	27	.....	.....	.....	.....	.....	1	.....	.....	1	3	32	70	30	11	7	1
New Hampshire.	Time..	3	24	55.0	55.0	14.73	14.73	....	.....	.....	.....	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	.....	.....	.....	.....
South Carolina	Time..	20	78	60.0	55.8	8.19	7.53	1	1	7	20	47	2	2	1	....	7	18	24	6	13	4	2	1	....	....	....	....	.....
Other States...	Piece..	1	1	60.0	50.2	13.08	10.93	....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
	Time..	19	66	55.8	53.0	14.40	13.51	....	2	5	12	41	6	.....	.....	.....	.....	1	1	1	2	4	5	22	17	12	1	.....	.....
	Total..	20	67	55.8	52.9	14.38	13.47	....	2	5	13	41	6	.....	.....	.....	.....	1	1	1	2	5	5	22	17	12	1	.....	.....
All States.....	Piece..	3	11	54.5	52.5	16.70	16.18	....	.....	.....	3	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	8	.....	.....	.....
	Time..	76	417	56.7	54.8	12.86	12.50	3	7	22	65	266	54	4	2	2	8	23	34	16	31	10	22	99	112	34	12	7	1
	Total..	77	428	56.7	54.8	12.95	12.60	3	7	22	68	274	54	4	2	2	8	23	34	16	31	11	22	100	113	42	12	7	1

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

DRAWERS-IN: Female.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'kd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Connecticut	Piece..	4	45	55.0	46.8	$13.06	$10.90	....	7	1	12	25	.....	.....	....	2	6	2	3	1	6	1	5	7	8	3	1	....	.....
	Time..	1	4	55.0	54.3	9.28	9.17	....	.....	.....	1	3	.....	.....	.....	.....	.....	1	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....
	Total..	4	49	55.0	47.4	12.75	10.76	....	7	1	13	28	.....	.....	....	2	6	3	4	1	6	2	6	7	8	3	1	....	.....
Georgia	Piece..	6	32	60.0	55.3	8.51	7.88	....	....	4	7	21	.....	1	....	2	6	11	3	.....	.....	1	4	1	3	....	.....	.....	.....
	Time..	4	15	60.0	50.7	7.16	6.04	1	1	.....	5	8	.....	2	....	.....	1	6	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	8	47	60.0	53.8	8.08	7.29	1	1	4	12	29	.....	3	....	2	7	17	9	.....	.....	1	4	1	3	....	.....	.....	.....
Maine	Piece..	3	42	58.0	54.9	11.08	10.43	....	1	1	14	26	.....	.....	.....	.....	2	.....	4	3	8	10	6	6	3	....	.....	.....	.....
	Time..	3	25	58.0	56.7	9.29	9.07	.....	....	1	1	23	.....	.....	.....	.....	3	2	2	.....	9	7	2	.....	.....	.....	.....	.....	.....
	Total..	5	67	58.0	55.6	10.41	9.92	....	1	2	15	49	.....	.....	.....	.....	5	2	6	3	17	17	8	6	3	....	.....	.....	.....
Massachusetts	Piece..	16	290	53.9	49.1	11.74	10.69	4	16	27	36	207	.....	5	2	9	7	16	19	21	38	41	25	62	30	14	1	....	.....
	Time..	5	17	54.0	50.0	8.82	8.14	....	....	1	5	11	.....	.....	.....	.....	2	1	7	1	4	.....	1	1	.....	.....	.....	.....	.....
	Total..	19	307	53.9	49.1	11.58	10.55	4	16	28	41	218	.....	5	2	9	9	17	26	22	42	41	26	63	30	14	1	....	.....
New Hampshire.	Piece..	3	31	55.0	54.3	10.44	10.31	....	....	1	1	29	.....	.....	.....	.....	.....	2	3	5	3	5	8	3	2	....	.....	.....	.....
Rhode Island	Piece..	3	49	54.0	50.3	11.49	10.56	....	2	1	15	30	1	.....	.....	.....	2	3	4	2	6	7	10	14	1	....	.....	.....	.....
South Carolina	Piece..	8	64	60.0	42.8	8.56	6.22	3	12	15	20	14	.....	10	5	13	4	9	4	2	8	4	1	4	....	.....	.....	.....	.....
	Time..	11	36	60.0	47.5	7.15	5.58	2	3	7	10	13	1	3	3	4	8	11	5	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	18	100	60.0	44.5	8.05	5.99	5	15	22	30	27	1	13	8	17	12	20	9	2	10	4	1	4	....	....	....	....	.....

Other States...	Piece..	5	23	57.4	53.9	10.20	9.68	....	....	4	1	18	.....	.....	1	1	.....	3	3	2	2	2	2	5	2	....	....	....	.....
	Time..	5	24	58.5	49.3	8.04	6.73	....	3	3	7	6	5	.....	3	3	3	3	5	5	1	.....	.....	1	....	....	....	....	.....
	Total..	9	47	58.0	51.6	9.10	8.17	....	3	7	8	24	5	.....	4	4	3	6	8	7	3	2	2	6	2	....	....	....	.....
All States.....	Piece..	48	576	55.5	49.6	11.11	9.96	7	38	54	106	370	1	16	8	27	27	46	43	36	71	71	61	102	49	17	2	....	.....
	Time..	29	121	58.3	50.7	8.08	7.06	3	7	12	29	64	6	5	6	7	17	24	26	6	16	8	4	2	....	....	....	....	.....
	Total..	69	697	56.0	49.8	10.59	9.46	10	45	66	135	434	7	21	14	34	44	70	69	42	87	79	65	104	49	17	2	....	.....

LOOM FIXERS: Male.

Alabama.....	Time..	2	68	60.0	55.5	$12.05	$11.24	4	3	6	6	27	22	4	2	....	2	.....	2	2	3	2	9	35	5	2	....	....	.....
Connecticut...	Time..	4	98	55.0	54.2	18.56	18.25	1	2	1	6	75	13	.....	1	.....	.....	.....	1	1	1	.....	.....	.....	4	22	39	29	.....
Georgia.....	Time..	9	160	60.0	53.1	11.88	10.50	2	7	23	39	68	21	3	2	1	4	4	10	10	28	18	12	60	8	....	....	....	.....
Maine.....	Time..	5	208	58.0	56.1	16.13	15.62	3	5	4	3	182	11	3	....	....	4	.....	1	3	....	.....	1	4	110	56	19	7	.....
Massachusetts.	Piece..	1	7	54.0	54.0	17.94	17.92	....	....	....	....	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	4	.....	.....
	Time..	20	663	54.0	51.8	16.98	16.32	6	19	20	49	518	51	5	2	2	3	4	5	7	3	3	4	50	84	282	205	2	2
	Total..	20	670	54.0	51.8	16.99	16.33	6	19	20	49	525	51	5	2	2	3	4	5	7	3	3	4	50	85	284	209	2	2
New Hampshire.	Time..	3	138	55.0	54.5	17.21	17.01	2	1	2	2	119	12	1	1	.....	.....	.....	1	.....	1	.....	1	1	12	98	9	12	1
New York.....	Time..	2	67	54.9	52.6	16.60	15.95	2	....	1	7	57	.....	1	1	.....	.....	.....	.....	.....	1	1	1	4	5	53	....	.....	.....
North Carolina	Time..	10	109	60.0	57.4	11.29	10.79	....	2	2	27	69	9	.....	1	1	.....	.....	.....	17	5	28	12	43	2	....	....	....	.....
Rhode Island..	Time..	3	161	54.0	53.2	17.91	17.67	....	1	2	7	151	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	4	19	12	122	3	.....
South Carolina	Piece..	3	38	60.0	55.4	11.81	10.93	1	....	3	7	26	1	1	....	.....	1	.....	2	3	7	6	3	10	4	1	....	....	.....
	Time..	19	365	60.7	53.6	11.78	10.42	9	19	35	99	169	34	9	6	9	4	14	14	24	61	30	41	147	6	....	....	....	.....
	Total..	20	403	60.7	53.7	11.78	10.46	10	19	38	106	195	35	10	6	9	5	14	16	27	68	36	44	157	10	1	....	....	.....
All States.....	Piece..	4	45	59.1	55.2	12.76	12.02	1	....	3	7	33	1	1	....	.....	1	.....	2	3	7	6	3	10	5	3	4	....	.....
	Time..	77	2,037	56.8	53.5	15.24	14.50	29	59	96	245	1,435	173	26	16	13	17	23	34	64	103	82	81	348	255	525	394	53	3
	Total..	77	2,082	56.8	53.6	15.19	14.45	30	59	99	252	1,468	174	27	16	13	18	23	36	67	110	88	84	358	260	528	398	53	3

TRIMMERS OR INSPECTORS: Female.

Alabama.....	Time..	3	24	60.0	55.4	$6.43	$5.89	....	1	.....	13	10	.....	1	....	....	6	17	.....	.....	.....	.....	....	.....	.....	....	.....	....	.....	.....
Georgia.....	Piece..	2	20	60.0	47.7	6.96	5.56	1	....	4	15	.....	.....	1	2	3	7	3	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	6	40	59.6	52.9	5.92	5.25	1	1	6	6	26	.....	2	2	7	12	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	8	60	59.8	51.2	6.27	5.35	2	1	10	21	26	.....	3	4	10	19	20	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

TRIMMERS, OR INSPECTORS: Female—Concluded.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'kd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.														
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Maine	Time..	5	161	58.0	55.7	$6.86	$6.59	1	2	4	22	132	.....	2	3	1	14	125	8	8	.....	.....	.....	.....	.....	.....	.....	.....	.....
Massachusetts	Piece..	2	21	54.0	50.7	9.76	9.19	1	.....	.....	3	17	.....	1	.....	.....	.....	.....	1	12	.....	4	.....	3	.....	.....	.....	.....	.....
	Time..	19	246	53.4	50.8	7.86	7.45	.....	4	12	45	185	.....	1	10	6	18	38	87	53	30	3	.....	.....	.....	.....	.....	.....	.....
	Total..	20	267	53.5	50.8	8.01	7.59	1	4	12	48	202	.....	2	10	6	18	38	88	65	30	7	.....	3	.....	.....	.....	.....	.....
New Hampshire	Time..	3	53	55.0	53.9	9.11	8.93	.....	.....	1	4	48	.....	.....	.....	.....	1	2	2	21	15	12	.....	.....	.....	.....	.....	.....	.....
North Carolina	Piece..	1	9	60.0	41.7	5.96	4.13	.....	1	6	2	.....	.....	1	3	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	6	15	60.0	49.3	4.96	4.08	2	.....	2	2	9	.....	2	2	10	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	6	24	60.0	46.4	5.34	4.10	2	1	8	4	9	.....	3	5	15	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rhode Island	Piece..	1	16	54.0	47.2	10.39	9.00	.....	.....	.....	13	3	.....	.....	.....	.....	.....	1	.....	7	5	3	.....	.....	.....	.....	.....	.....	.....
	Time..	2	22	54.0	49.9	8.03	7.41	1	.....	1	6	14	.....	1	.....	.....	1	.....	6	14	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	2	38	54.0	48.8	9.02	8.08	1	.....	1	19	17	.....	1	.....	.....	1	1	6	21	5	3	.....	.....	.....	.....	.....	.....	.....
South Carolina	Piece..	1	12	60.0	52.8	5.66	4.96	.....	.....	2	7	3	.....	.....	1	3	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	16	122	60.0	47.3	5.13	4.06	1	13	28	61	18	1	24	34	31	28	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	16	134	60.0	47.8	5.18	4.14	1	13	30	68	21	1	24	35	34	36	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Other States...	Time..	7	63	54.7	51.2	7.98	7.70	....	....	.....	20	43	.....	.....	....	....	2	4	50	5	2	.....	....	.....	....	.....	.....	.....	.....	.....
All States.....	Piece..	7	78	57.2	48.5	8.10	6.99	2	1	12	40	23	.....	3	6	11	15	4	4	20	5	7	....	3	.....	.....	.....	.....	.....
	Time..	67	746	56.4	51.7	7.10	6.60	6	21	54	179	485	1	33	51	55	82	208	154	101	47	15	....	.....	.....	.....	.....	.....	.....
	Total..	70	824	56.5	51.4	7.19	6.64	8	22	66	219	508	1	36	57	66	97	212	158	121	52	22	....	3	....	....	....	.....	.....

OTHER EMPLOYEES: Male.

Alabama.....	Piece..	1	19	60.0	52.8	$4.31	$3.90	2	2	3	1	12	3	8	....	7	2	....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	3	841	60.2	49.6	8.16	6.87	82	64	65	151	379	100	131	53	73	67	217	81	49	42	36	9	28	27	4	8	5	11
	Total..	3	860	60.2	49.7	8.07	6.81	84	66	68	152	391	103	139	53	80	69	217	82	50	42	36	9	28	27	4	8	5	11
Connecticut...	Piece..	4	19	55.0	50.3	10.50	8.56	....	2	2	1	12	2	2	1	3	2	1	4	1	.....	.....	1	.....	1	.....	1	2	.....
	Time..	4	762	55.7	52.8	11.79	11.30	21	23	29	62	559	68	23	7	14	12	25	36	65	146	105	61	94	66	46	33	23	6
	Total..	4	781	55.7	52.7	11.76	11.23	21	25	31	63	571	70	25	8	17	14	26	40	66	146	105	62	94	67	46	34	25	6
Georgia.....	Piece..	5	55	60.0	43.7	6.65	4.92	7	8	7	26	4	3	18	7	2	6	8	5	3	2	3	1	.....	.....	.....	.....	.....	.....
	Time..	9	2,041	60.2	50.5	8.67	7.44	157	158	179	473	836	238	288	97	128	183	383	291	121	130	96	34	135	65	23	24	27	16
	Total..	9	2,096	60.2	50.3	8.62	7.38	164	166	186	499	840	241	306	104	130	189	391	296	124	132	99	35	135	65	23	24	27	16
Maine.....	Piece..	2	31	58.0	51.7	8.99	8.19	....	2	4	3	22	.....	1	2	1	3	.....	1	4	13	5	1	.....	.....	.....	.....	.....	.....
	Time..	5	1,956	58.3	54.9	11.00	10.56	45	89	109	139	1,311	263	80	43	36	74	100	179	349	230	134	155	222	115	100	37	67	35
	Total..	5	1,987	58.3	54.8	10.97	10.52	45	91	113	142	1,333	263	81	45	37	77	100	180	353	243	139	156	222	115	100	37	67	35
Massachusetts.	Piece..	20	343	53.0	48.6	9.84	9.36	11	18	17	36	240	21	34	17	37	33	22	11	22	20	13	24	52	22	12	4	13	7
	Time..	20	5,302	59.4	53.6	11.47	11.42	161	149	190	377	2,989	1,436	227	72	105	142	209	319	653	795	476	320	626	399	383	244	220	112
	Total..	20	5,645	59.0	53.3	11.37	11.30	172	167	207	413	3,229	1,457	261	89	142	175	231	330	675	815	489	344	678	421	395	248	233	119
New Hampshire.	Piece..	1	1	55.0	55.0	8.47	8.46	....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	3	1,552	55.6	54.1	11.77	11.57	43	36	39	72	1,074	288	45	14	22	17	27	29	71	445	271	124	131	125	66	90	44	31
	Total..	3	1,553	55.6	54.1	11.76	11.57	43	36	39	72	1,075	288	45	14	22	17	27	29	72	445	271	124	131	125	66	90	44	31
New York.....	Piece..	2	6	54.0	45.9	11.65	9.84	1	.....	.....	1	4	.....	1	.....	.....	.....	.....	.....	.....	2	1	.....	1	1	.....	.....	.....	.....
	Time..	2	536	56.1	52.3	11.65	10.93	22	29	26	48	321	90	25	18	6	13	10	22	105	77	54	27	68	41	24	19	17	10
	Total..	2	542	56.1	52.2	11.65	10.92	23	29	26	49	325	90	26	18	6	13	10	22	105	79	55	27	69	42	24	19	17	10
North Carolina	Piece..	9	29	60.6	55.2	8.96	8.23	.....	.....	4	9	16	.....	2	1	1	2	5	2	4	4	2	3	3	.....	.....	.....	.....	.....
	Time..	11	1,041	60.6	55.2	8.35	7.75	26	42	90	174	582	127	76	59	65	84	224	170	89	108	27	13	58	15	10	7	26	10
	Total..	11	1,070	60.6	55.2	8.37	7.76	26	42	94	183	598	127	78	60	66	86	229	172	93	112	29	16	61	15	10	7	26	10

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

OTHER EMPLOYEES: Male—Concluded.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'k'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.																
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Rhode Island..	Piece..	2	57	54.0	48.9	$13.78	$12.17	....	1	7	21	27	1	2	3	....	4	....	3	1	2	3	3	15	8	10	2	1	....
	Time..	3	815	54.7	54.0	11.50	11.47	16	16	15	51	564	153	25	7	11	10	29	49	101	101	117	64	102	77	38	38	40	6
	Total..	3	872	54.7	53.7	11.65	11.51	16	17	22	72	591	154	27	10	11	14	29	52	102	103	120	67	117	85	48	40	41	6
South Carolina	Piece..	17	163	60.0	44.3	5.83	4.25	17	21	31	47	43	4	73	19	16	12	7	18	5	8	3	2	....	....	....	....	....	....
	Time..	20	3,716	60.5	52.0	7.62	6.74	145	258	450	898	1,628	337	516	334	427	464	755	268	156	232	129	74	184	37	17	30	56	37
	Total..	20	3,879	60.5	51.6	7.55	6.63	162	279	481	945	1,671	341	589	353	443	476	762	286	161	240	132	76	184	37	17	30	56	37
Other States...	Time..	1	39	54.9	39.1	10.14	6.77	9	4	2	4	15	5	9	3	1	5	2	3	3	2	4	3	3	....	1	....	....	....
All States.....	Piece..	64	727	56.0	47.8	8.77	7.82	38	54	75	145	381	34	141	52	68	64	43	45	42	51	31	35	71	32	22	7	16	7
	Time..	81	18,601	58.9	52.9	10.06	9.53	727	868	1,194	2,449	10,258	3,105	1,445	707	888	1,071	1,981	1,447	1,762	2,308	1,449	884	1,651	967	712	530	525	274
	Total..	81	19,328	58.8	52.7	10.01	9.47	765	922	1,269	2,594	10,639	3,139	1,586	759	956	1,135	2,024	1,492	1,804	2,359	1,480	919	1,722	999	734	537	541	281

OTHER EMPLOYEES: Female.

Alabama.....	Piece..	1	2	60.0	41.0	$3.45	$2.68	....	1	.....	.....	1	.....	1	....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	2	91	60.0	45.1	4.96	3.73	13	6	18	19	29	6	33	9	24	15	5	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	2	93	60.0	45.0	4.93	3.70	13	7	18	19	30	6	34	9	25	15	5	3	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Connecticut...	Piece..	3	78	55.0	38.1	8.24	7.26	3	5	1	.....	69	.....	12	1	6	8	7	6	10	6	14	6	2	.....	.....	.....	.....	.....
	Time..	4	111	55.0	47.9	8.55	8.04	5	6	13	8	79	.....	6	6	8	7	9	8	16	16	20	11	3	1	.....	.....	.....	.....
	Total..	4	189	55.0	43.9	8.42	7.72	8	11	14	8	148	.....	18	7	14	15	16	14	26	22	34	17	5	1	.....	.....	.....	.....

Georgia	Piece	5	43	60.0	39.5	6.86	4.69	9	5	10	6	13	.....	12	4	6	7	6	3	3	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....
	Time	9	87	60.0	43.7	5.96	4.39	7	14	18	19	20	9	29	6	21	4	17	5	1	2	1	....	1	.....	.....	.....	.....	.....	.....	.....
	Total	9	130	60.0	42.3	6.26	4.49	16	19	28	25	33	9	41	10	27	11	23	8	4	2	2	1	1	.....	.....	.....	.....	.....	.....	.....
Maine	Piece	4	20	58.0	57.7	6.28	6.22	....	1	1	3	15	.....	6	1	3	3	.....	.....	1	1	2	3	.....	.....	.....	.....	.....	.....	.....	.....
	Time	5	283	58.0	54.4	8.25	7.80	5	8	17	23	228	2	9	4	14	32	68	30	38	18	12	44	14	.....	.....	.....	.....	.....	.....	.....
	Total	5	303	58.0	54.6	8.12	7.69	5	9	18	26	243	2	15	5	17	35	68	30	39	19	14	47	14	.....	.....	.....	.....	.....	.....	.....
Massachusetts	Piece	18	560	53.5	48.8	9.23	8.39	21	16	35	70	418	.....	41	32	55	37	20	24	39	84	125	34	52	15	....	1	....	1		
	Time	20	1,418	53.3	50.2	8.07	7.66	33	31	52	165	1,127	10	61	17	104	80	168	331	254	247	92	38	53	2	1	.....	.....	.....	.....	.....
	Total	20	1,978	53.3	49.8	8.40	7.87	54	47	87	235	1,545	10	102	49	159	117	188	355	293	331	217	72	75	17	1	1	....	1		
New Hampshire	Piece	3	85	55.0	53.0	8.52	8.28	1	....	4	7	73	.....	3	3	1	6	7	16	16	12	12	4	4	1	.....	.....	.....	.....	.....	.....
	Time	3	282	54.9	51.6	8.24	7.74	5	8	12	28	229	.....	10	3	5	15	17	113	62	16	21	15	5	.....	.....	.....	.....	.....	.....	.....
	Total	3	367	55.0	51.9	8.31	7.87	6	8	16	35	302	.....	13	6	6	21	24	129	78	28	33	19	9	1	.....	.....	.....	.....	.....	.....
New York	Piece	1	5	54.0	47.4	4.58	4.16	1	1	.....	1	1	1	2	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time	2	108	54.0	51.4	8.16	7.76	1	2	3	30	72	.....	2	1	....	4	7	62	20	2	1	3	6	.....	.....	.....	.....	.....	.....	.....
	Total	2	113	54.0	51.3	8.00	7.60	2	3	3	31	73	1	4	2	2	4	7	62	20	2	1	3	6	.....	.....	.....	.....	.....	.....	.....
North Carolina	Piece	6	52	60.0	53.8	7.40	5.96	1	3	5	10	29	4	8	7	4	5	4	10	8	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time	11	155	60.0	51.8	5.95	5.21	6	11	18	35	81	4	26	16	23	21	45	13	3	5	3	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total	11	207	60.0	52.3	6.32	5.40	7	14	23	45	110	8	34	23	27	26	49	23	11	10	4	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rhode Island	Piece	3	39	54.0	51.7	6.88	6.52	1	....	1	3	34	.....	3	7	8	4	1	4	5	1	1	1	2	1	....	1	.....	.....	.....	.....
	Time	3	144	54.0	50.2	8.09	7.60	4	5	4	16	115	.....	4	6	5	18	26	17	39	4	6	5	14	.....	.....	.....	.....	.....	.....	.....
	Total	3	183	54.0	50.5	7.83	7.37	5	5	5	19	149	.....	7	13	13	22	27	21	44	5	7	6	16	1	....	1	.....	.....	.....	.....
South Carolina	Piece	17	183	60.0	45.8	4.06	3.11	17	20	30	62	54	.....	118	20	8	13	9	6	8	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time	18	260	60.0	45.7	5.36	4.14	19	28	52	92	69	.....	81	37	52	40	38	4	.....	7	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
	Total	19	443	60.0	45.8	4.82	3.71	36	48	82	154	123	.....	199	57	60	53	47	10	8	8	.....	.....	1	.....	.....	.....	.....	.....	.....	.....
Other States	Piece	1	2	54.0	36.0	6.08	4.63	....	1	.....	.....	1	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time	1	35	54.0	47.8	5.27	4.61	....	4	.....	13	18	.....	5	5	8	16	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total	1	37	54.0	47.2	5.31	4.61	....	5	.....	13	19	.....	6	5	8	16	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All States	Piece	62	1,069	55.5	47.9	7.85	6.98	54	53	87	162	708	5	207	76	94	83	54	70	90	110	156	49	60	17	....	2	....	1		
	Time	78	2,974	55.4	50.0	7.59	7.01	98	123	207	448	2,067	31	266	110	264	252	401	586	435	317	156	116	67	3	1	.....	.....	.....	.....	.....
	Total	79	4,043	55.4	49.5	7.66	7.00	152	176	294	610	2,775	36	473	186	358	335	455	656	525	427	312	165	127	20	1	2	....	1		

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **TWO-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

CARD STRIPPERS: Male.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'k'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
All States.....	Time..	13	104	113.2	92.9	$17.21	$15.84	10	9	8	28	34	15	15	2	....	3	2	3	4	8	6	12	9	33	7	.....	.....	.....

DRAWING-FRAME TENDERS: Male.

All States.....	Piece..	2	15	114.0	104.5	$18.83	$17.38	....	.....	.....	13	2	.....	.....	.....	.....	.....	.....	.....	1	1	5	4	.....	3	1	.....	.....	.....
	Time..	7	45	115.6	81.2	16.57	11.31	6	5	10	13	8	3	9	3	1	....	3	5	4	3	9	1	4	3	.....	.....	.....	.....
	Total..	8	60	115.2	87.0	17.14	12.83	6	5	10	26	10	3	9	3	1	....	3	5	5	4	14	5	4	6	1	.....	.....	.....

DRAWING-FRAME TENDERS: Female.

Alabama.....	Time..	4	38	120.0	91.2	$10.82	$7.99	5	2	9	12	5	5	9	3	3	6	3	7	3	4	.....	.....	.....	.....	.....	.....	.....	.....
	Piece..	1	53	110.0	100.2	19.76	18.18	2	.....	2	23	26	.....	2	.....	.....	.....	1	.....	1	5	12	4	11	11	6	.....	.....	.....
New Hampshire.	Time..	2	39	110.0	106.4	16.03	15.47	....	1	.....	5	33	.....	....	1	.....	.....	.....	.....	.....	4	28	2	2	2	.....	.....	.....	.....
	Total..	2	92	110.0	102.8	18.18	17.03	2	1	2	28	59	.....	2	1	.....	.....	1	.....	1	9	40	6	13	13	6	.....	.....	.....
Other States...	Time..	2	14	108.0	100.4	14.87	13.78	1	.....	.....	5	3	5	1	.....	.....	.....	.....	.....	.....	4	9	.....	.....	.....	.....	.....	.....	.....
All States.....	Piece..	1	53	110.0	100.2	19.76	18.18	2	.....	2	23	26	.....	2	.....	.....	.....	1	.....	1	5	12	4	11	11	6	.....	.....	.....
	Time..	8	91	113.9	99.1	13.68	12.09	6	3	9	22	41	10	10	4	3	6	3	7	3	12	37	2	2	2	.....	.....	.....	.....
	Total..	8	144	112.4	99.5	15.91	14.33	8	3	11	45	67	10	12	4	3	6	4	7	4	17	49	6	13	13	6	.....	.....	.....

SLUBBER TENDERS: Male.

Alabama	Piece	5	56	120.0	91.0	$17.89	$13.86	5	6	6	24	15		9	2	1		1	2		5	11	15	4	3	3			
	Time	1	5	126.0	108.7	17.61	15.22				5										1	2	1	1					
	Total	6	61	120.5	92.5	17.86	13.97	5	6	6	29	15		9	2	1		1	2		6	13	16	5	3	3			
New Hampshire	Piece	2	87	110.0	99.2	28.69	26.24	2	3	7	20	55		3			2	1			1	2	2	2	15	33	22	4	
Other States	Piece	3	6	120.0	114.2	20.34	19.33				6												1	2	3				
	Time	1	2	120.0	105.8	15.60	13.75			1			1							1			1						
	Total	3	8	120.0	112.1	19.16	17.93			1	6		1							1			2	2	3				
All States	Piece	10	149	114.2	96.7	24.29	21.31	7	9	13	50	70		12	2	1	2	2	2		6	13	18	8	21	36	22	4	
	Time	2	7	124.3	107.9	17.04	14.80			1	5		1							1	1	2	2	1					
	Total	11	156	114.6	97.2	23.97	21.02	7	9	14	55	70	1	12	2	1	2	2	2	1	7	15	20	9	21	36	22	4	

SPEEDER TENDERS: Male.

Alabama	Piece	5	120	120.0	85.2	$17.89	$12.61	15	13	23	53	16		24	2	1	4	4	6	7	15	21	15	6	15				
	Time	1	4	126.0	99.8	15.44	12.12			1	3							1			3								
	Total	6	124	120.2	85.7	17.81	12.60	15	13	24	56	16		24	2	1	4	5	6	7	18	21	15	6	15				
New Hampshire	Piece	2	88	110.0	98.1	24.83	22.53	4	4	5	29	45	1	3	2		1	1			2	4	6	3	29	28	9		
North Carolina	Piece	2	40	120.0	85.9	20.43	15.02	6	4	8	13	2	7	6	1		3	4		1	2	2	5	4	9	3			
	Time	1	2	120.0	118.8	14.70	14.54				1	1										2							
	Total	2	42	120.0	87.5	20.16	15.00	6	4	8	14	3	7	6	1		3	4		1	2	4	5	4	9	3			
Other States	Piece	1	8	120.0	98.1	19.19	15.81			1	7							1	1	1			1	3	1				
All States	Piece	10	256	116.6	90.2	20.71	16.50	25	21	37	102	63	8	33	5	1	8	10	7	9	19	27	27	16	54	31	9		
	Time	2	6	124.0	106.1	15.19	12.93			1	4	1						1			3	2							
	Total	11	162	116.7	90.5	20.59	16.42	25	21	38	106	64	8	33	5	1	8	11	7	9	22	29	27	16	54	31	9		

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIME-WORKERS, BY STATES, 1916: **TWO-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

SPEEDER TENDERS: Female.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'kd. per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Alabama	Piece..	5	101	120.0	80.6	$17.22	$10.19	11	18	21	44	7	.....	23	5	6	3	2	13	5	24	13	5	1	1	.....	.....	.....	.....
	Time..	1	4	126.0	84.7	14.99	10.08	....	1	1	2	.....	.....	1	....	....	....	....	1	1	1	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	6	105	120.2	80.8	17.14	10.19	11	19	22	46	7	.....	24	5	6	3	2	14	6	25	13	5	1	1	.....	.....	.....	.....
New Hampshire.	Piece..	2	361	110.0	98.0	22.77	20.46	12	16	27	104	202	.....	19	2	....	5	2	6	4	9	16	24	43	160	65	4	2	.....
	Time..	1	4	110.0	83.8	17.82	13.88	1	.....	.....	1	2	.....	1	.....	.....	.....	.....	.....	.....	.....	1	.....	2	.....	.....	.....	.....	.....
	Total..	2	365	110.0	97.9	22.72	20.39	13	16	27	105	204	.....	20	2	....	5	2	6	4	9	17	24	45	160	65	4	2	.....
Other States	Piece..	4	34	109.7	100.2	17.08	15.76	1	2	2	2	16	11	1	2	....	1	....	....	1	4	9	4	8	4	.....	.....	.....	.....
	Time..	2	7	108.0	90.6	17.30	14.37	1	.....	1	1	4	.....	1	.....	.....	.....	.....	.....	.....	1	.....	5	.....	.....	.....	.....	.....	.....
	Total..	5	41	109.4	98.5	17.12	15.52	2	2	3	3	20	11	2	2	....	1	....	....	1	5	9	9	8	4	.....	.....	.....	.....
All States	Piece..	11	496	112.0	94.6	21.25	18.05	24	36	50	150	225	11	43	9	6	9	4	19	10	37	38	33	52	165	65	4	2	.....
	Time..	4	15	113.3	87.2	16.82	13.10	2	1	2	4	6	.....	3	....	....	....	....	1	1	2	1	5	2	.....	.....	.....	.....	.....
	Total..	13	511	112.1	94.4	21.12	17.90	26	37	52	154	231	11	46	9	6	9	4	20	11	39	39	38	54	165	65	4	2	.....

SPINNERS, FRAME: Male.

All States.....	Piece..	1	14	110.0	103.2	$19.88	$18.78	....	1	.....	2	11	.....	.....	1	.....	.....	.....	.....	.....	.....	2	1	1	9	.....	.....	.....	.....	.....	.....	.....
	Time..	6	32	119.8	91.5	13.97	10.69	2	6	3	9	11	1	5	2	4	3	2	....	2	5	3	3	2	1	.....	.....	.....	.....	.....	.....	.....
	Total..	7	46	116.8	95.0	15.77	13.15	2	7	3	11	22	1	5	3	4	3	2	....	2	5	5	4	3	10	.....	.....	.....	.....	.....	.....	.....

SPINNERS, FRAME: Female.

Alabama.....	Time..	6	446	120.4	89.7	$12.59	$9.39	22	59	85	213	67	.....	93	41	42	37	36	34	37	58	51	10	7	.....	.....	.....	.....	.....	.....	.....
New Hampshire.	Piece..	1	651	110.0	103.7	20.29	19.19	1	14	34	160	442	.....	4	2	3	3	4	3	5	26	44	42	124	391	.....	.....	.....	.....	.....	.....	.....
	Time..	1	113	110.0	94.8	20.62	17.93	3	11	10	21	67	1	5	3	2	3	2	2	3	7	13	13	17	25	18	.....	.....	.....	.....	.....	.....
	Total..	2	764	110.0	102.4	20.34	19.00	4	25	44	181	509	1	9	5	5	6	6	5	8	33	57	55	141	416	18	.....	.....	.....	.....	.....	.....
North Carolina.	Time..	2	84	120.0	85.0	12.58	8.88	7	13	18	24	17	5	23	3	6	8	6	11	6	12	8	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other States...	Time..	4	111	114.2	96.4	16.29	13.80	3	7	12	52	37	.....	8	3	6	1	6	6	5	16	18	20	16	6	.....	.....	.....	.....	.....	.....	.....
All States.....	Piece..	1	651	110.0	103.7	20.29	19.19	1	14	34	160	442	.....	4	2	3	3	4	3	5	26	44	42	124	391	.....	.....	.....	.....	.....	.....	.....
	Time..	13	754	117.9	90.9	14.34	11.26	35	90	125	310	188	6	129	50	56	49	50	53	51	93	90	44	40	31	18	.....	.....	.....	.....	.....	.....
	Total..	14	1,405	114.2	96.8	17.10	14.93	36	104	159	470	630	6	133	52	59	52	54	56	56	119	134	86	164	422	18	.....	.....	.....	.....	.....	.....

DOFFERS: Male.

Alabama.....	Piece..	2	81	120.0	84.6	$14.82	$10.76	3	16	17	38	7	.....	14	5	8	5	2	5	10	7	14	7	1	3	.....	.....	.....	.....	.....	.....	.....
	Time..	4	168	120.6	96.9	11.09	8.90	6	11	34	82	25	10	27	14	21	23	21	13	13	32	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	6	249	120.4	92.9	12.30	9.50	9	27	51	120	32	10	41	19	29	28	23	18	23	39	18	7	1	3	.....	.....	.....	.....	.....	.....	.....
New Hampshire.	Piece..	2	205	110.0	99.3	20.79	18.71	4	8	14	78	101	.....	5	2	2	1	2	1	1	9	7	12	93	70	.....	.....	.....	.....	.....	.....	.....
	Time..	2	53	110.0	96.3	18.51	16.25	2	1	9	14	27	.....	3	....	....	....	1	1	....	8	5	20	9	3	3	.....	.....	.....	.....	.....	.....
	Total..	2	258	110.0	98.6	20.32	18.20	6	9	23	92	128	.....	8	2	2	1	3	2	1	17	12	32	102	73	3	.....	.....	.....	.....	.....	.....
North Carolina.	Piece..	2	17	120.0	96.4	12.27	9.78	....	1	6	7	3	.....	2	1	1	2	5	2	....	2	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	2	27	120.0	83.2	11.27	8.03	4	2	7	7	4	3	7	2	3	3	1	4	2	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	2	44	120.0	88.3	11.65	8.71	4	3	13	14	7	3	9	3	4	5	6	6	2	6	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
Other States...	Time..	2	29	113.5	96.6	11.35	9.79	1	2	3	6	16	1	4	1	....	3	2	7	4	6	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
All States.....	Piece..	6	303	113.2	95.2	18.72	16.08	7	25	37	123	111	.....	21	8	11	8	9	8	11	18	22	20	94	73	.....	.....	.....	.....	.....	.....	.....
	Time..	10	277	117.8	95.4	12.55	10.31	13	16	53	109	72	14	41	17	24	29	25	25	19	50	12	20	9	3	3	.....	.....	.....	.....	.....	.....
	Total..	12	580	115.4	95.3	15.77	13.33	20	41	90	232	183	14	62	25	35	37	34	33	30	68	34	40	103	76	3	.....	.....	.....	.....	.....	.....

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIME-WORKERS, BY STATES, 1916: **TWO-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

DOFFERS: Female.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'k'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
All States.....	Piece..	1	95	110.0	92.7	$21.65	$17.94	....	2	26	41	26	.....	.....	.....	.....	1	1	2	3	2	11	13	45	17	.....	.....	.....	.....
	Time..	3	37	108.8	95.6	15.44	13.64	....	3	5	6	22	1	2	1	1	1	2	3	2	8	4	4	9	.....	.....	.....	.....	.....
	Total..	4	132	109.7	93.5	19.91	16.73	....	5	31	47	48	1	2	1	1	2	3	5	5	10	15	17	54	17	.....	.....	.....	.....

SPOOLER TENDERS: Female.

Alabama.....	Piece..	4	176	120.3	86.8	$12.13	$8.84	6	21	50	77	22	.....	40	9	15	22	20	21	12	28	8	1	.....	.....	.....	.....	.....	.....
	Time..	2	66	120.0	102.7	11.67	10.02	1	2	12	32	19	.....	4	6	4	8	7	11	10	13	3	.....	.....	.....	.....	.....	.....	.....
	Total..	6	242	120.2	91.1	12.00	9.16	7	23	62	109	41	.....	44	15	19	30	27	32	22	41	11	1	.....	.....	.....	.....	.....	.....
New Hampshire.	Piece..	2	353	110.0	95.3	19.52	16.95	3	12	30	265	43	.....	5	2	3	8	5	7	12	31	49	69	80	79	3	.....	.....	.....
North Carolina.	Piece..	2	36	120.0	83.6	14.16	9.80	3	5	6	18	4	.....	7	....	5	3	3	5	2	5	3	2	1	.....	.....	.....	.....	.....
Pennsylvania.	Time..	2	28	107.7	99.8	12.65	11.71	1	.....	.....	7	20	.....	1	.....	.....	.....	2	6	2	17	.....	.....	.....	.....	.....	.....	.....	.....
Other States...	Piece..	1	13	120.0	62.6	11.13	6.12	4	2	3	2	2	.....	9	1	.....	.....	.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	.....
All States.....	Piece..	9	578	114.0	91.3	16.74	13.79	16	40	89	362	71	.....	61	12	23	33	28	34	26	64	61	73	81	79	3	.....	.....	.....
	Time..	4	94	116.3	101.9	11.96	10.52	2	2	12	39	39	.....	5	6	4	8	9	17	12	30	3	.....	.....	.....	.....	.....	.....	.....
	Total..	13	672	114.3	92.7	16.07	13.33	18	42	101	401	110	.....	66	18	27	41	37	51	38	94	64	73	81	79	3	.....	.....	.....

WARPER TENDERS: Male.

All States.....	Time..	5	15	114.4	105.6	$23.44	$21.55	....	2	1	.....	9	3	....	....	1	....	1	1	....	.....	.....	1	2	3	5	1	.....	.....

WARPER TENDERS: Female.

Alabama.....	Piece..	5	18	120.7	103.5	$18.92	$16.33	....	2	2	7	7	.....	1	....	....	1	1	....	....	4	1	2	3	5	.....	.....	.....	.....
	Time..	1	5	120.0	72.9	13.20	7.92	1	.....	2	1	1	.....	1	1	1	....	1	....	....	1	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	5	23	120.5	96.8	17.68	14.50	1	2	4	8	8	.....	2	1	1	1	2	....	....	5	1	2	3	5	.....	.....	.....	.....
New Hampshire.	Piece..	2	76	110.0	99.0	22.91	20.69	2	2	3	56	13	.....	1	2	....	1	1	....	....	.....	4	9	11	33	14	.....	.....	.....
	Time..	1	11	110.0	105.4	18.62	17.89	.....	.....	1	4	6	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	3	6	1	.....	.....	.....	.....
	Total..	2	87	110.0	99.8	22.37	20.33	2	2	4	60	19	.....	1	2	....	1	1	1	....	.....	4	12	17	34	14	.....	.....	.....
Other States...	Time..	1	3	120.0	73.0	14.00	8.80	....	1	1	.....	1	.....	1	....	1	....	....	....	....	.....	1	.....	.....	.....	.....	.....	.....	.....
All States.....	Piece..	7	94	112.0	99.8	22.15	19.85	2	4	5	63	20	.....	2	2	....	2	2	....	....	4	5	11	14	38	14	.....	.....	.....
	Time..	3	19	114.2	91.8	16.46	13.83	1	1	4	5	8	.....	2	1	2	....	1	1	....	1	1	3	6	1	.....	.....	.....	.....
	Total..	8	113	112.4	98.5	21.19	18.84	3	5	9	68	28	.....	4	3	2	2	3	1	....	5	6	14	20	39	14	.....	.....	.....

BEAMER TENDERS: Male.

All States.....	Piece..	3	23	115.4	101.1	$26.17	$23.19	....	.....	5	15	3	.....	.....	.....	.....	.....	.....	.....	.....	1	2	1	5	5	7	.....	2	.....
	Time..	2	7	108.0	107.2	30.30	30.13	....	.....	.....	1	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	.....	3	.....
	Total..	4	30	113.7	102.5	27.13	24.81	....	.....	5	16	9	.....	.....	.....	.....	.....	.....	.....	.....	1	2	1	5	6	10	.....	5	.....

SLASHER TENDERS: Male.

All States.....	Piece..	1	70	110.0	92.9	$40.47	$34.10	....	1	6	63	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	4	12	16	29	8	
	Time..	9	25	114.6	103.9	27.19	24.60	1	.....	3	4	13	4	1	.....	.....	1	.....	.....	.....	.....	2	.....	1	7	8	5	.....	.....	
	Total..	10	95	111.2	95.8	36.97	31.60	1	1	9	67	13	4	1	.....	.....	1	.....	.....	1	.....	2	.....	1	11	20	21	29	8	

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **TWO-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

DRAWERS-IN: Female.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'kd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.																
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18	$18 and under $20.	$20 and under $25.	$25 and over.
Alabama	Piece..	2	15	120.0	91.7	$12.64	$9.69	....	3	2	9	1	.....	2	2	1	2	2	....	2	1	3	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	4	13	121.4	96.8	14.96	11.85	....	2	1	9	1	.....	1	1	1	....	....	....	1	5	4	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	6	28	120.6	94.0	13.72	10.69	....	5	3	18	2	.....	3	3	2	2	2	....	3	6	7	.....	.....	.....	.....	.....	.....	.....	.....
New Hampshire.	Piece..	2	147	110.0	86.5	24.11	18.79	2	4	35	102	4	.....	1	1	1	2	1	4	2	7	11	34	32	38	13	.....	.....	.....	.....
Other States..	Time..	4	8	117.0	92.7	15.57	12.47	....	1	2	1	4	.....	....	1	1	1	....	....	....	.....	4	1	.....	.....	.....	.....	.....	.....	.....
All States..	Piece..	4	162	110.9	87.0	23.35	17.94	2	7	37	111	5	.....	3	3	2	4	3	4	4	8	14	34	32	38	13	.....	.....	.....	.....
	Time..	8	21	119.7	95.2	15.19	12.09	....	3	3	10	5	.....	1	2	2	1	....	....	1	5	8	1	.....	.....	.....	.....	.....	.....	.....
	Total..	12	183	111.9	87.9	22.15	17.27	2	10	40	121	10	.....	4	5	4	5	3	4	5	13	22	35	32	38	13	.....	.....	.....	.....

LOOM FIXERS: Male.

Alabama	Time..	5	95	120.3	105.7	$23.57	$20.76	3	5	8	31	32	16	3	2	....	....	....	2	3	2	1	5	10	54	13	.....	.....	.....	.....
New Hampshire.	Time..	2	380	110.0	105.9	36.22	34.22	5	6	23	55	291	.....	4	1	....	....	....	1	2	2	4	8	1	7	29	51	270	.....	.....
North Carolina.	Time..	2	29	120.0	100.9	25.39	21.20	....	2	6	9	8	4	....	....	....	....	....	1	....	4	1	2	2	11	6	2	.....	.....	.....
Other States...	Time..	3	19	112.4	107.9	27.63	26.84	....	.....	1	4	14	.....	....	....	....	....	1	....	....	.....	.....	1	2	3	2	7	3	.....	.....
	Total..	12	523	112.5	105.6	33.01	30.78	8	13	38	99	345	20	7	3	....	....	1	4	5	8	6	16	15	75	50	60	273	.....	.....

WEAVERS: Male.

Alabama	Piece..	7	375	120.0	101.7	$20.84	$17.68	8	16	57	139	155	.....	14	3	10	5	7	8	8	29	45	55	51	115	21	4	.....	.....
	Time..	6	102	120.0	52.5	13.96	6.06	39	18	27	14	4	.....	51	10	10	8	4	3	2	10	3	.....	1	.....	.....	.....	.....	.....
	Total..	7	477	120.0	91.1	19.37	15.20	47	34	84	153	159	.....	65	13	20	13	11	11	10	39	48	55	52	115	21	4	.....	.....
Connecticut	Piece..	4	365	110.0	104.5	27.45	26.06	2	3	23	32	305	.....	2	1	1	1	4	1	3	6	7	10	16	79	151	70	13	.....
Georgia	Piece..	10	608	120.0	87.2	20.23	14.91	51	62	140	229	111	15	64	24	18	17	25	28	17	54	65	85	71	106	33	1	.....	.....
	Time..	5	72	120.0	56.8	15.08	7.37	19	23	13	13	2	2	33	9	2	3	5	3	1	5	7	3	1	.....	.....	.....	.....	.....
	Total..	10	680	120.0	84.0	19.68	14.11	70	85	153	242	113	17	97	33	20	20	30	31	18	59	72	88	72	106	33	1	.....	.....
Maine	Piece..	5	611	116.0	100.0	26.84	23.53	19	30	81	197	284	.....	24	5	5	9	6	9	11	16	24	29	39	124	181	100	27	2
	Time..	1	63	116.0	106.7	30.96	28.50	1	.....	5	56	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	8	13	38	.....	.....
	Total..	5	674	116.0	100.6	27.23	23.99	20	30	86	253	284	1	25	5	5	9	6	9	11	16	24	32	39	132	194	138	27	2
Massachusetts	Piece..	20	2,774	107.9	92.0	24.40	21.04	133	123	368	403	1,747	.....	158	44	28	39	50	75	77	100	98	129	202	869	603	237	40	25
	Time..	6	70	108.0	30.5	20.74	5.88	36	16	16	1	1	.....	42	3	6	1	2	8	....	4	1	1	.....	2	.....	.....	.....	.....
	Total..	20	2,844	107.9	90.5	24.31	20.67	169	139	384	404	1,748	.....	200	47	34	40	52	83	77	104	99	130	202	871	603	237	40	25
New Hampshire	Piece..	5	1,561	110.0	101.4	25.92	23.89	35	40	130	253	1,097	6	39	12	9	8	3	12	8	39	52	50	85	429	642	158	15	.....
	Time..	2	4	110.0	72.5	19.39	12.38	....	2	.....	.....	2	.....	1	....	1	.....	.....	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....
	Total..	5	1,565	110.0	101.4	25.90	23.86	35	42	130	253	1,099	6	40	12	10	8	3	12	8	40	52	50	85	430	642	158	15	.....
New York	Piece..	2	260	111.4	95.5	25.51	22.23	13	11	31	30	175	.....	13	3	2	4	2	4	5	12	6	12	12	70	88	26	1	.....
North Carolina	Piece..	12	447	120.0	96.5	20.26	16.42	22	41	66	133	173	12	30	8	11	11	18	11	16	27	47	50	73	132	13	.....	.....	.....
	Time..	9	50	120.0	59.8	15.83	7.76	13	10	15	6	4	2	18	5	4	9	....	1	2	4	3	4	.....	.....	.....	.....	.....	.....
	Total..	12	497	120.0	92.8	19.81	15.55	35	51	81	139	177	14	48	13	15	20	18	12	18	31	50	54	73	132	13	.....	.....	.....
Rhode Island	Piece..	3	581	108.0	98.1	26.57	24.28	6	7	84	34	450	.....	9	3	4	6	9	7	13	21	25	29	34	107	178	107	28	1
	Time..	2	18	108.0	33.9	23.63	7.08	8	8	.....	2	.....	.....	10	....	2	1	....	....	3	.....	.....	.....	.....	2	.....	.....	.....	.....
	Total..	3	599	108.0	96.2	26.48	23.77	14	15	84	36	450	.....	19	3	6	7	9	7	16	21	25	29	34	109	178	107	28	1
South Carolina	Piece..	20	1,334	119.9	89.1	18.67	13.94	102	114	275	617	222	4	137	35	53	55	36	51	65	165	200	200	161	164	11	1	.....	.....
	Time..	8	131	120.0	58.9	16.49	8.02	42	25	28	24	12	.....	58	6	4	9	4	7	9	12	14	4	2	2	.....	.....	.....	.....
	Total..	20	1,465	119.9	86.4	18.47	13.41	144	139	303	641	234	4	195	41	57	64	40	58	74	177	214	204	163	166	11	1	.....	.....
Other States	Piece..	1	45	107.5	100.2	20.05	18.24	1	3	.....	10	31	.....	1	.....	.....	2	1	....	4	4	2	4	6	18	2	1	.....	.....
All States	Piece..	89	8,961	112.7	95.1	23.62	20.30	392	450	1,255	2,077	4,750	37	491	138	141	157	161	206	227	473	571	653	750	2,213	1,923	705	124	28
	Time..	39	510	117.4	58.6	18.37	9.75	158	102	104	116	25	5	214	33	29	31	15	22	17	36	28	15	4	15	13	38	.....	.....
	Total..	89	9,471	113.0	93.1	23.33	19.73	550	552	1,359	2,193	4,775	42	705	171	170	188	176	228	244	509	599	668	754	2,228	1,936	743	124	28

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **TWO-WEEK PAY ROLLS**—Continued.

MANUFACTURING—Continued.

WEAVERS: Female.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'kd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.														
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Alabama	Piece..	7	261	120.5	98.4	$18.43	$15.16	5	18	48	98	91	1	15	3	4	14	10	10	16	40	35	38	24	44	7	1	.....	.....
	Time..	5	50	120.1	64.2	14.38	7.60	12	13	10	9	5	1	24	1	3	2	5	3	2	4	5	.....	1	.....	.....	.....	.....	.....
	Total..	7	311	120.5	92.9	17.78	13.94	17	31	58	107	96	2	39	4	7	16	15	13	18	44	40	38	25	44	7	1	.....	.....
Connecticut	Piece..	4	425	110.0	101.2	24.40	22.47	6	3	50	35	331	.....	6	3	2	4	11	10	2	15	21	27	39	103	127	50	5	.....
Georgia	Piece..	10	448	120.0	87.7	17.75	13.05	35	48	111	132	119	3	53	16	19	20	29	25	21	52	67	51	47	43	5	.....	.....	.....
	Time..	4	29	120.0	47.8	16.11	6.33	11	7	8	3	.....	.....	12	3	2	2	2	3	4	1	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	10	477	120.0	85.2	17.65	12.64	46	55	119	135	119	3	65	19	21	22	31	28	25	53	67	51	47	43	5	.....	.....	.....
Maine	Piece..	5	768	116.0	103.3	23.68	21.26	16	32	83	213	424	.....	21	13	7	10	9	7	15	40	33	50	71	253	176	54	9	.....
	Time..	2	25	116.0	101.7	24.26	21.40	.....	.....	5	20	.....	.....	.....	.....	.....	.....	.....	.....	4	1	.....	.....	1	18	1	.....	.....	.....
	Total..	5	793	116.0	103.2	23.70	21.26	16	32	88	233	424	.....	21	13	7	10	9	7	19	41	33	50	72	271	177	54	9	.....
Massachusetts	Piece..	20	4,036	107.9	95.0	22.28	19.76	121	130	527	448	2,809	1	163	42	56	49	72	130	102	185	199	244	434	1,617	613	118	9	3
	Time..	6	60	107.7	27.9	20.09	5.25	35	16	9	.....	.....	.....	40	1	3	5	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	20	4,096	107.9	94.0	22.25	19.55	156	146	536	448	2,809	1	203	43	59	54	72	139	104	185	199	244	434	1,617	613	118	9	3
New Hampshire	Piece..	5	2,971	110.0	102.1	24.90	23.08	45	78	207	531	2,110	.....	49	14	20	16	20	23	26	69	87	137	191	1,048	1,113	153	5	.....
	Time..	2	17	110.0	99.1	16.25	14.71	.....	2	.....	4	11	.....	1	.....	1	.....	.....	.....	.....	.....	12	2	.....	1	.....	.....	.....	.....
	Total..	5	2,988	110.0	102.0	24.85	23.03	45	80	207	535	2,121	.....	50	14	21	16	20	23	26	69	99	139	191	1,049	1,113	153	5	.....

New York	Piece..	2	226	108.0	101.5	22.82	21.42	2	6	13	17	188	.....	3	....	1	3	2	5	1	6	10	17	24	102	44	8	.....	.....
North Carolina	Piece..	12	216	120.0	99.7	18.37	15.34	9	15	26	68	90	8	18	2	3	8	3	2	9	26	36	45	31	24	9	.....	.....	.....
	Time..	7	27	120.0	86.2	14.70	10.42	....	4	8	13	1	1	4	1	1	1	3	5	2	7	3	.....	.....	.....	.....	.....	.....	.....
	Total..	12	243	120.0	98.2	17.96	14.79	9	19	34	81	91	9	22	3	4	9	6	7	11	33	39	45	31	24	9	.....	.....	.....
Rhode Island	Piece..	3	584	108.0	94.8	24.25	21.41	15	29	73	33	434	.....	22	10	5	13	16	8	15	27	20	49	48	135	137	64	15	.....
	Time..	2	20	108.0	63.4	21.17	12.13	4	5	3	8	.....	.....	4	1	2	1	....	3	1	.....	1	.....	3	4	.....	.....	.....	.....
	Total..	3	604	108.0	93.8	24.15	21.10	19	34	76	41	434	.....	26	11	7	14	16	11	16	27	21	49	51	139	137	64	15	.....
South Carolina	Piece..	20	590	119.9	79.8	17.00	12.54	39	68	127	241	114	1	72	21	27	27	27	25	44	94	94	82	48	29	.....	.....	.....	.....
	Time..	8	65	120.0	64.5	15.50	8.31	15	15	17	15	3	.....	18	10	1	10	2	6	3	5	7	2	.....	1	.....	.....	.....	.....
	Total..	20	655	120.0	78.3	16.85	12.12	54	83	144	256	117	1	90	31	28	37	29	31	47	99	101	84	48	30	.....	.....	.....	.....
Other States	Piece..	2	91	107.7	101.1	18.00	16.86	....	3	4	21	63	.....	....	2	....	2	....	4	1	9	17	19	18	16	3	.....	.....	.....
All States	Piece..	90	10,616	110.9	97.0	22.62	20.12	293	430	1,269	1,837	6,773	14	422	126	144	166	199	249	252	563	619	759	975	3,414	2,234	448	43	3
	Time..	36	293	115.8	62.4	17.42	9.31	77	62	60	72	20	2	103	17	13	21	12	29	18	18	28	4	5	24	1	.....	.....	.....
	Total..	90	10,909	111.0	96.1	22.48	19.83	370	492	1,329	1,909	6,793	16	525	143	157	187	211	278	270	581	647	763	980	3,438	2,235	448	43	3

TRIMMERS OR INSPECTORS: Female.

Alabama	Time..	5	44	121.4	96.6	$10.97	$8.79	2	4	7	17	11	3	7	4	....	7	9	10	1	4	2	.....	.....	.....	.....	.....	.....	.....
New Hampshire	Piece..	1	47	110.0	102.9	21.33	20.01	....	1	2	24	20	.....	1	....	....	....	....	1	....	.....	3	1	11	30	.....	.....	.....	.....
	Time..	1	23	110.0	97.6	15.17	13.59	.1	1	2	3	16	.....	2	....	1	....	1	....	....	1	16	2	.....	.....	.....	.....	.....	.....
	Total..	2	70	110.0	101.1	19.31	17.90	1	2	4	27	36	.....	3	....	1	....	1	1	....	1	19	3	11	30	.....	.....	.....	.....
All States	Piece..	1	47	110.0	102.9	21.33	20.01	....	1	2	24	20	.....	1	....	....	....	....	1	....	.....	3	1	11	30	.....	.....	.....	.....
	Time..	6	67	117.5	97.0	12.41	10.44	3	5	9	20	27	3	9	4	1	7	10	10	1	5	18	2	.....	.....	.....	.....	.....	.....
	Total..	7	114	114.4	99.4	16.09	14.38	3	6	11	44	47	3	10	4	1	7	10	11	1	5	21	3	11	30	.....	.....	.....	.....

TABLE D.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **TWO-WEEK PAY ROLLS**—Concluded.

MANUFACTURING—Concluded.

OTHER EMPLOYEES: Male.

State.	Piece-workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours w'k'd per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Alabama.....	Piece..	5	60	120.0	89.6	$17.52	$13.18	4	2	13	23	14	.....	8	2	5	3	3	3	3	6	10	7	1	5	3	1	.....	.....
	Time..	7	1,261	121.2	96.2	16.24	13.22	110	118	189	302	355	187	237	72	49	53	65	76	45	212	108	71	80	90	42	22	11	28
	Total..	7	1,321	121.1	95.9	16.30	13.21	114	120	202	325	369	187	245	74	54	56	68	79	48	218	118	78	81	95	45	23	11	28
New Hampshire.	Piece..	2	374	110.0	66.9	22.21	14.33	88	59	61	85	53	28	121	15	15	11	7	11	8	14	19	15	11	47	36	32	10	2
	Time..	2	3,877	112.6	103.8	24.58	22.74	169	144	188	781	1,977	618	208	23	32	32	35	34	26	95	153	351	609	939	519	398	186	237
	Total..	2	4,251	112.4	100.6	24.37	22.00	257	203	249	866	2,030	646	329	38	47	43	42	45	34	109	172	366	620	986	555	430	196	239
North Carolina	Piece..	2	12	120.0	98.7	17.83	15.73	1	1	1	2	5	2	2	.....	.....	.....	.....	.....	1	1	1	2	2	1	2	.....	.....	.....
	Time..	2	270	120.4	90.8	16.73	13.30	33	30	39	55	76	37	50	12	15	6	8	14	16	33	48	14	16	17	6	6	2	7
	Total..	2	282	120.4	91.2	16.78	13.40	34	31	40	57	81	39	52	12	15	6	8	14	17	34	49	16	18	18	8	6	2	7
Other States...	Piece..	2	25	107.7	88.7	15.32	13.01	.....	1	6	5	13	.....	4	2	.....	3	1	1	1	4	2	3	1	1	1	1	.....	.....
	Time..	4	220	113.4	99.0	19.28	17.42	17	12	18	44	81	48	27	3	8	1	11	21	10	24	19	5	11	33	17	8	9	13
	Total..	5	245	112.8	97.9	18.87	16.97	17	13	24	49	94	48	31	5	8	4	12	22	11	28	21	8	12	34	18	9	9	13
All States.....	Piece..	11	467	111.3	71.9	21.31	14.23	93	63	81	115	85	30	132	19	20	17	11	14	13	25	32	27	15	54	42	34	10	2
	Time..	15	5,628	114.9	101.3	22.13	19.94	329	304	434	1,182	2,489	890	522	110	104	92	119	145	97	364	328	441	716	1,079	584	434	208	285
	Total..	16	6,095	114.6	99.0	22.07	19.51	422	367	515	1,297	2,574	920	654	129	124	109	130	159	110	389	360	468	731	1,133	626	468	218	287

OTHER EMPLOYEES: Female.

Alabama	Piece	7	59	120.4	80.9	$10.36	$7.33	4	11	14	23	7	.....	24	2	6	4	7	5	2	7	2	.....	.....	.....	.....	.....	.....
	Time	6	160	120.9	84.0	9.25	6.42	21	25	16	60	23	15	70	22	15	21	12	4	7	3	2	1	2	1	.....	.....	.....
	Total	7	219	120.8	83.1	9.55	6.66	25	36	30	83	30	15	94	24	21	25	19	9	9	10	4	1	2	1	.....	.....	.....
New Hampshire.	Piece	2	480	110.0	77.8	19.93	13.72	54	91	62	146	127	.....	115	8	14	9	17	15	5	39	45	45	41	116	10	1	.....
	Time	2	718	110.0	100.7	17.97	16.55	17	22	46	162	455	16	30	4	11	8	10	5	18	61	186	88	66	224	4	2	1
	Total	2	1,198	110.0	91.5	18.76	15.42	71	113	108	308	582	16	145	12	25	17	27	20	23	100	231	133	107	340	14	3	1
Other States	Piece	6	66	109.7	84.4	16.28	12.26	6	3	15	11	26	5	16	3	5	4	2	1	1	4	6	7	6	10	1	.....	.....
	Time	6	74	111.0	79.3	14.06	9.93	13	7	10	19	18	7	20	2	3	2	3	6	6	17	8	5	2	.....	.....	.....	.....
	Total	7	140	110.4	81.7	15.11	11.03	19	10	25	30	44	12	36	5	8	6	5	7	7	21	14	12	8	10	1	.....	.....
All States	Piece	15	605	111.0	78.8	18.60	12.94	64	105	91	180	160	5	155	13	25	17	26	21	8	50	53	52	47	126	11	1	.....
	Time	14	952	111.9	96.3	16.20	14.34	51	54	72	241	496	38	120	28	29	31	25	15	31	81	196	94	70	225	4	2	1
	Total	16	1,557	111.5	89.5	17.11	13.79	115	159	163	421	656	43	275	41	54	48	51	36	39	131	249	146	117	351	15	3	1

TABLE E.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN THE UNITED STATES, BY YEARS, 1907 TO 1916.

FINISHING.

[In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
Laborers, bleach house, male:																							
19 establishments	1911	688	57.5	$0.133	$7.63	.....	.....	.....	364	128	196	.....	40	107	283	206	32	11	8	1	.....	.....	.....
	1912	748	57.2	.137	7.82	.....	.....	65	339	187	157	.....	36	57	323	244	64	10	14	.....	.....	.....	.....
19 establishments	1912	714	57.7	.137	7.88	.....	.....	9	309	187	209	.....	26	51	327	234	54	10	12	.....	.....	.....	.....
	1913	787	57.7	.142	8.20	.....	.....	19	306	232	230	.....	11	60	315	279	75	14	32	1	.....	.....	.....
18 establishments	1913	801	57.4	.142	8.17	.....	.....	92	281	198	230	.....	4	54	331	285	73	21	33	.....	.....	.....	.....
	1914	785	56.2	.143	8.05	3	.....	349	107	158	168	.....	3	49	304	303	92	23	11	.....	.....	.....	.....
21 establishments	1914	920	56.0	.146	8.19	3	.....	359	232	158	168	.....	3	49	311	376	128	36	17	.....	.....	.....	.....
	1916	867	55.7	.175	9.76	3	.....	358	272	164	64	6	.....	14	37	154	260	281	119	1	1	.....	.....
24 establishments	1916	959	55.6	.176	9.79	3	.....	398	324	164	64	6	.....	14	37	156	312	305	133	1	1	.....	.....
Laborers, dyehouse, male:																							
30 establishments	1911	1,229	57.7	.144	8.32	.....	.....	.....	415	575	230	9	5	56	369	577	202	13	7	.....	.....	.....	.....
	1912	1,268	57.2	.153	8.75	.....	.....	271	148	649	200	.....	.....	40	157	550	486	25	10	.....	.....	.....	.....
27 establishments	1912	1,179	57.4	.154	8.83	.....	.....	209	126	649	195	.....	.....	24	160	497	465	22	11	.....	.....	.....	.....
	1913	1,120	57.4	.153	8.77	.....	.....	209	130	575	206	.....	3	27	210	408	443	25	4	.....	.....	.....	.....
33 establishments	1913	1,167	57.5	.149	8.56	.....	.....	286	47	513	321	.....	3	99	206	408	429	21	1	.....	.....	.....	.....
	1914	1,267	56.1	.153	8.55	2	.....	431	391	154	289	.....	[1]17	99	206	437	403	96	7	2	.....	.....	.....
32 establishments	1914	1,275	56.0	.153	8.57	2	.....	467	391	154	261	.....	[1]14	97	195	427	438	95	7	2	.....	.....	.....
	1916	1,214	56.3	.174	9.76	.....	.....	395	392	156	239	32	[2]13	105	50	135	240	427	242	2	.....	.....	.....
37 establishments	1916	1,264	56.4	.173	9.72	.....	.....	405	397	156	274	32	[2]13	105	84	135	245	432	248	2	.....	.....	.....

Laborers, color mixing, male:																								
12 establishments	1911	263	57.7	.146	8.45				106	90	67			1	79	140	33	7	3					
	1912	270	57.4	.147	8.45			39	64	103	64			3	72	152	32	9	2					
12 establishments	1912	243	58.4	.145	8.46				43	103	97			3	84	130	16	8	2					
	1913	246	58.6	.149	8.73				36	106	104			1	62	139	28	12	4					
12 establishments	1913	288	57.5	.151	8.67			69	36	79	104			1	60	171	40	12	4					
	1914	317	56.8	.153	8.66			120	31	92	70	4	1	2	45	200	52	10	7					
11 establishments	1914	295	56.5	.152	8.61			120	31	92	48	4	1	1	45	182	51	10	5					
	1916	255	56.2	.178	9.99			118	30	60	47				2	40	76	103	34					
15 establishments	1916	283	56.1	.182	10.17			119	56	61	47				2	40	77	104	59	1				
Engravers, male:																								
12 establishments	1911	179	55.8	.479	26.68	6	26		72	75											9	114	54	2
	1912	166	55.4	.483	26.75	6	23	36	31	70											6	94	64	2
11 establishments	1912	123	55.8	.488	27.20	6	23		23	70	1										1	78	42	2
	1913	107	55.9	.484	27.01	6	27		19	37	18										3	70	32	2
11 establishments	1913	124	54.9	.482	26.41	6	27	40	19	14	18										10	64	47	2
	1914	123	53.0	.510	27.01	10	53	54	6												1	39	81	
10 establishments	1914	118	53.0	.511	27.05	10	48	54	6												1	37	78	2
	1916	107	53.1	.526	27.89	6	44	51	6												2	26	73	6
11 establishments	1916	122	53.3	.533	28.42	6	44	51	21												2	26	82	12
Printers, male:																								
12 establishments	1911	156	56.9	.489	27.79				86	57	13									15	5	13	123	
	1912	164	56.7	.487	27.54			22	66	62	14									18	9	13	124	
12 establishments	1912	137	57.4	.472	27.04				52	66	19									18	9	22	88	
	1913	133	57.1	.470	26.78				56	64	13								4	17	8	11	93	
12 establishments	1913	147	56.3	.479	26.85			33	56	45	13								4	17	8	11	107	
	1914	159	55.5	.518	28.57			68	46	44	1								3	16	8	6	119	7
11 establishments	1914	152	55.5	.516	28.51			68	39	44	1								3	16	8	6	112	7
	1916	155	55.2	.548	30.11			71	52	29	3									4	20	5	67	59
13 establishments	1916	176	55.2	.553	30.37			71	73	29	3									5	20	5	79	67

[1] Including 6 employees earning under 8 cents per hour.

[2] Including 9 employees earning under 8 cents per hour.

TABLE E.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN THE UNITED STATES, BY YEARS, 1907 TO 1916—Concluded.

FINISHING—Continued.

[In this table the figures opposite each group of years are for identical establishments. When a second line is shown for 1916 it contains all data secured for 1916, whether or not comparable data for 1914 were available.]

Occupation, sex, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
Calender tenders, male:																							
20 establishments	1911	412	57.9	$0.149	$8.61	.....	.....	.....	118	201	93	.....	.....	17	79	213	100	2	1	.....	.....	.....	.....	.....
	1912	409	57.8	.151	8.73	.....	.....	13	110	201	85	.....	.....	28	58	180	128	12	3	.....	.....	.....	.....	.....
20 establishments	1912	422	58.1	.150	8.72	.....	.....	6	95	201	120	.....	.....	29	65	195	124	5	4	.....	.....	.....	.....	.....
	1913	395	57.8	.153	8.85	.....	.....	15	95	193	92	.....	.....	.....	60	204	114	15	2	.....	.....	.....	.....	.....
19 establishments	1913	344	57.7	.156	8.98	.....	.....	29	86	137	92	.....	.....	.....	36	172	112	22	2	.....	.....	.....	.....	.....
	1914	359	56.7	.161	9.12	.....	.....	136	49	61	113	.....	.....	.....	34	101	185	28	10	1	.....	.....	.....	.....
19 establishments	1914	359	56.7	.161	9.12	.....	.....	136	49	61	113	.....	.....	.....	34	101	185	28	10	1	.....	.....	.....	.....
	1916	326	55.9	.192	10.73	.....	.....	136	89	58	43	.....	.....	.....	13	15	66	108	115	7	2	.....	.....	.....
23 establishments	1916	363	55.8	.195	10.84	.....	.....	139	123	58	43	.....	.....	.....	13	15	68	112	146	7	2	.....	.....	.....
Folders, male:																								
19 establishments	1911	268	57.4	.230	13.16	.....	.....	.....	158	38	72	.....	.....	.....	2	28	13	46	94	58	27	.....	.....	.....
	1912	277	57.2	.246	14.06	.....	.....	23	127	68	59	.....	.....	.....	.....	28	7	27	65	108	36	4	2	.....
19 establishments	1912	276	57.7	.243	13.99	.....	.....	10	110	68	88	.....	.....	.....	.....	28	7	26	82	91	36	4	2	.....
	1913	250	57.1	.250	14.20	.....	.....	43	102	34	71	.....	.....	.....	.....	.....	11	12	95	99	33	.....	.....	.....
19 establishments	1913	266	56.8	.247	13.95	.....	.....	65	102	28	71	.....	.....	.....	.....	.....	11	12	111	99	33	.....	.....	.....
	1914	255	56.0	.273	15.18	.....	.....	151	17	22	65	.....	.....	.....	.....	3	8	9	61	70	99	5	.....	.....
20 establishments	1914	260	55.7	.272	15.05	.....	.....	156	33	22	49	.....	.....	.....	.....	3	8	9	66	70	99	5	.....	.....
	1916	300	54.8	.306	16.72	.....	.....	199	72	20	9	.....	.....	.....	.....	4	1	4	74	34	166	16	1	.....
24 establishments	1916	361	54.8	.303	16.56	.....	.....	209	123	20	9	.....	.....	.....	.....	4	2	4	87	50	197	16	1	.....

Knotters, female:																							
19 establishments	1911	281	56.9	.116	6.59	.....	.....	.....	183	53	45	.....	72	131	23	18	32	4	1	.....	.....	.....	.....	.....
	1912	296	56.1	.121	6.78	.....	.....	84	135	40	37	.....	67	109	57	16	35	6	4	2	.....	.....	.....	.....
19 establishments	1912	300	56.5	.121	6.82	.....	.....	76	118	40	66	.....	50	134	53	16	35	6	4	2	.....	.....	.....	.....
	1913	274	55.9	.118	6.54	.....	.....	106	95	44	29	.....	40	125	59	26	23	.....	1	.....	.....	.....	.....	.....
19 establishments	1913	279	55.8	.117	6.51	.....	.....	111	95	44	29	.....	40	126	75	14	23	.....	1	.....	.....	.....	.....	.....
	1914	282	54.6	.122	6.69	.....	.....	233	18	17	14	.....	15	130	75	46	10	5	1	.....	.....	.....	.....	.....
20 establishments	1914	285	54.6	.122	6.66	.....	.....	236	18	17	14	.....	15	130	78	46	10	5	1	.....	.....	.....	.....	.....
	1916	317	54.4	.139	7.57	.....	.....	275	25	8	9	.....	.....	59	142	76	15	8	15	2	.....	.....	.....	.....
24 establishments	1916	353	54.4	.140	7.61	.....	.....	303	33	8	9	.....	.....	59	165	78	25	9	15	2	.....	.....	.....	.....
Other employees, male:																								
23 establishments	1914	7,546	56.9	.172	9.78	64	64	3,802	589	954	1,734	339	[1] 97	158	1,366	2,581	1,220	537	790	504	243	39	9	2
	1916	7,923	56.2	.205	11.48	60	52	3,907	1,460	1,300	883	261	16	68	408	844	1,633	1,940	1,738	604	531	82	27	32
26 establishments	1916	8,655	56.1	.206	11.51	60	52	4,043	2,042	1,300	883	275	16	70	416	851	1,795	2,057	2,050	674	581	84	29	32
Other employees, female:																								
19 establishments	1914	1,857	54.4	.136	7.38	10	1	39	1,504	150	77	76	[2] 139	472	633	235	127	127	111	12	1	.....	.....	.....
	1916	1,961	54.2	.161	8.72	45	33	1,538	198	131	16	.....	[3] 9	148	597	389	282	174	301	56	5	.....	.....	.....
22 establishments	1916	2,231	54.2	.160	8.65	45	33	1,808	198	131	16	.....	[4] 11	156	667	548	290	186	304	63	6	.....	.....	.....

[1] Including 23 employees earning less than 8 cents per hour.
[2] Including 36 employees earning less than 8 cents per hour.
[3] Including 2 employees earning less than 8 cents per hour.
[4] Including 3 employees earning less than 8 cents per hour.

TABLE F.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916.

FINISHING—Continued.

LABORERS, BLEACH HOUSE: Male.

[In this table the figures for both years are for identical establishments.]

State, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
Connecticut:																							
2 establishments	1914	102	57.2	$0.140	$8.00	.....	.....	.....	58	.....	44	.....	.....	4	55	34	6	.....	3	.....	.....	.....	.....	.....
	1916	55	56.0	.175	9.81	.....	.....	.....	44	.....	11	.....	.....	.....	.....	1	21	31	2	.....	.....	.....	.....	.....
Massachusetts:																							
4 establishments	1914	220	55.9	.137	7.66	3	.....	105	.....	112	.....	.....	3	26	115	56	16	4	.....	.....	.....	.....	.....	.....
	1916	256	55.9	.165	9.21	3	.....	128	.....	124	1	.....	.....	.....	28	97	54	66	11	.....	.....	.....	.....	.....
New Hampshire:																							
3 establishments	1914	150	55.0	.162	8.93	.....	.....	.....	150	.....	.....	.....	.....	.....	9	87	36	12	6	.....	.....	.....	.....	.....
	1916	159	55.0	.193	10.59	.....	.....	.....	159	.....	.....	.....	.....	.....	.....	2	23	83	50	.....	1	.....	.....	.....
New Jersey:																							
2 establishments	1914	53	60.0	.144	8.63	.....	.....	.....	.....	.....	53	.....	.....	6	17	10	19	.....	1	.....	.....	.....	.....	.....
	1916	45	57.7	.180	10.33	.....	.....	.....	26	.....	19	.....	.....	1	3	7	6	23	5	.....	.....	.....	.....	.....
New York:																							
2 establishments	1914	72	58.3	.154	8.95	.....	.....	21	.....	.....	51	.....	.....	.....	20	27	16	7	2	.....	.....	.....	.....	.....
	1916	38	54.5	.192	10.46	.....	.....	18	20	.....	.....	.....	.....	.....	.....	.....	5	21	12	.....	.....	.....	.....	.....
Rhode Island:																							
6 establishments	1914	257	54.2	.146	7.92	.....	.....	233	24	.....	.....	.....	.....	11	75	124	32	13	2	.....	.....	.....	.....	.....
	1916	241	54.8	.173	9.49	.....	.....	212	23	.....	.....	6	.....	13	6	34	103	50	34	1	.....	.....	.....	.....
Other States:																							
2 establishments	1914	66	58.6	.145	8.47	.....	.....	.....	.....	46	20	.....	.....	2	20	38	3	.....	3	.....	.....	.....	.....	.....
	1916	73	58.9	.170	10.00	.....	.....	.....	.....	40	33	.....	.....	.....	.....	13	48	7	5	.....	.....	.....	.....	.....
Total:																							
21 establishments	1914	920	56.0	.146	8.19	3	.....	359	232	158	168	.....	3	49	311	376	128	36	17	.....	.....	.....	.....	.....
	1916	867	55.7	.175	9.76	3	.....	358	272	164	64	6	.....	14	37	154	260	281	119	1	1	.....	.....	.....

LABORERS, DYEHOUSE: Male.

Connecticut:																								
3 establishments	1914	89	57.5	$0.150	$8.60				45		44			1	16	62	9		1					
	1916	66	57.5	.180	10.38				33		33						11	53	2					
Massachusetts:																								
9 establishments	1914	469	55.1	.152	8.34	2		336		131			2	1	115	217	131	3						
	1916	397	55.3	.178	9.82			271		126						93	101	128	74	1				
New Hampshire:																								
3 establishments	1914	346	55.0	.172	9.45				346						10	47	196	92	1					
	1916	334	55.7	.196	10.91				302			32				1	22	188	123					
New Jersey:																								
2 establishments	1914	48	60.0	.162	9.69						48		1	1	4	6	36							
	1916	69	56.7	.195	11.04				57		12			1	2	1	10	17	38					
North Carolina:																								
6 establishments	1914	117	60.0	.113	6.78						117		[1] 11	65	40	1								
	1916	119	60.0	.113	6.81						119		[2] 12	65	36	6								
Pennsylvania:																								
2 establishments	1914	78	55.3	.162	8.96			61			17			1		31	41		3	2				
	1916	84	55.7	.169	9.41			60			24					25	53	4	1	1				
Rhode Island:																								
3 establishments	1914	70	54.0	.153	8.24			70						1		47	22							
	1916	64	54.0	.183	9.89			64							1		27	33	3					
Other States:																								
4 establishments	1914	58	59.2	.129	7.59					23	35			27	10	16	3		2					
	1916	81	59.3	.130	7.66					30	51		1	39	11	9	16	4	1					
Total:																								
32 establishments	1914	1,275	56.0	.153	8.57	2		467	391	154	261		[1] 14	97	195	427	438	95	7	2				
	1916	1,214	56.3	.174	9.76			395	392	156	239	32	[2] 13	105	50	135	240	427	242	2				

LABORERS, COLOR MIXING: Male.

Connecticut:																								
2 establishments	1914	52	57.5	$0.155	$8.90				26		26				3	39	6	1	3					
	1916	37	56.6	.183	10.37				25		12					1	2	29	5					
Massachusetts:																								
3 establishments	1914	152	56.1	.152	8.52			74		78			1		30	87	29	5						
	1916	130	55.8	.176	9.81			70		60						21	47	48	14					
Rhode Island:																								
4 establishments	1914	51	54.2	.150	8.14			46	5						11	26	14							
	1916	53	54.2	.179	9.67			48	5							13	12	19	9					
Other States:																								
2 establishments	1914	40	59.9	.153	9.19					14	22	4		1	1	30	2	4	2					
	1916	35	60.0	.180	10.78						35				2	5	15	7	6					
Total:																								
11 establishments	1914	295	56.5	.152	8.61			120	31	92	48	4	1	1	45	182	51	103	5					
	1916	255	56.2	.178	9.99			118	30	60	47				2	40	76	10	34					

[1] Including 6 employees earning less than 8 cents per hour.

[2] Including 9 employees earning less than 8 cents per hour.

TABLE F.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Continued.

FINISHING—Continued.

ENGRAVERS: Male.

[In this table the figures for both years are for identical establishments.]

State, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
						Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
Massachusetts:																								
3 establishments	1914	68	53.1	$0.510	$27.10	5	26	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23	45	.....
	1916	68	53.1	.526	27.88	4	27	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	16	46	4
Rhode Island:																								
4 establishments	1914	22	54.5	.490	26.68	.....	.....	17	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	12	.....
	1916	19	54.5	.509	27.70	.....	.....	14	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	11	.....
Other States:																								
3 establishments	1914	28	51.4	.529	27.22	5	22	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4	21	2
	1916	20	51.7	.544	28.08	2	17	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	16	2
Total:																								
10 establishments	1914	118	53.0	.511	27.05	10	48	54	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	37	78	2
	1916	107	53.1	.526	27.89	6	44	51	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	26	73	6

PRINTERS: Male.

Connecticut:																								
2 establishments	1914	19	55.0	$0.559	$30.73	.....	.....	.....	19	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	1
	1916	18	54.4	.628	34.18	.....	.....	10	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	13
Massachusetts:																								
3 establishments	1914	81	56.1	.478	26.62	.....	.....	39	.....	41	1	.....	.....	.....	.....	.....	.....	.....	3	16	7	3	51	1
	1916	82	55.6	.515	28.41	.....	.....	41	12	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	19	3	15	41
Rhode Island:																								
4 establishments	1914	33	54.2	.562	30.47	.....	.....	29	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	31	1
	1916	37	54.5	.589	32.05	.....	.....	20	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	33	4

Other States:																									
2 establishments	1914	19	55.5	.559	30.92				16	3											1	2	12	4	
	1916	18	55.8	.536	29.81				15		3										1	2	14	1	
Total:																									
11 establishments	1914	152	55.5	.516	28.51			68	39	44	1								3	16	8	6	112	7	
	1916	155	55.2	.548	30.11			71	52	29	3									4	20	5	67	59	

CALENDER TENDERS: Male.

Connecticut:																									
2 establishments	1914	58	58.5	$0.159	$9.28				17		41					15	42		1						
	1916	33	57.6	.191	11.01				16		17							30	3						
Massachusetts:																									
4 establishments	1914	62	56.5	.145	8.18			23		39					30	18	1	13							
	1916	72	56.3	.172	9.66			30		42					13	14	23	6	16						
New Jersey:																									
2 establishments	1914	44	60.0	.157	9.41					44				4	18	21	1								
	1916	49	57.6	.190	10.91				30	19						18	20	11							
New York:																									
2 establishments	1914	22	57.8	.170	9.79			8		14					4	10	8								
	1916	31	54.5	.186	10.15			16	15							4	19	8							
Rhode Island:																									
6 establishments	1914	116	54.2	.171	9.25			105	11						20	81	5	9	1						
	1916	102	54.2	.210	11.40			90	12							10	16	68	6	2					
Other States:																									
3 establishments	1914	57	57.4	.161	9.25				21	22	14				26	30	1								
	1916	39	57.1	.192	10.94				16	16	7				1	11	17	9	1						
Total:																									
19 establishments	1914	359	56.7	.161	9.12			136	49	61	113			34	101	185	28	10	1						
	1916	326	55.9	.192	10.73			136	89	58	43			13	15	66	108	115	7	2					

FOLDERS: Male.

Massachusetts:																									
5 establishments	1914	69	54.6	$0.289	$15.72			58		11									25	11	32	1			
	1916	86	54.7	.304	16.56			72		14					4	1	3	23	3	45	7				
New York:																									
2 establishments	1914	29	58.6	.240	14.03			7			22					1		14	12	2					
	1916	29	54.7	.310	16.94			9	20									1	5	23					
Rhode Island:																									
6 establishments	1914	99	54.2	.305	16.51			91	8									1	29	65	4				
	1916	118	54.0	.336	18.12			118										12	1	95	9	1			
Other States:																									
7 establishments	1914	63	58.0	.215	12.48				25	11	27				3	7	9	26	18						
	1916	67	56.5	.254	14.35				52	6	9						1	38	25	3					
Total:																									
20 establishments	1914	260	55.7	.272	15.05			156	33	22	49				3	8	9	66	70	99	5				
	1916	300	54.8	.306	16.72			199	72	20	9				4	1	4	74	34	166	16	1			

TABLE F.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, IN EACH STATE, BY YEARS, 1914 AND 1916—Concluded.

FINISHING—Continued.

KNOTTERS: Female.

[In this table the figures for both years are for identical establishments.]

State, and number of establishments.	Year.	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
						Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
Massachusetts:																							
5 establishments	1914	87	54.0	$0.132	$7.12	.....	.....	87	.....	.....	.....	.....	.....	15	51	21	.....	.....	.....	.....	.....	.....	.....
	1916	105	54.0	.144	7.75	.....	.....	105	.....	.....	.....	.....	.....	4	33	65	3	.....	.....	.....	.....	.....	.....
New York:																							
2 establishments	1914	22	54.0	.132	7.11	.....	.....	22	.....	.....	.....	.....	.....	15	1	.....	2	3	1	.....	.....	.....	.....
	1916	30	54.0	.144	7.76	.....	.....	30	.....	.....	.....	.....	.....	.....	23	.....	2	1	3	1	.....	.....	.....
Rhode Island:																							
6 establishments	1914	110	54.0	.123	6.65	.....	.....	110	.....	.....	.....	.....	3	49	23	25	8	2	.....	.....	.....	.....	.....
	1916	124	54.0	.143	7.70	.....	.....	124	.....	.....	.....	.....	.....	30	61	5	9	6	12	1	.....	.....	.....
Other States:																							
7 establishments	1914	66	56.6	.105	5.92	.....	.....	17	18	17	14	.....	12	51	3	.....	.....	.....	.....	.....	.....	.....	.....
	1916	58	56.0	.123	6.87	.....	.....	16	25	8	9	.....	.....	25	25	6	1	1	.....	.....	.....	.....	.....
Total:																							
20 establishments	1914	285	54.6	.122	6.66	.....	.....	236	18	17	14	.....	15	130	78	46	10	5	1	.....	.....	.....	.....
	1916	317	54.4	.139	7.57	.....	.....	275	25	8	9	.....	.....	59	142	76	15	8	15	2	.....	.....	.....

OTHER EMPLOYEES: Male.

Connecticut:																							
2 establishments	1914	768	57.6	$0.163	$9.39	30	.....	.....	293	91	340	14	.....	10	207	342	64	10	68	51	14	1	.....	1
	1916	746	57.9	.198	11.45	24	1	34	297	42	323	25	.....	.....	4	15	187	340	107	40	45	5	2	1
Massachusetts:																							
6 establishments	1914	2,651	55.9	.166	9.25	34	44	1,844	.....	572	25	132	[1] 28	43	668	910	358	192	230	153	55	11	3	.....
	1916	2,796	55.8	.197	10.91	20	35	1,711	2	956	11	61	7	29	280	450	589	620	459	162	137	23	14	26
New Hampshire:																							
3 establishments	1914	135	56.4	.177	9.98	.....	.....	.....	125	.....	.....	10	.....	1	29	33	22	15	22	9	4	.....	.....	.....
	1916	404	55.8	.217	12.14	.....	.....	.....	382	.....	1	21	.....	.....	2	22	108	41	158	38	29	3	1	2

New Jersey:																							
2 establishments	1914	336	61.2	.172	10.54					13	303	20	[1] 19	11	29	52	143	15	44	14	8		1	
	1916	402	58.3	.200	11.65				264		115	23	5	10	16	26	54	141	102	26	20	2		
New York:																								
2 establishments	1914	803	58.9	.173	10.16		4	187	37		534	41	1	20	109	275	170	60	93	48	23	3		1
	1916	599	55.3	.209	11.58			207	367		6	19		2	9	15	83	253	147	34	42	11	3	
Pennsylvania:																								
1 establishment	1914	558	60.1	.161	9.69		16		2		526	14	[2] 37	23	57	249	87	18	42	29	15	1		
	1916	467	59.5	.192	11.45	16	16		1		423	11		3	12	99	130	67	107	30	18	1		
Rhode Island:																								
6 establishments	1914	2,001	55.2	.188	10.40			1,771	132		6	92	9	45	207	591	348	205	254	192	122	23	5	
	1916	2,199	55.1	.217	11.97			1,955	147		4	93	4	23	76	160	408	435	591	233	225	36	6	2
Other States:																								
1 establishment	1914	294	59.0	.161	9.48					278		16	[1] 3	5	60	129	28	22	37	8	2			
	1916	310	58.6	.205	11.98					302		8		1	9	57	74	43	67	41	15	1	1	1
Total:																								
23 establishments	1914	7,546	56.9	.172	9.78	64	64	3,802	589	954	1,734	339	[3] 97	158	1,366	2,581	1,220	537	790	504	243	39	9	2
	1916	7,923	56.2	.205	11.48	60	52	3,907	1,460	1,300	883	261	16	68	408	844	1,633	1,940	1,738	604	531	82	27	32

OTHER EMPLOYEES: Female.

Connecticut:																							
2 establishments	1914	132	55.0	$0.117	$6.42				132					81	44	5		2					
	1916	121	55.0	.142	7.80				121						43	63	14		1				
Massachusetts:																							
4 establishments	1914	720	53.8	.132	7.09	10	24	686					52	143	350	85	20	29	41				
	1916	727	53.5	.160	8.59	34	21	672						54	231	141	116	57	108	19	1		
New Jersey:																							
2 establishments	1914	76	60.0	.092	5.53						76		60	14	2								
	1916	73	56.9	.125	7.11				57		16			19	50	1	1	1	1				
New York:																							
2 establishments	1914	324	54.0	.149	8.06		6	318					[4] 13	70	71	69	27	33	33	8			
	1916	320	54.0	.167	9.04			320					[5] 4	16	82	45	53	56	53	11			
Rhode Island:																							
6 establishments	1914	414	54.0	.151	8.15			414					7	74	115	58	63	59	33	4	1		
	1916	468	54.0	.171	9.24			468					3	25	118	87	71	42	95	23	4		
Other States:																							
3 establishments	1914	191	55.6	.126	7.01	1	9	86	18	77			[1] 7	90	51	18	17	4	4				
	1916	252	55.8	.155	8.66	11	12	78	20	131			2	34	73	52	27	18	43	3			
Total:																							
19 establishments	1914	1,857	54.4	.136	7.38	11	39	1,504	150	77	76		[6] 139	472	633	235	127	127	111	12	1		
	1916	1,961	54.2	.161	8.72	45	33	1,538	198	131	16		[4] 9	148	597	389	282	174	301	56	5		

[1] Including 1 earning less than 8 cents per hour.
[2] Including 20 earning less than 8 cents per hour.
[3] Including 23 earning less than 8 cents per hour.
[4] Including 4 earning less than 8 cents per hour.
[5] Including 2 earning less than 8 cents per hour.
[6] Including 5 earning less than 8 cents per hour.

TABLE G.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916.

FINISHING—Continued.

LABORERS, BLEACH HOUSE: Male.

State.	Pieceworkers or timeworkers.	Number of establishments	Number of employees	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
Connecticut	Time..	2	55	56.0	$0.175	$9.81	.....	.....	.....	44	.....	11	.....	.....	.....	.....	1	21	31	2	.....	.....	.....	.....	.....
Massachusetts	Time..	5	282	55.7	.168	9.35	3	.....	154	.....	124	1	.....	.....	.....	28	97	54	81	22	.....	.....	.....	.....	.....
New Hampshire	Time..	3	159	55.0	.193	10.59	.....	.....	.....	159	.....	.....	.....	.....	.....	.....	2	23	83	50	.....	1	.....	.....	.....
New Jersey	Time..	2	45	57.7	.180	10.33	.....	.....	.....	26	.....	19	.....	.....	1	3	7	6	23	5	.....	.....	.....	.....	.....
New York	Time..	3	90	54.8	.184	10.08	.....	.....	18	72	.....	.....	.....	.....	.....	.....	.....	51	26	13	.....	.....	.....	.....	.....
Rhode Island	Time..	7	255	54.7	.173	9.50	.....	.....	226	23	.....	.....	6	.....	13	6	36	109	54	36	1	.....	.....	.....	.....
Other States	Piece..	1	27	60.0	.168	10.11	.....	.....	.....	.....	.....	27	.....	.....	.....	.....	8	13	6	.....	.....	.....	.....	.....	.....
	Time..	2	46	58.3	.171	9.94	.....	.....	.....	.....	40	6	.....	.....	.....	.....	5	35	1	5	.....	.....	.....	.....	.....
	Total..	2	73	58.9	.170	10.00	.....	.....	.....	.....	40	33	.....	.....	.....	.....	13	48	7	5	.....	.....	.....	.....	.....
All States	Piece..	1	27	60.0	.168	10.11	.....	.....	.....	.....	.....	27	.....	.....	.....	.....	8	13	6	.....	.....	.....	.....	.....	.....
	Time..	24	932	55.5	.176	9.78	3	.....	398	324	164	37	6	.....	14	37	148	299	299	133	1	1	.....	.....	.....
	Total..	24	959	55.6	.176	9.79	3	.....	398	324	164	64	6	.....	14	37	156	312	305	133	1	1	.....	.....	.....

LABORERS, DYEHOUSE: Male.

Connecticut	Time..	3	66	57.5	$0.180	$10.38	.....	.....	.....	33	.....	33	.....	.....	.....	.....	.....	11	53	2	.....	.....	.....	.....	.....
Massachusetts	Time..	9	397	55.3	.178	9.82	.....	.....	271	.....	126	.....	.....	.....	.....	.....	93	101	128	74	1	.....	.....	.....	.....
New Hampshire	Time..	3	334	55.7	.196	10.91	.....	.....	.....	302	.....	.....	32	.....	.....	.....	1	22	188	123	.....	.....	.....	.....	.....
New Jersey	Time..	2	69	56.7	.195	11.04	.....	.....	.....	57	.....	12	.....	.....	1	2	1	10	17	38	.....	.....	.....	.....	.....
North Carolina	Time..	8	154	60.0	.118	7.06	.....	.....	.....	.....	.....	154	.....	[1] 12	65	70	6	1	.....	.....	.....	.....	.....	.....	.....
Pennsylvania	Piece..	1	16	60.0	.177	10.64	.....	.....	.....	.....	.....	16	.....	.....	.....	.....	3	8	3	1	1	.....	.....	.....	.....
	Time..	4	78	54.6	.172	9.37	.....	.....	70	.....	.....	8	.....	.....	.....	.....	22	47	3	6	.....	.....	.....	.....	.....
	Total..	4	94	55.5	.173	9.58	.....	.....	70	.....	.....	24	.....	.....	.....	.....	25	55	6	7	1	.....	.....	.....	.....

Rhode Island	Time	3	64	54.0	.183	9.89			64							1		27	33	3							
Other States	Time	5	86	59.0	.133	7.80				5	30	51		1	39	11	9	18	7	1							
All States	Piece	1	16	60.0	.177	10.64						16					3	8	3	1	1						
	Time	37	1,248	56.3	.173	9.70			405	397	156	258	32	[1] 13	105	84	132	237	429	247	1						
	Total	37	1.264	56.4	.173	9.72			405	397	156	274	32	[1] 13	105	84	135	245	432	248	2						

LABORERS, COLOR MIXING: Male.

Connecticut	Time	2	37	56.6	$0.183	$10.37				25		12					1	2	29	5							
Massachusetts	Time	4	131	55.8	.177	9.85			71		60						21	47	48	14	1						
Rhode Island	Time	4	53	54.2	.179	9.67			48	5							13	12	19	9							
Other States	Piece	1	19	60.0	.193	11.60						19					1	5	7	6							
	Time	5	43	56.9	.194	11.00				26	1	16				2	4	11	1	25							
	Total	5	62	57.9	.194	11.19				26	1	35				2	5	16	8	31							
All States	Piece	1	19	60.0	.193	11.60						19					1	5	7	6							
	Time	15	264	55.8	.181	10.07			119	56	61	28				2	39	72	97	53	1						
	Total	15	283	56.1	.182	10.17			119	56	61	47				2	40	77	104	59	1						

ENGRAVERS: Male.

Massachusetts	Time	3	68	53.1	$0.526	$27.88	4	27	37														2	16	46	4
Rhode Island	Time	4	19	54.5	.509	27.70			14	5														8	11	
Other States	Time	4	35	53.1	.561	29.85	2	17		16														2	25	8
All States	Time	11	122	53.3	.533	28.42	6	44	51	21													2	26	82	12

PRINTERS: Male.

Connecticut	Time	2	18	54.4	$0.628	$34.18			10	8															5	13
Massachusetts	Time	3	82	55.6	.515	28.41			41	12	29												4	19	3	15	41
Rhode Island	Time	4	37	54.5	.589	32.05			20	17																33	4
Other States	Piece	1	15	55.0	.556	30.58				15																14	1
	Time	3	24	55.7	.567	31.49				21		3											1	1	2	12	8
	Total	4	39	55.4	.563	31.14				36		3											1	1	2	26	9
All States	Piece	1	15	55.0	.556	30.58				15																14	1
	Time	12	161	55.2	.552	30.35			71	58	29	3											5	20	5	65	66
	Total	13	176	55.4	.553	30.37			71	73	29	3											5	20	5	79	67

[1] Including 9 employees whose wages were under 8 cents.

TABLE G.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Continued.

FINISHING—Continued.

CALENDER TENDERS: Male.

State.	Pieceworkers or timeworkers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—											
							Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
Connecticut	Time..	2	33	57.6	$0.191	$11.01	.....	.....	.....	16	.....	17	.....	.....	.....	.....	.....	.....	30	3	.....	.....	.....	.....	.....
Massachusetts	Time..	5	73	56.3	.173	9.68	.....	.....	31	.....	42	.....	.....	.....	.....	13	14	23	7	16	.....	.....	.....	.....	.....
New Jersey	Time..	2	49	57.6	.190	10.91	.....	.....	.....	30	.....	19	.....	.....	.....	.....	.....	18	20	11	.....	.....	.....	.....	.....
New York	Time..	3	46	54.7	.195	10.68	.....	.....	16	30	.....	.....	.....	.....	.....	.....	.....	4	19	23	.....	.....	.....	.....	.....
Rhode Island	Time..	7	104	54.2	.210	11.37	.....	.....	92	12	.....	.....	.....	.....	.....	.....	.....	10	18	68	6	2	.....	.....	.....
Other States	Piece..	2	9	59.3	.200	11.83	.....	.....	.....	.....	3	6	.....	.....	.....	.....	1	1	4	2	1	.....	.....	.....	.....
	Time..	4	49	55.9	.202	11.25	.....	.....	.....	35	13	1	.....	.....	.....	.....	.....	10	16	23	.....	.....	.....	.....	.....
	Total..	4	58	56.4	.201	11.34	.....	.....	.....	35	16	7	.....	.....	.....	.....	1	11	20	25	1	.....	.....	.....	.....
All States	Piece..	2	9	59.3	.200	11.83	.....	.....	.....	.....	3	6	.....	.....	.....	.....	1	1	4	2	1	.....	.....	.....	.....
	Time..	23	354	55.7	.195	10.82	.....	.....	139	123	55	37	.....	.....	.....	13	14	67	108	144	6	2	.....	.....	.....
	Total..	23	363	55.8	.195	10.84	.....	.....	139	123	58	43	.....	.....	.....	13	15	68	112	146	7	2	.....	.....	.....

FOLDERS: Male.

Massachusetts	Piece..	2	41	54.0	$0.355	$19.15	.....	.....	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	3	30	7	.....	.....
	Time..	5	50	55.1	.253	13.89	.....	.....	36	.....	14	.....	.....	.....	.....	.....	4	2	3	26	.....	15	.....	.....	.....
	Total..	6	91	54.6	.299	16.26	.....	.....	77	.....	14	.....	.....	.....	.....	.....	4	2	3	27	3	45	7	.....	.....
New York	Piece..	1	9	54.0	.298	16.10	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	3	.....	.....	.....
	Time..	2	45	55.0	.319	17.52	.....	.....	.....	45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45	.....	.....	.....
	Total..	3	54	54.8	.315	17.29	.....	.....	9	45	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	5	48	.....	.....	.....

Rhode Island	Time	7	123	54.0	.334	18.02			123											12	6	95	9	1	
Other States	Piece	2	24	55.8	.283	15.75				18	6								1	2	14	7			
	Time	7	69	56.2	.250	14.05				60		9								45	22	2			
	Total	8	93	56.1	.258	14.49				78	6	9							1	47	36	9			
All States	Piece	5	74	54.6	.325	17.68			59	18	6								1	4	22	40	7		
	Time	21	287	54.9	.297	16.27			159	105	14	9				4	2	3		83	28	157	9	1	
	Total	24	361	54.8	.303	16.56			209	123	20	9				4	2	4		87	50	197	16	1	

KNOTTERS: Female.

Massachusetts	Piece	1	21	54.0	$0.141	$7.62			21						3	4	12	2							
	Time	6	86	54.0	.144	7.79			86						1	29	55	1							
	Total	6	107	54.0	.144	7.76			107						4	33	67	3							
New York	Piece	1	7	54.0	.205	11.08			7									2	1	3	1				
	Time	2	46	54.0	.130	7.02			46							46									
	Total	3	53	54.0	.140	7.56			53							46		2	1	3	1				
Rhode Island	Piece	2	5	54.0	.163	8.82			5							1	1	2	1	2					
	Time	6	122	54.0	.143	7.70			122						30	60	4	9	6	12	1				
	Total	7	127	54.0	.143	7.74			127						30	61	5	11	7	12	1				
Other States	Piece	1	5	58.0	.149	8.67					5					2	1	1	1						
	Time	8	61	55.7	.127	7.05			16	33	3	9			25	23	13								
	Total	8	66	55.9	.128	7.17			16	33	8	9			25	25	14	1	1						
All States	Piece	5	38	54.5	.157	8.55			33		5				3	7	14	7	3	3	1				
	Time	22	315	54.3	.138	7.50			270	33	3	9			56	158	64	18	6	12	1				
	Total	24	353	54.4	.140	7.61			303	33	8	9			59	165	78	25	9	15	2				

OTHER EMPLOYEES: Male.

Connecticut	Time	2	746	57.9	$0.198	$11.45	24	1	34	297	42	323	25			4	15	187	340	107	40	45	5	2	1
Massachusetts	Piece	3	60	54.0	.219	11.84			60							1	3	9	14	19	7	7			
	Time	7	2,768	55.8	.196	10.89	20	35	1,683	2	956	11	61	7	29	279	449	589	615	449	157	130	23	15	26
	Total	7	2,828	55.8	.197	10.91	20	35	1,743	2	956	11	61	7	29	280	452	598	629	468	164	137	23	15	26

TABLE G.—AVERAGE AND CLASSIFIED FULL-TIME HOURS PER WEEK, AND RATES OF WAGES PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916—Concluded.

FINISHING—Continued.

OTHER EMPLOYEES: Male—Concluded.

State.	Pieceworkers or timeworkers.	Number of establishments	Number of employees.	Average full-time hours per week.	Average rate of wages per hour.	Average full-time weekly earnings.	Employees whose full-time hours per week were—							Employees whose rates of wages per hour were—										
							Under 51.	51 and under 54.	54.	Over 54 and under 57.	57 and under 60.	60.	Over 60.	8 and under 10 cts.	10 and under 12 cts.	12 and under 14 cts.	14 and under 16 cts.	16 and under 18 cts.	18 and under 20 cts.	20 and under 25 cts.	25 and under 30 cts.	30 and under 40 cts.	40 and under 50 cts.	50 and under 60 cts.	60 cts. and over.
New Hampshire	Piece..	2	9	55.0	$0 301	$16.57	.....	.....	.....	9	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	7	.....	.....	.....
	Time..	3	395	55.9	.215	12.04	.....	.....	.....	373	.....	1	21	.....	.....	2	22	108	40	158	37	22	3	1	2
	Total..	3	404	55.8	.217	12.14	.....	.....	.....	382	.....	1	21	.....	.....	2	22	108	41	158	38	29	3	1	2
New Jersey	Time..	2	402	58.3	.200	11.65	.....	.....	.....	264	.....	115	23	5	10	16	26	54	141	102	26	20	2	.....	.....
New York	Piece..	2	48	54.8	.201	11.04	.....	.....	9	39	.....	.....	.....	.....	1	4	3	6	9	16	7	2	.....	.....	.....
	Time..	3	1,147	55.4	.214	11.86	.....	.....	198	910	.....	6	33	.....	3	13	13	227	281	421	86	87	12	4	.....
	Total..	3	1,195	55.3	.214	11.83	.....	.....	207	949	.....	6	33	.....	4	17	16	233	290	437	93	89	12	4	.....
Pennsylvania	Piece..	1	233	58.8	.190	11.17	14	.....	.....	1	.....	218	.....	.....	.....	2	31	82	43	63	10	2	.....	.....	.....
	Time..	1	234	60.3	.194	11.72	2	16	.....	.....	.....	205	11	.....	3	10	68	48	24	44	20	16	1	.....	.....
	Total..	1	467	59.5	.192	11.45	16	16	.....	1	.....	423	11	.....	3	12	99	130	67	107	30	18	1	.....	.....
Rhode Island	Piece..	3	21	54.0	.233	12.61	.....	.....	21	.....	.....	.....	.....	.....	.....	.....	1	1	2	9	7	1	.....	.....	.....
	Time..	7	2,282	55.1	.217	11.92	.....	.....	2,038	147	.....	4	93	4	23	76	163	410	504	595	235	227	37	6	2
	Total..	7	2,303	55.1	.217	11.93	.....	.....	2,059	147	.....	4	93	4	23	76	164	411	506	604	242	228	37	6	2
Other States	Piece..	1	60	58.0	.222	12.88	.....	.....	.....	.....	60	.....	.....	.....	.....	.....	4	4	11	29	8	4	.....	.....	.....
	Time..	1	250	58.7	.200	11.77	.....	.....	.....	.....	242	.....	8	.....	1	9	53	70	32	38	33	11	1	1	1
	Total..	1	310	58.6	.205	11.98	.....	.....	.....	.....	302	.....	8	.....	1	9	57	74	43	67	41	15	1	1	1

All States	Piece..	12	431	57.2	.204	11.67	14	.....	90	49	60	218	.....	.....	1	7	42	102	80	136	40	23	.....	.....	.....
	Time..	26	8,224	56.1	.206	11.50	46	52	3,953	1,993	1,240	665	275	16	69	409	809	1,693	1,977	1,914	634	558	84	29	32
	Total..	26	8,655	56.1	.206	11.51	60	52	4,043	2,042	1,300	883	275	16	70	416	851	1,795	2,057	2,050	674	581	84	29	32

OTHER EMPLOYEES: Female.

Connecticut	Time..	2	121	55.0	$0.142	$7.80	.....	.....	.....	121	.....	.....	.....	.....	.....	43	63	14	.....	1	.....	.....	.....	.....	.....
Massachusetts	Piece..	3	189	54.0	.203	10.96	.....	.....	189	.....	.....	.....	.....	.....	5	3	18	31	34	80	17	1	.....	.....	.....
	Time..	5	556	53.4	.145	7.76	34	21	501	.....	.....	.....	.....	.....	49	228	141	85	23	28	2	.....	.....	.....	.....
	Total..	5	745	53.6	.160	8.57	34	21	690	.....	.....	.....	.....	.....	54	231	159	116	57	108	19	1	.....	.....	.....
New Jersey	Piece..	1	4	60.0	.119	7.14	.....	.....	.....	.....	.....	4	.....	.....	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	2	69	56.7	.126	7.11	.....	.....	.....	57	.....	12	.....	.....	16	49	1	1	1	1	.....	.....	.....	.....	.....
	Total..	2	73	56.9	.125	7.11	.....	.....	.....	57	.....	16	.....	.....	19	50	1	1	1	1	.....	.....	.....	.....	.....
New York	Piece..	2	235	54.0	.175	9.45	.....	.....	235	.....	.....	.....	.....	[1] 4	16	31	31	43	49	50	11	.....	.....	.....	.....
	Time..	3	220	54.0	.143	7.72	.....	.....	220	.....	.....	.....	.....	.....	8	119	70	12	8	3	.....	.....	.....	.....	.....
	Total..	3	455	54.0	.159	8.61	.....	.....	455	.....	.....	.....	.....	[1] 4	24	150	101	55	57	53	11	.....	.....	.....	.....
Rhode Island	Piece..	4	75	54.0	.198	10.72	.....	.....	75	.....	.....	.....	.....	[2] 2	.....	6	4	22	6	24	10	1	.....	.....	.....
	Time..	7	510	54.0	.165	8.91	.....	.....	510	.....	.....	.....	.....	3	25	114	168	55	47	74	20	4	.....	.....	.....
	Total..	7	585	54.0	.169	9.15	.....	.....	585	.....	.....	.....	.....	[2] 5	25	120	172	77	53	98	30	5	.....	.....	.....
Other States	Piece..	2	122	56.7	.178	10.12	8	3	19	.....	92	.....	.....	1	1	31	13	15	16	43	2	.....	.....	.....	.....
	Time..	3	130	54.9	.133	7.29	3	9	59	20	39	.....	.....	1	33	42	39	12	2	.....	1	.....	.....	.....	.....
	Total..	3	252	55.8	.155	8.66	11	12	78	20	131	.....	.....	2	34	73	52	27	18	43	3	.....	.....	.....	.....
All States	Piece..	12	625	54.6	.187	10.17	8	3	518	.....	92	4	.....	[3] 7	25	72	66	111	105	197	40	2	.....	.....	.....
	Time..	22	1,606	54.1	.149	8.06	37	30	1,290	198	39	12	.....	4	131	595	482	179	81	107	23	4	.....	.....	.....
	Total..	22	2,231	54.2	.160	8.65	45	33	1,808	198	131	16	.....	[3] 11	156	667	548	290	186	304	63	6	.....	.....	.....

[1] Including 2 under 8 cents per hour.

[2] Including 1 under 8 cents per hour.

[3] Including 3 under 8 cents per hour.

TABLE H.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS.**

FINISHING—Continued.

LABORERS, BLEACH HOUSE: Male.

State.	Piece workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week of establishments.	Average hours wkd. per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Connecticut...	Time..	2	55	56.0	54.9	$9.81	$9.69	3	2	1	7	2	40	3	1	1	1	1	....	3	16	19	4	3	3	.....	.....	.....	.....
Massachusetts.	Time..	5	282	55.7	57.3	9.35	9.67	9	8	11	38	47	169	10	6	3	13	9	18	16	50	66	62	21	5	1	2	.....	.....
New York.....	Time..	2	38	54.5	65.2	10.46	12.61	1	.....	2	2	1	32	1	.....	.....	.....	.....	2	2	2	.....	5	17	4	3	2	.....	.....
Rhode Island..	Time..	7	255	54.7	55.2	9.50	9.70	4	6	15	64	31	135	8	1	5	8	18	25	41	44	45	15	18	14	7	6	.....	.....
Other States...	Time..	3	132	56.6	56.1	10.25	10.10	4	3	4	11	62	48	4	....	3	1	3	1	7	26	38	33	11	5	.....	.....	.....	.....
Total.....	Time..	19	762	55.5	56.6	9.64	9.90	21	19	33	122	143	424	26	8	12	23	31	46	69	138	168	119	70	31	11	10	.....	.....

LABORERS, DYEHOUSE: Male.

Connecticut...	Time..	3	66	57.5	47.8	$10.38	$8.63	2	7	14	8	14	21	3	2	2	13	3	....	1	11	25	4	2	.....	.....	.....	.....	.....
Massachusetts.	Time..	9	397	55.3	58.6	9.82	10.38	5	14	15	27	46	290	8	4	8	10	3	6	12	64	127	79	70	5	.....	1	.....	.....
North Carolina	Time..	2	35	60.0	54.5	7.90	7.20	.....	.....	6	8	20	1	.....	.....	4	2	6	10	12	....	1	.....	.....	.....	.....	.....	.....	.....
Rhode Island..	Time..	3	64	54.0	58.1	9.89	10.65	.....	.....	.....	9	9	46	.....	.....	.....	.....	.....	3	4	15	25	3	11	3	.....	.....	.....	.....
Other States...	Time..	5	120	57.5	54.1	9.17	8.84	4	5	13	9	48	41	9	2	2	4	17	6	3	10	38	18	11	.....	.....	.....	.....	.....
Total.....	Time..	22	682	56.0	56.5	9.67	9.80	11	26	48	61	137	399	20	8	16	29	29	25	32	100	216	104	94	8	.....	1	.....	.....

LABORERS, COLOR MIXING: Male.

Connecticut...	Time..	2	37	56.6	61.3	$10.37	$11.23	.....	.....	.....	10	1	26	.....	.....	.....	.....	.....	.....	3	4	5	18	5	2	.....	.....	.....	.....
Massachusetts..	Time..	4	131	55.8	58.5	9.85	10.33	6	2	6	8	2	107	7	1	.....	3	3	1	6	16	25	42	19	8	.....	.....	.....	.....
Rhode Island..	Time..	4	53	54.2	62.0	9.67	11.07	.....	.....	1	7	1	44	.....	.....	.....	.....	1	4	4	10	6	11	12	4	1	.....	.....	.....
Other States...	Time..	2	13	59.8	62.1	10.32	10.75	.....	.....	.....	2	1	10	.....	.....	.....	.....	.....	1	1	2	.....	8	.....	.....	1	.....	.....	.....
Total.....	Time..	12	234	55.8	59.9	9.91	10.66	6	2	7	27	5	187	7	1	.....	3	4	6	14	32	36	79	36	14	2	.....	.....	.....

ENGRAVERS: Male.

Massachusetts..	Time..	3	68	53.1	53.1	$27.88	$27.84	.....	.....	.....	4	62	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	5	61
Rhode Island..	Time..	4	19	54.5	56.3	27.70	28.53	.....	.....	.....	2	2	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19
Other States...	Time..	3	20	51.7	52.3	28.08	28.37	.....	.....	.....	2	12	6	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	19
Total.....	Time..	10	107	53.1	53.5	27.89	28.06	.....	.....	.....	8	76	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	6	99

PRINTERS: Male.

Connecticut...	Time..	2	18	54.4	52.2	$34.18	$32.90	.....	.....	3	.....	8	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	.....	15
Massachusetts..	Time..	3	82	55.6	58.4	28.41	29.65	.....	.....	.....	.....	41	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	7	14	59
Rhode Island..	Time..	4	37	54.5	56.9	32.05	33.55	.....	1	.....	3	19	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	36
Other States...	Piece..	1	15	55.0	58.5	30.58	32.49	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
	Time..	2	4	59.0	51.5	23.63	21.42	.....	1	.....	.....	3	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	2
	Total..	3	19	55.8	57.0	29.11	30.16	.....	1	.....	.....	3	15	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	17
All States.....	Piece..	1	15	55.0	58.5	30.58	32.49	.....	.....	.....	.....	.....	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
	Time..	11	141	55.2	57.1	29.96	30.86	.....	2	3	3	71	62	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	4	8	15	112
	Total..	12	156	55.2	57.2	30.02	31.01	.....	2	3	3	71	77	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	4	8	15	127

TABLE H.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

FINISHING—Continued.

CALENDER TENDERS: Male.

State.	Piece workers or time-workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wkd. per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Connecticut	Time	2	33	57.6	57.5	$11.01	$10.99	.....	.....	1	16	.....	16	.....	.....	.....	1	.....	.....	.....	1	13	12	6	.....	.....	.....	.....	.....
Massachusetts	Time	5	73	56.3	61.1	9.68	10.53	.....	1	2	6	1	63	1	.....	.....	2	.....	4	10	12	16	8	18	2	.....	.....	.....	.....
New York	Time	2	31	54.5	57.5	10.15	10.75	.....	2	2	5	4	18	1	.....	1	1	.....	2	1	4	3	2	15	1	.....	.....	.....	.....
Rhode Island	Time	7	104	54.2	60.8	11.37	12.73	1	.....	2	24	3	74	1	.....	.....	1	.....	4	.....	8	10	18	22	26	14	.....	.....	.....
Other States	Piece	1	3	58.0	54.5	13.96	13.14	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....	.....	.....
	Time	2	32	59.2	58.8	10.46	10.39	1	1	2	5	7	16	2	.....	.....	.....	.....	1	2	2	12	5	6	2	.....	.....	.....	.....
	Total	2	35	59.1	58.5	10.76	10.62	1	1	2	6	9	16	2	.....	.....	.....	1	1	2	2	11	5	7	3	.....	.....	.....	.....
All States	Piece	1	3	58.0	54.5	13.96	13 14	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....	.....	.....
	Time	18	273	55.2	59.9	10.63	11 43	2	4	9	56	15	187	5	.....	1	5	1	11	13	27	53	45	67	31	14	.....	.....	.....
	Total	18	276	55.8	59.8	10.66	11.45	2	4	9	57	17	187	5	.....	1	5	1	11	13	27	54	45	68	32	14	.....	.....	.....

FOLDERS: Male.

Massachusetts	Piece	2	41	54.0	52.8	$19.15	$18.65	.....	1	.....	3	33	4	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	2	3	11	10	14	.....
	Time	5	50	55.1	59.8	13.89	14.97	.....	.....	2	5	23	20	.....	.....	.....	.....	.....	2	3	4	1	4	9	.....	13	13	1	.....
	Total	6	91	54.6	56.6	16.26	16.63	.....	1	2	8	56	24	.....	.....	.....	.....	.....	2	4	4	1	4	11	3	24	23	15	.....

New York.....	Piece..	1	9	54.0	54.9	16.10	16.39	.....	.....	1	.....	2	6	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	3	1	1	2	.....
	Time..	1	20	55.0	61.2	17.33	19.26	.....	.....	2	.....	.....	18	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	10	8	.....
	Total..	2	29	54.7	59.2	16.94	18.37	.....	.....	3	.....	2	24	.....	.....	.....	.....	.....	.....	.....	.....	2	1	1	3	1	11	10	.....
Rhode Island..	Time..	7	123	54.0	52.2	18.02	17.35	.....	.....	3	48	42	30	.....	.....	.....	.....	.....	.....	.....	1	1	.....	13	6	56	36	9	1
Other States...	Piece..	1	6	58.0	61.5	15.31	16.13	.....	.....	.....	.....	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	1	2	.....	1	.....
	Time..	3	22	57.0	61.0	14.12	14.97	.....	.....	.....	1	7	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	11	5	.....	.....	.....
	Total..	4	28	57.3	61.1	14.38	15.22	.....	.....	.....	1	10	17	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	12	7	.....	1	.....
All States.....	Piece..	4	56	54.4	54.1	18.25	18.02	.....	1	1	3	38	13	.....	.....	.....	.....	.....	.....	1	.....	1	.....	5	7	14	11	17	.....
	Time..	16	215	54.7	55.7	16.60	16.73	.....	.....	7	54	72	82	.....	.....	.....	.....	.....	2	3	5	3	5	28	17	74	59	18	1
	Total..	19	271	54.6	55.4	16.94	17.00	.....	1	8	57	110	95	.....	.....	.....	.....	.....	2	4	5	4	5	33	24	88	70	35	1

KNOTTERS: Female.

Massachusetts.	Piece..	1	21	54.0	52.3	$7.62	$7.36	.....	.....	1	3	17	.....	.....	.....	.....	1	7	8	4	1	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	6	86	54.0	50.2	7.79	7.29	1	4	3	15	62	1	2	4	2	1	26	7	44	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	6	107	54.0	50.6	7.76	7.31	1	4	4	18	79	1	2	4	2	2	33	15	48	1	.....	.....	.....	.....	.....	.....	.....	.....
New York.....	Piece..	1	7	54.0	51.9	11.08	10.52	.....	.....	1	.....	6	.....	.....	.....	.....	.....	.....	.....	1	1	2	2	1	.....	.....	.....	.....	.....
	Time..	1	23	54.0	49.6	6.75	6.19	.....	.....	2	9	12	.....	.....	1	1	3	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	2	30	54.0	50.1	7.76	7.20	.....	.....	3	9	18	.....	.....	1	1	3	18	.....	1	1	2	2	1	.....	.....	.....	.....	.....
Rhode Island..	Piece..	2	5	54.0	29.4	8.82	4.76	.....	3	2	.....	.....	.....	.....	.....	4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Time..	6	122	54.0	47.6	7.70	6.74	5	3	10	42	62	.....	7	1	8	15	31	42	3	5	6	4	.....	.....	.....	.....	.....	.....
	Total..	7	127	54.0	46.9	7.74	6.67	5	6	12	42	62	.....	7	1	12	15	32	42	3	5	6	4	.....	.....	.....	.....	.....	.....
Other States...	Piece..	1	5	58.0	57.0	8.67	8.54	.....	.....	.....	1	4	.....	.....	.....	.....	.....	.....	2	1	1	1	.....	.....	.....	.....	.....	.....	.....
	Time..	4	21	57.6	55.5	6.75	6.47	.....	.....	1	6	14	.....	.....	.....	1	1	16	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Total..	4	26	57.7	55.8	7.12	6.87	.....	.....	1	7	18	.....	.....	.....	1	1	16	5	1	1	1	.....	.....	.....	.....	.....	.....	.....
All States.....	Piece..	5	38	54.5	49.3	8.55	7.76	.....	3	4	4	27	.....	.....	.....	4	1	8	10	6	3	3	2	1	.....	.....	.....	.....	.....
	Time..	17	252	54.3	49.3	7.56	6.97	6	7	16	72	150	1	9	6	12	20	91	52	47	5	6	4	.....	.....	.....	.....	.....	.....
	Total..	19	290	54.3	49.3	7.69	7.08	6	10	20	76	177	1	9	6	16	21	99	62	53	8	9	6	1	.....	.....	.....	.....	.....

TABLE H.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **ONE-WEEK PAY ROLLS**—Continued.

FINISHING—Continued.

OTHER EMPLOYEES: Male.

State.	Piece workers or time workers.	Number of establishments.	Number of employees.	Average full-time hours per week of establishments.	Average hours wkd. per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.																
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
Connecticut...	Time..	2	746	57.9	58.5	$11.45	$11.61	5	24	30	197	96	394	8	7	16	13	11	13	54	109	145	103	110	80	44	18	7	8
Massachusetts.	Piece..	3	60	54.0	53.4	11.84	11.80	.....	1	2	11	33	13	1	....	.....	2	1	....	8	7	9	9	10	6	.....	6	1	.....
	Time..	7	2,768	55.6	59.4	10.89	11.67	41	67	68	229	625	1738	61	25	43	51	51	135	225	294	662	386	327	152	133	75	72	76
	Total..	7	2,828	55.5	59.3	10.91	11.67	41	68	70	240	658	1751	62	25	43	53	52	135	233	301	671	395	337	158	133	81	73	76
New Hampshire.	Time..	1	210	55.0	53.5	11.93	11.63	3	2	6	12	175	12	4	....	1	2	....	6	4	50	2	38	75	18	3	3	2	2
New Jersey....	Time..	1	129	61.9	64.8	12.00	12.83	2	1	6	18	18	48	2	.....	.....	1	2	11	8	9	11	13	34	13	6	8	9	2
New York.....	Piece..	2	48	54.8	54.8	11.04	11.19	.....	4	.....	9	21	14	2	1	.....	.....	3	4	1	5	6	5	11	5	2	3	.....	.....
	Time..	2	551	55.4	60.9	11.63	12.86	19	12	12	50	125	333	16	4	6	6	9	11	24	77	68	70	83	58	34	32	39	14
	Total..	2	599	55.3	60.4	11.58	12.72	19	16	12	59	146	347	18	5	6	6	12	15	25	82	74	75	94	63	36	35	39	14
Rhode Island..	Piece..	3	21	54.0	48.3	12.61	11.54	1	1	1	10	1	7	2	....	.....	.....	....	2	....	1	4	1	3	6	2	.....	.....	.....
	Time..	7	2,282	55.1	56.5	11.92	12.33	62	66	117	413	395	1229	84	20	22	45	60	101	155	257	234	248	369	239	163	96	138	51
	Total..	7	2,303	55.1	56.4	11.93	12.32	63	67	118	423	396	1236	86	20	22	45	60	103	155	258	238	249	372	245	165	96	138	51
Other States...	Piece..	1	60	58.0	57.0	12.88	12.67	.....	.....	3	3	51	3	....	....	....	....	1	....	1	7	6	13	18	5	7	2	.....	.....
	Time..	1	250	58.7	56.8	11.77	11.45	4	7	7	27	146	59	6	3	3	....	4	8	31	24	55	29	32	25	12	8	7	3
	Total..	1	310	58.6	56.9	11.98	11.69	4	7	10	30	197	62	6	3	3	....	5	8	32	31	61	42	50	30	19	10	7	3

All States.....	Piece..	9	189	55.5	54.4	12.06	11.89	1	6	6	33	106	37	5	1	....	2	5	6	10	20	25	28	42	22	11	11	1	.....
	Time..	21	6,936	55.8	58.3	11.43	11.94	136	179	246	946	1580	3849	181	59	91	118	137	285	501	820	1177	887	1030	585	395	240	274	156
	Total..	21	7,125	55.8	58.2	11.45	12.00	137	185	252	979	1686	3886	186	60	91	120	142	291	511	840	1202	915	1072	607	406	251	275	156

OTHER EMPLOYEES: Female.

Connecticut...	Time..	2	121	55.0	49.3	$7.80	$6.99	.....	4	19	47	50	1	3	1	1	6	43	46	12	8	.....	1	.....	.....	.....	.....	.....	.....
Massachusetts.	Piece..	3	189	54.0	51.4	10.96	10.39	.....	2	6	83	98	.....	.....	1	1	8	7	8	18	37	28	29	48	3	1	.....	.....	.....
	Time..	5	556	53.4	51.2	7.76	7.45	8	4	19	102	419	4	9	7	12	63	92	178	129	30	12	5	17	2	.....	.....	.....	.....
	Total..	5	745	53.6	51.3	8.57	8.20	8	6	25	185	517	4	9	8	13	71	99	186	147	67	40	34	65	5	1	.....	.....	.....
New York.....	Piece..	2	235	54.0	49.3	9.45	8.71	.....	6	25	78	122	4	5	4	11	19	21	23	40	36	27	27	19	3	.....	.....	.....	.....
	Time..	2	85	54.0	51.2	7.90	7.54	.....	1	6	19	58	1	....	1	3	7	22	26	11	7	5	1	2	.....	.....	.....	.....	.....
	Total..	2	320	54.0	49.8	9.04	8.40	.....	7	31	97	180	5	5	5	14	26	43	49	51	43	32	28	21	3	.....	.....	.....	.....
Rhode Island..	Piece..	4	75	54.0	43.9	10.72	8.67	5	6	9	33	22	.....	7	1	3	1	2	5	12	20	10	7	6	1	.....	.....	.....	.....
	Time..	7	510	54.0	46.0	8.91	7.56	11	13	121	164	188	13	18	9	26	47	79	136	89	40	23	27	14	1	1	.....	.....	.....
	Total..	7	585	54.0	45.7	9.15	7.70	16	19	130	197	210	13	25	10	29	48	81	141	101	60	33	34	20	2	1	.....	.....	.....
Other States...	Piece..	2	96	57.9	55.3	10.35	9.88	.....	.....	9	13	74	.....	.....	1	3	2	3	19	8	1[illegible]	9	15	15	6	1	.....	.....	.....
	Time..	2	51	57.5	54.9	7.86	7.36	.....	3	3	13	25	7	1	2	3	2	22	6	6	6	3	.....	.....	.....	.....	.....	.....	.....
	Total..	2	147	57.8	55.2	9.49	9.01	.....	3	12	26	99	7	1	3	6	4	25	25	14	20	12	15	15	6	1	.....	.....	.....
All States.....	Piece..	11	595	54.6	50.3	10.23	9.43	5	14	49	207	316	4	12	7	18	30	33	55	78	107	74	78	88	13	2	.....	.....	.....
	Time..	18	1,323	54.0	49.2	8.22	7.45	19	25	168	345	740	26	31	20	45	125	258	392	247	91	43	34	33	3	1	.....	.....	.....
	Total..	18	1,918	54.2	49.5	8.85	8.06	24	39	217	552	1056	30	43	27	63	155	291	447	325	198	117	112	121	16	3	.....	.....	.....

TABLE H.—AVERAGE FULL-TIME HOURS, HOURS ACTUALLY WORKED, FULL-TIME WEEKLY EARNINGS AND AMOUNTS ACTUALLY EARNED, AND NUMBER OF EMPLOYEES WORKING EACH CLASSIFIED PER CENT OF FULL TIME AND EARNING EACH CLASSIFIED AMOUNT, DURING ONE PAY-ROLL PERIOD, FOR PIECEWORKERS AND TIMEWORKERS, BY STATES, 1916: **TWO WEEK PAY ROLLS**—Concluded.

FINISHING.

LABORERS, BLEACH HOUSE: Male.

State.	Piece-workers or time-workers.	Number of establishments	Number of employees.	Average full-time hours per week of establishments.	Average hours wkd. per employee during one week.	Average full-time weekly earnings.	Average amount earned per employee during one week.	Employees working each classified per cent of full time during one week.						Employees earning each classified amount during one week.															
								Under 25.	25 and under 50.	50 and under 75.	75 and under 100.	100.	Over 100.	Under $3.	$3 and under $4.	$4 and under $5.	$5 and under $6.	$6 and under $7.	$7 and under $8.	$8 and under $9.	$9 and under $10.	$10 and under $11.	$11 and under $12.	$12 and under $14.	$14 and under $16.	$16 and under $18.	$18 and under $20.	$20 and under $25.	$25 and over.
New Hampshire.	Time..	2	86	110.0	100.1	$21.23	$19.48	6	3	9	10	13	45	6	1	....	2	1	2	....	4	4	8	11	32	11	3	1	.....
Other States...	Piece..	1	27	120.0	120.9	20.21	20.39	.....	3	1	2	2	19	....	....	....	....	1	2	....	1	.....	.....	9	9	4	1	.....	.....
	Time..	2	32	113.5	99.3	21.30	18.97	3	3	3	5	1	17	3	....	....	....	2	....	2	1	3	.....	1	16	4	.....	.....	.....
	Total..	2	59	116.5	109.2	20.80	19.62	3	6	4	7	3	36	3	....	....	....	3	2	2	2	3	.....	10	25	8	1	.....	.....
All States.....	Piece..	1	27	120.0	120.9	20.21	20.39	.....	3	1	2	2	19	....	....	....	....	1	2	....	1	.....	.....	9	9	4	1	.....	.....
	Time..	4	118	110.9	99.9	21.25	19.34	9	6	12	15	14	62	9	1	....	2	3	2	2	5	7	8	12	48	15	3	1	.....
	Total..	4	145	112.6	103.8	21.06	19.54	9	9	13	17	16	81	9	1	....	2	4	4	2	6	7	8	21	57	19	4	1	.....

LABORERS, DYEHOUSE: Male.

New Hampshire.	Time..	2	285	111.7	108.4	$22.06	$21.42	1	6	12	151	71	44	2	1	3	....	1	1	3	1	7	3	84	146	27	2	4	.....
Pennsylvania..	Piece..	1	16	120.0	124.4	21.27	22.06	.....	1	.....	5	.....	10	....	....	....	....	1	....	....	....	.....	2	2	5	6	.....	.....	.....
	Time..	3	18	113.3	82.8	20.87	15.96	2	3	3	1	5	4	2	2	....	....	1	1	....	2	.....	.....	3	4	3	.....	.....	.....
	Total..	3	34	116.5	102.4	21.06	18.83	2	4	3	6	5	14	2	2	....	....	2	1	....	2	.....	2	5	9	9	.....	.....	.....
Other States...	Time..	2	79	114.2	117.5	19.85	20.79	1	.....	2	13	10	53	1	....	1	....	....	3	2	12	2	5	1	21	30	.....	1	.....
All States.....	Piece..	1	16	120.0	124.4	21.27	22.06	.....	1	.....	5	.....	10	....	....	....	....	1	....	....	....	.....	2	2	5	6	.....	.....	.....
	Time..	7	382	112.3	109.1	21.55	21.04	4	9	17	165	86	101	5	3	4	....	2	5	5	15	9	8	88	171	60	2	5	.....
	Total..	7	398	112.6	109.7	21.53	21.08	4	10	17	170	86	111	5	3	4	....	3	5	5	15	9	10	90	176	66	2	5	.....

CALENDER TENDERS: Male.

All States.....	Piece..	1	6	120.0	127.9	$21.54	$23.13	.....	.....	.....	3	.....	3	.....	1	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	2	3	.....	.....	.....
	Time..	4	66	111.1	111.0	22.76	22.76	.....	1	3	10	31	21	.....	1	.....	.....	.....	.....	1	.....	1	1	1	52	7	2	.....	.....	.....
	Total..	4	72	111.8	112.4	22.66	22.79	.....	1	3	13	31	24	.....	1	.....	.....	.....	.....	1	.....	2	1	1	54	10	2	.....	.....	.....

FOLDERS: Male.

All States.....	Piece..	1	18	110.0	106.9	$31.80	$30.91	.....	.....	1	8	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	4	10	3	.....	.....
	Time..	4	47	111.6	114.2	28.04	28.61	.....	.....	1	10	13	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13	16	16	2	.....	.....
	Total..	4	65	111.1	112.2	29.08	29.25	.....	.....	2	18	22	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	14	20	26	5	.....	.....

KNOTTERS: Female.

All States.....	Time..	4	40	109.5	101.3	$14.41	$13.40	.....	.....	4	20	16	.....	.....	1	2	1	1	4	6	10	7	.....	8	.....	.....	.....	.....	.....	.....

OTHER EMPLOYEES: Male.

New Hampshire.	Piece..	2	9	110.0	120.3	$33.15	$36.19	.....	.....	.....	4	.....	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	2	1	4	
	Time..	2	185	113.5	112.4	24.33	24.34	7	2	14	24	53	85	8	.....	.....	4	3	.....	3	2	6	19	23	34	39	14	16	14	
	Total..	2	194	113.5	112.8	24.74	24.89	7	2	14	28	53	90	8	.....	.....	4	3	.....	3	2	6	19	23	35	40	16	17	18	
New Jersey....	Time..	1	273	113.2	112.1	22.95	23.04	6	8	12	68	69	110	8	1	1	6	3	3	4	7	10	10	14	118	51	21	5	11	
Pennsylvania..	Piece..	1	233	117.5	123.0	22.34	23.78	1	8	13	64	7	140	1	.....	1	2	6	6	9	7	4	6	26	78	41	15	20	11	
	Time..	1	234	120.5	96.6	23.44	19.12	37	28	11	46	42	70	43	6	5	5	4	3	1	6	10	13	33	40	21	20	11	13	
	Total..	1	467	119.0	109.8	22.89	21.45	38	36	24	110	49	210	44	6	6	7	10	9	10	13	14	19	59	118	62	35	31	24	
All States.....	Piece..	3	242	117.2	122.9	22.74	24.24	1	8	13	68	7	145	1	.....	1	2	6	6	9	7	4	6	26	79	42	17	21	15	
	Time..	4	692	115.8	106.9	23.48	22.06	50	38	37	138	164	265	59	7	6	15	10	6	8	15	26	42	70	192	111	55	32	38	
	Total..	4	934	116.2	111.1	23.29	22.63	51	46	50	206	171	410	60	7	7	17	16	12	17	22	30	48	96	271	153	72	53	53	

OTHER EMPLOYEES: Female.

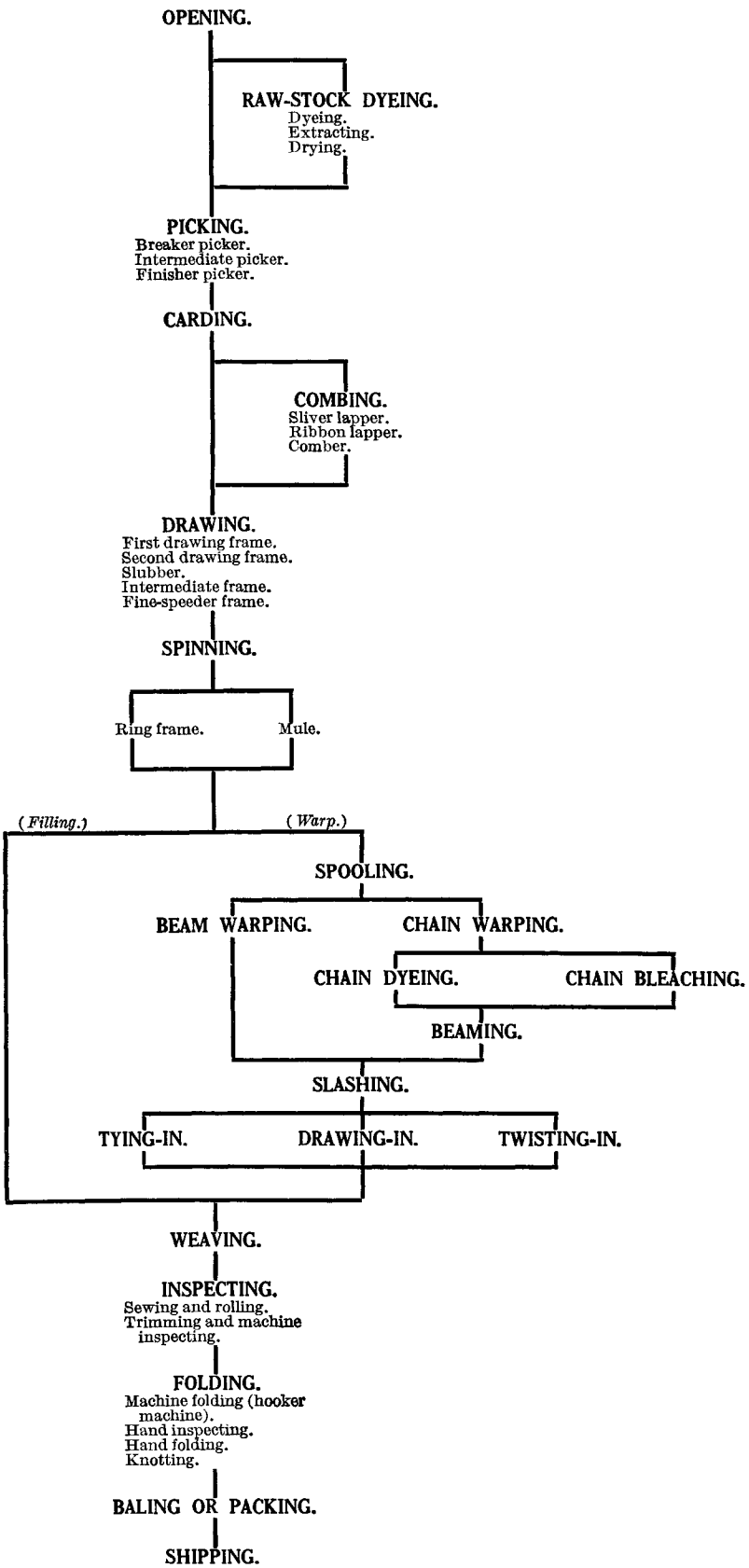
All States.....	Piece..	1	30	105.3	93.0	$17.96	$15.63	.....	4	.....	15	11	.....	.....	.....	.....	4	1	.....	2	5	36	4	.....	8	.....	.....	.....	.....	.....
	Time..	3	148	109.0	92.0	14.03	12.23	8	11	9	54	60	6	19	1	6	3	6	10	11	27	6	21	5	3	.....	.....	.....	.....	.....
	Total..	3	178	108.4	92.2	14.69	12.81	8	15	9	69	71	6	19	1	6	7	7	10	13	32	42	25	5	11	.....	.....	.....	.....	.....

DESCRIPTION OF PROCESSES, MACHINES, AND OCCUPATIONS.

Following is a description of the processes, machines, and occupations in the cotton textile industry. The description is divided into two parts, the first confined to the manufacture of cotton cloth and the second to the finishing, or "converting," of such cloth. This division was made because most mills manufacturing cotton cloth do not do the finishing in the mill, but send the cloth to a finishing, or "converting," plant where bleaching, dyeing, printing, etc., are done. At the beginning of each part is a chart showing the processes arranged in proper sequence, with alternative processes in coordinate positions. Then follow the descriptions of the processes, together with the machines used and the occupations concerned with them, arranged in consecutive order and grouped in sections which correspond in a general way to the usual departments in a mill. As far as possible technical and shop language are avoided, and such words and expressions peculiar to the industry as have been used are defined.

Each individual process is treated as a unit. First, the process itself is described; i. e., the state of the product at the beginning, what is done to it and how it is done, and the state of the product after the process. Then, before the next process is taken up, the machine or machines used in the process, and how they act upon the product, are described briefly. Following the descriptions of the machines are descriptions of each of the occupations concerned with the process. Certain points were borne in mind in writing the descriptions of occupations. They were: Character of the operative, whether man, woman, or child; what the individual worker is required to do and how he does it; does the operative oil and clean, or otherwise care for, his machine; does the operative stand or sit at his work; the continuity of actual employment; whether or not such employment requires active physical effort, or is principally watching the machine; particular occupational hazards; and the basis of pay. All these points are covered for practically every occupation. This involves considerable repetition, but it seemed best to make the description of each occupation complete in itself.

SEQUENCE OF PROCESSES IN THE MANUFACTURE OF COTTON CLOTH.



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COTTON-CLOTH MANUFACTURE.

GENERAL OCCUPATIONS.

Cotton mills are organized with a superintendent at the head, and, directly under him, overseers, one in charge of each department. The usual departments are: Carding, spinning, weaving, and cloth room. Mills doing dyeing have an overseer for that department; and some mills, where slashing is important and there is a great deal of beaming, have an overseer in charge of these two processes. Large mills usually have a mechanical department in charge of a master mechanic. The arrangement of the processes in this description follows the organization usual in most mills, except that all the processes in the preparation of the warp are grouped here. This was done to make the relation of one to the other clearer.

There are several auxiliary occupations that occur in all or nearly all departments. These, while important, do not for the most part enter directly into the manufacturing process. Mention of such occupations will be made under each department, but the general statement which follows will suffice for a description of them.

Superintendent.—The superintendent has complete charge of the manufacturing, and is responsible for the proper management of the plant.

Overseer.—Overseers are men in charge of departments. They are responsible directly to the superintendent. Overseers are not only experts in the processes that come directly under their supervision, but have a rather complete knowledge of all processes in the mill, for a man can not do satisfactory work in one department unless he knows its relation to the other departments. Overseers understand thoroughly all the machines in their departments and are able to direct changes and repairs on them. Overseers are sometimes called bosses, as boss carder, boss weaver, etc.

Second hand.—Second hands are assistants to the overseers. An overseer may have one or more second hands, depending on the size of the mill, the size of the department, and the general physical layout of the plant. Often there is a second hand in charge of each room, where a department is divided in different rooms; or, in large rooms there may be two or more second hands. The work of the second hand is supervisory. He not only must see that the employees are doing their work and doing it properly, but he must

plan the work and place the workers. The second hand is usually responsible for having the work come off the machines according to the specifications called for. Orders for changes are issued through him and important changes or repairs of machinery are made by him or under his immediate supervision.

Section hand.—Section hands are men in supervisory positions directly under the second hands. They have charge of certain sections in which they must supervise the workers and see that the work comes off properly. An important part of the work of section hands is fixing—i. e., making repairs and changes in machinery. They inspect the machinery to see that no parts are worn out or missing, and that the machines are properly oiled and cleaned. The work of a section hand and that of a fixer are practically the same. Where the work of supervision predominates (as in the spinning department where the section hand actively directs the doffers), he is called a section hand; where the fixing is important and supervision incidental, he is called a fixer.

Fixer.—(*See* Section hand.)

Oiler.—Oilers are employed in every department of the mill where there are enough machines to justify their employment. Their work is to make regular trips around the room oiling the different parts of machines according to some regular scheme, as determined by the overseer. Fast moving parts have to be frequently oiled; slower moving parts not so often. But it is important that no part be skipped. So the oiler has to be a reliable man who can be depended upon not to neglect his work. Oilers usually have some further duties such as cleaning the overhead pulleys, belts, shafting, etc. Often they assist fixers, and if they become sufficiently skilled, are promoted to that position.

Trucker or floor man.—Truckers or floormen perform a very necessary function in every department of the mill. As the term would indicate they are employed to convey material from one section of a room to another or from one room to another. For the most part they are strong men and are required to do the heavy work, such as putting up and taking down beams for warpers. In some mills and some departments they are given specific names, as beam truckers. In some instances where the duties are distinctive in a particular department, as filling carrier in the weaving department, a separate occupation has been described under that department.

Sweeper.—Sweeping the floor several times a day is absolutely necessary in most sections of the mill because the waste is thrown on the floor, and flyings, or lint, settle on it. So sweepers are employed in most departments, particularly up to and including spinning. The work is very unskilled, requiring the worker merely to

push a brush or broom before him, gathering as much waste and dirt as possible. He also has to gather up the sweepings and truck them to the waste house, or some place where they can be picked over. Old men are employed as a rule, men who are beyond doing other work. For this reason the job is made light and the pay small. A certain number of trips must be made each day and between trips the sweeper has his time free. Most mills pay sweepers on a time basis, but some pay so much a round.

Waste picker.—Waste pickers are employed in most mills to pick over the sweepings in order to separate the various kinds of waste. Large quantities of perfectly good workable cotton get into the sweepings, particularly in the spinning room, and there would be a considerable loss to the management if this were not saved and used over again. Then, too, what is called waste in the ordinary mill, while it can not be used in that particular plant, can still be used for something and has a value on the market. The waste picker usually sorts the various kinds of waste and either bags it or bales it. The work naturally is dusty and disagreeable, and is usually given to a very low grade of employees.

Scrubber or scourer.—Scrubbers or scourers are employees who wash the floors in the mill. They are sometimes men and sometimes women. In departments where good cotton or yarn or cloth gets on the floor it is important to have the floors as clean as possible, and washing has to be done frequently. Scrubbers are of a very low grade of employees. They are usually paid on a time basis.

CARDING DEPARTMENT.

Cotton comes to the mill in bales direct from the gin or compress. The first concern of the mill is to remove the dirt and other foreign matter. Then the fibers must be separated, arranged parallel to each other, and drawn into an even strand for spinning. All the cleaning, carding, and drawing processes usually constitute one department under an overseer, called the overseer of carding.

The occupations of the carding department are as follows:

General:
- Second hand.
- Section hand.
- Fixer.
- Trucker.
- Oiler.
- Sweeper.
- Scrubber.
- Waste picker.

Opening:
- Cotton opener.
- Opener tender (bale breaker tender).

Picking:
- Hopper feeder.
- Picker tender (breaker picker tender, intermediate picker tender, finisher picker tender).
- Lap hauler. (*See* Trucker.)

Carding:
- Card tender.
- Card stripper.
- Card grinder.

Combing:
- Sliver lap machine tender.
- Ribbon lapper tender.
- Comber tender.

Drawing:
- Drawing frame tender.
- Slubber tender.
- Speeder tender (intermediate tender, fine speeder tender, jack speeder tender).
- Can boy.
- Roving hauler.

OPENING.

The first essential process in the manufacture of cotton cloth is opening. This includes not only the opening of the bales, but also the pulling apart of the matted sheets into small bunches by a machine called an opener. In small mills this is done in the picker room and is not thought of as a separate process, but merely as a step in the picking. As a rule, for convenience in handling, the opener room is near the warehouse and the picker room near the carding room, the stock being blown from the opener to the picker room through a large pipe or trunk. This means of conveying the stock is desirable as it helps to fluff up and clean it. The bales are brought from the warehouse to the opener room, are opened, and the cotton fed by the armful into the automatic feed or bale breaker. This in turn feeds the opener, which tears up the lump of cotton and delivers the stock in light fluffy tufts capable of being blown about easily.

Automatic feed.—An automatic feed consists essentially of a hopper out of which rises an endless revolving lattice fitted with spikes pointing upward. The cotton in the hopper is picked up by the spikes and carried over the top, where it is knocked off by revolving strips of leather onto a feed apron. The quantity carried over the top can be regulated by a spiked cylinder placed just below the top and revolved against the direction of the apron, or by an oscillating comb similarly located. Feeds vary in size and in detail of construction according to the particular use to which they are put. They are found in connection with practically every machine that handles loose cotton or wool.

Bale breaker.—The bale breaker is the same as the automatic feed, except that the teeth are somewhat stronger, and it has, in

front of the lifting apron about half way up, a revolving cylinder with large spikes on it strong enough to break up the large, hard lumps which may have been formed when the cotton was compressed.

Opener.—An opener is a machine which consists essentially of a beater and the necessary parts to feed the cotton to it. The beater is about four feet long and about twelve inches in diameter. It consists of three blades slightly beveled at each edge. The stock delivered by the automatic feed onto the feed apron of the opener is carried forward and fed to the beater through feed rollers. The beater turns about twelve or thirteen hundred revolutions a minute and beats the cotton against grids, loosening some of the dirt, which falls through the grids into a dust box below. The cotton, thus loosened and cleaned somewhat, is drawn by a suction fan and blown through a trunk to the picker room, passing over grids in the trunk to remove more of the dirt and other foreign substances.

Cotton opener.—Opening cotton is an unskilled occupation for men and older boys. This worker breaks the bands around the bale either with a band cutter or an ax. He removes the bands and burlap covering and places the bales in position near the bale breaker or opener. He also picks off the burlap the cotton that adheres to it when it is removed from the bale. This is moderately heavy work for a fairly strong man. One man working at a moderate speed could open all the cotton used in an average mill. The cotton opener usually sweeps the opener room, though in some mills there is a separate job for sweeper and burlap cleaner. This employee works on his feet, and moves about. He is paid on a time basis.

Opener tender.—The opener tender runs the opener. One man can run two or three machines, depending on the product, organization, etc. The principal work of the opener tender is to keep the hoppers of his automatic feeds supplied. The opener is fed automatically, and the "opened" cotton is carried off by a suction fan. The tender gathers the cotton from several bales (3 to 30, depending on the mixture required), which are spread on the floor about his machine. If there are only a few opened bales, he takes an armful from each successively and throws it into the hopper. If there are several bales, he gathers an armful from each in a truck and puts this mixture from the truck into the hopper. This operative, on signal from the picker room, starts and stops his machine by throwing a lever. If a lump of cotton clogs in the spikes, the operative knows it by the sound of running. He stops the machine, removes the clog, and starts the machine again. He oils and cleans the machine, and removes the motes from under the beater once a day. Once a week he cleans and oils thoroughly. This operative stands while at work, but is not required to remain in one place. There is con-

siderable dust and lint produced, from which he is not protected. The fast moving beater and revolving spikes are very dangerous, and the operative is supposed to stop his machine before putting his hand near them. He is paid on a time basis.

RAW-STOCK DYEING.

Some cotton is dyed in the raw stock, i. e. it is dyed before it is put through any of the processes of making yarn. Cotton that is to be so dyed is taken directly from the opening room to the dye-house, and is then returned to the picker room, and follows through the various processes just like cotton that has not been dyed. As a rule there is a trunk connecting the opening room with the dye-house just like the trunk connecting the opening room with the picker room, and the cotton is conveyed from one department to the other by blowing it through this trunk. For a description of this process see pages 198 to 201.

PICKING.

Picking is the process of cleaning the cotton, i. e. removing all foreign substances. This is accomplished by beating it in a machine called a picker. This machine accomplishes two things: It beats the dust and other foreign matter out of the cotton, and it delivers it in an even sheet or lap which is rolled up at the delivery end. This latter function of the picker gives rise to the term "lapper" which is sometimes applied to the machine. The cotton is put through two or three pickers, according as it needs to be less or more thoroughly cleaned.

Picker.—All pickers are essentially the same, except in the manner of feeding. They consist of a beater similar to the one in the opener and a device for rolling the cotton into a sheet. The loose cotton from the opener comes to the picker room through a trunk and is deposited sometimes into a bin and sometimes directly into the hoppers of the automatic feeds set up to the pickers. These feeds deliver a regular and fairly even supply onto the feed apron of the picker. It is carried into the machine and is beaten against grids as in the opener to remove the dirt. A suction fan draws it against two large screen rollers which roll it into a sheet, which in turn is pressed between a pair of calender rollers, and is wound around a pin into a roll 50 inches long and 20 or 25 inches in diameter. The cotton is put through two or three pickers, hence the names, breaker picker, intermediate picker, and finisher picker. The intermediate and the finisher pickers further clean the cotton, and in the same way as the breaker picker, but, instead of receiving the stock loose, are fed the rolls of lap from the preceding machine. Usually four laps are fed to each machine as one sheet in order to minimize any unevenness and obtain, or approximate, a sheet weighing inch for inch the

same. The laps taken off the finisher picker should weigh within a half pound of the weight the machines are set to deliver. These are ready to be taken to the cards.

Hopper feeder.—Hopper feeding is an occupation for a man or boy and requires little or no skill. Where the cotton from the openers is deposited into a bin, the work of the hopper feeder is to carry the cotton by armfuls from the bin and put it into the hoppers of the breaker pickers. Where the cotton is conveyed directly into the hoppers, his work consists in opening and closing the slides or gates to permit the cotton to go into a particular hopper. When the gates are high this may be done by pulling a rope, and when low enough a stick is sometimes used to open and close them. It is the duty of the hopper feeder to keep the hoppers sufficiently filled (about two-thirds full) so that there will be no light places or heavy places.

One hopper feeder usually feeds all the breaker pickers. He can handle from 8 to 12. Where there are not enough pickers to keep him busy, he is given other work to do, such as sweeping, and in some places the hopper feeder is dispensed with and the work done by a picker tender. The work is usually so arranged that the hopper feeder can go from one picker to the other, starting back again when he has filled the last one. He works leisurely, is on his feet, but moves about. While the openers are in operation the feeder has to be active and alert. In a well organized mill the pickers take up just what the openers deliver. However, there is usually a surplus from the openers, requiring them to stop for a few minutes, thus giving the hopper feeder one or two short periods a day in which he has no work to do. There is some lint and dust in the atmosphere, particularly if the feeder has to carry the cotton in his arms.

Picker tender.—The term "picker tender" is used in place of the more specific terms "breaker-picker tender," "intermediate-picker tender," and "finisher-picker tender," because the duties of all are practically the same. The machines are placed so that the front of one will be opposite the back of another. The operative is required to take the laps off one and place them on the apron of the other, each operative having from four to six pickers to doff and as many to feed. Sometimes they work in pairs, particularly while doffing or taking off the laps.

The lap rolls on the breaker, the intermediate, and the finisher pickers in the same way, so that doffing is practically the same in each case. The pickers, except sometimes the breakers, stop automatically. As soon as a picker stops, one operative pulls out the lap pin on which the lap is wound, while the other pushes in a wooden pin or a small steel pin. He then lifts off the roll and places it on end on the floor, the sheet or lap tearing as the roll is

removed. The other operative replaces the lap pin, starts the machine by throwing a lever, and starts the lap rolling in the pin. The machines are doffed in rotation. The laps from the finishers are weighed and if more than 1 per cent off weight are run through again. If this occurs often, the machine is adjusted.

Feeding the apron of the intermediate and the finisher pickers simply requires removing the pin of the lap that is running out and lifting a new lap from the floor a few feet away and placing it on the apron in position. It unrolls itself. A number of laps (usually four) are placed on the aprons of the intermediate and finishers so they will unroll and feed in in a sheet of four thicknesses—this on the theory that, if the laps are not of uniform weight, yard for yard, any difference will be reduced to one-fourth in the aggregate.

It usually takes from 10 to 12 minutes to make a roll of lap, and 3 to 4 minutes for two operatives to doff 8 to 12 pickers. It takes about 45 to 50 minutes for a lap on an apron to unroll. Each man has two or three aprons to keep supplied, which means three or four between each doffing. As it takes less than a minute to put on a lap, there are some few minutes between each doff during which the operative has nothing to do, but he must be on hand ready to doff the instant the machine stops, and he must set a new lap the instant the old runs out. In some mills the picker tender devotes the time between doffs to oiling and sweeping, and emptying the mote boxes, while in others there are other hands to do this work. He must wipe the lint and dust off the outside of the machine, and once a week, when the machines are stopped, he assists in giving them a thorough cleaning under the direction of a foreman. The dust produced by the machine is for the most part confined in the machine. There is, however, some dust and lint in the air. When the machines and overhead are being thoroughly cleaned, usually once a week, the work is rather dusty.

CARDING.

The process following picking is carding, and the machine that does the work is called a card. While the picker is primarily designed to clean the cotton, it does not do it completely. Moreover, pickers tear the fiber, so it is not desirable to run the stock through pickers more than is absolutely necessary. Every possible means of getting rid of foreign substances is taken advantage of. It will be remembered that the opener began the cleaning and that grids were provided in the trunk to remove sand or motes.

We now come to the last place where foreign substances can be removed—the card—although cleaning is not the essential function of this machine. The card is designed to comb or brush out the fibers and parallelize them as much as possible. Furthermore, it

is the first machine to give the cotton any semblance of thread, the sheet or lap fed into the back being delivered in front as a soft ropelike strand, about an inch to an inch and a half in diameter, and called sliver.

Card.—A card occupies a floor space about 5 by 10 feet. It consists principally of a large cylinder about 40 inches wide and 50 inches in diameter, called the "cylinder"; a smaller cylinder, called the "doffer"; and on the top an endless belt with strips of wood, called "flats." All of these are covered with very fine wire teeth, set about 400 to the square inch, and called card clothing. Cards are usually placed in rows, adjoining rows having the delivery ends facing each other, so that the card tender can run two rows from the same alley.

A roll of lap from the finisher picker is placed in the lap stand at the back of the card and is fed in slowly on the feed plate. A small cylinder, called a leader or licker-in, with sawlike teeth, revolving more than 1,000 times a minute, picks off the fibers and by the force of the blow removes any dirt there might be, which falls through grids below. The fibers are removed from the leader by the cylinder, the surface speed of which is about twice that of the leader. The cylinder carries the fiber up into contact with the teeth of the top flats which are so arranged that the points of contact cover about one-third of the circumference of the cylinder. The surface speed of the cylinder is much greater than that of the flats, so that the action resulting from the contact combs or straightens out (cards) the fibers. The cotton is removed from the cylinder by the smaller cylinder or doffer, and from this doffer by an oscillating comb called a doffer comb. It is drawn off in a thin transparent sheet called fleece, is drawn through a trumpet and calender rolls, and is delivered in a light, soft rope called sliver. This is led through a coiler head and coiled into a can about 3 feet high and 10 or 12 inches in diameter.

The teeth and wires on the cylinder, doffer, and top flats must be kept clean and sharp in order to do their work properly. Short fibers and dirt lodge between the teeth, necessitating a cleaning or stripping. The top flats, moving very slowly in an endless chain, are constantly being cleaned by a comb at one end, the strippings gathering around a pin or stick covered with felt. The cylinders are stripped at least twice a day, depending on the stock run. Stripping used to be done by hand with a small board covered with card clothing. The method now generally in use is called machine stripping. A small roller called a stripping roller, covered with teeth similar to card clothing, is set so its teeth will penetrate about one-eighth of an inch into the teeth on the cylinder. The stripping roller is run fast while the cylinder is run slowly, the dirt and fibers ad-

hering to the stripping roller. The latter is removed and is itself cleaned by turning against a piece of card clothing on the stripping box, the strippings thus removed falling into the box. Both cylinder and doffer are stripped in this way.

About once a month the teeth on the cylinder, the doffer, and the flats have to be sharpened. This is called grinding, and is done by means of an emery wheel about 8 inches wide, made to traverse back and forth on a shaft which is held in position in brackets.

Card tender.—Card tending is an occupation for a man and requires no particular skill. One operative usually tends all the machines in one alley, i. e., two rows of cards. The number varies from 16 to 32, usually about 20, depending on the layout of the room. Operatives tending a large number are relieved of some of the duties usually required of a card tender, while those tending less than the average are given some additional duty. The work usually required of a card tender is the same as that usually required of most machine tenders, viz, supplying the stock to feed into the machine, watching to see that the machine is doing its work properly, doffing or removing the stock delivered by the machine, and cleaning and oiling the machine. Feeding a card merely requires lifting a roll of lap from brackets behind the card, where it had been placed by a trucker, down on to the lap stands, and placing the end of the new roll in contact with the end of the old so there will be a continuous sheet feeding into the card. Doffing simply requires removing the can from the turntable on which it rests and placing an empty can on the table in its stead, the sliver being broken in the process. The card has to be wiped off and oiled once or twice a day, and from time to time the tender must look to see that the fleece coming off the doffer is even and free from neps or small matted curls of fiber. Carding is important work, and as work not properly done here can not be remedied later, it is important that the operation should be watched fairly closely. It takes from $2\frac{1}{2}$ to 3 hours for a roll of lap to run out, and an operative can place full ones in position in a whole section in 15 to 20 minutes. Cards doff about every half hour, and it is only a matter of 5 or 10 minutes' active work for each doff. Oiling and cleaning take only a few minutes each day, so most of the time the card tender is engaged in watching the operation of his machines. Card tenders tending an extra large number of cards may be relieved of doffing, or oiling, or both. Those tending fewer machines may be required to strip, particularly if stripping is done by hand, or they may only be required to remove the "toppings," as the strippings from the top flats are called. Card tenders do not do their own grinding. They are usually paid on a time basis, though sometimes the number of cards run is the unit.

Card stripper.—Card stripping is an occupation for men. It is one of the dirtiest and most disagreeable jobs in the mill, particularly if there is no vacuum attachment to carry off the lint and dust. Strippers work in pairs. They have a stripping box, a long, narrow box on wheels, with brackets on the top which support the stripping roller when it is moved about. In order to strip, the card is stopped, a door in the cover is opened, exposing the cylinder, and the stripping roller is set in position so its teeth will project into the teeth of the card about one-eighth of an inch. The roller is connected to the loose pulley by a band. Some of the gears are thrown out so that when the machine is started the cylinder revolves slowly and the roller fast. In less than a minute the cylinder is cleaned. The machine is stopped and the roller lifted off, one man lifting at each end, and set on the brackets of the stripping box. One of the strippers gives the roller one or two turns against a piece of card clothing on the box, and the roller is cleaned, the strippings falling into the box. The roller is then placed in position and the doffer is cleaned in the same way as the cylinder. When this is done one of the strippers takes down the pin on which the strippings from the top flats have gathered, removes the strippings and replaces the pin, while the other hand puts the belt and gears back in position and starts the machine running. Strippers go from card to card, making the rounds two to four times a day, depending on the stock used in a given mill. One team usually strips all the cards in the room. It takes about two minutes to strip a card. Strippers work at a fairly rapid rate for two or three hours, while stripping, so they are usually given some free time between strippings. In some mills where there is not enough work to keep strippers busy, they devote part of their time to trucking or sweeping. In most mills there is a hood arrangement over the roller which collects the dust and lint and carries them through a flexible rubber tube to the stripping box. This is called a vacuum attachment. Where this improvement is not supplied great quantities of dust and lint fly into the air, making the job extremely disagreeable, if not unhealthful. Strippers are paid on a time basis.

Card grinder.—Card grinding is an occupation for men. It is the most responsible and highest paid position in connection with carding. The work of a grinder requires some mechanical ability, and a rather full knowledge of cards, which are delicate and complicated machines. Before grinding the lap is removed from the card and the cylinders and flats are thoroughly cleaned. The grinding rollers are then set in position in brackets provided for them on the machines. There is one set for the cylinder, one for the doffer, and one for the top flats. These are adjusted to grind evenly. They are connected to the pulley by bands and are allowed to grind all day, the grinder looking

from time to time to see that they are grinding all right. When the grinding is done, the grinder has to "set up the card," i. e., readjust the parts. He has gauges to measure the distances between the parts. He goes all over the machine carefully and thoroughly, fixes it wherever necessary, and leaves it in perfect adjustment. Sometimes the grinder burnishes the wires on the cylinders and top flats. This is done with a burnishing roller—a roller similar to a stripping roller, except that the teeth are straight and longer. This roller is set in position and run a few hours to remove any rough edges or burrs caused by grinding. One card is usually "set up" while another is being ground. Sometimes two cards are ground at the same time because a grinder can set up about two a day, and, as it takes about a day to grind one, this keeps him busy. In most mills the grinder is the foreman or section hand of carding; sometimes the drawing is under his supervision; he often is required to inspect and repair the drawing frames; in some places he oils; in others he cleans and generally looks after the shafting and belts in his section of the mill. While his work is responsible, it is not hard, nor is he required to devote his attention to it constantly. He is paid on a time basis.

COMBING.

Combing is the process of separating short fibers and neps from the long fibers, and making the long fibers lie parallel. This process is used only in the manufacture of the highest grades of goods, when it is essential to have only the longest fibers, and those of uniform length. It is expensive, because there is a very high per cent of waste. Yarns made of combed stock are known as combed yarns to distinguish them from carded yarns, yarns made of stock that has only been carded. The sliver from the card is first put through a machine called a sliver lap machine, which takes from 14 to 20 ends of sliver and lays them side by side in a sheet 8 to 10 inches wide, which is rolled to a diameter of 12 to 14 inches. These laps are then put through a ribbon lap machine which draws the fibers out as in the drawing processes (described later), and by doubling six laps into one, delivers a lap of much more even density and weight than it received. This lap is then fed up to the comber which combs out the short fibers and neps and delivers the long fibers in a sliver, which is coiled in a can ready to be taken to the first drawing process.

Sliver lap machine, or sliver lapper.—The sliver lap machine is a comparatively small machine designed to make one roll of sliver lap. It consists principally of a guide plate in the back, three pairs of draft or drawing rollers (see drawing frame), a pair of smooth steel calender or press rollers, and the balling or lap-rolling device.

Slivers from several cans (14 to 20) placed behind the machine are drawn over the guide plate, guided parallel through grooves, and led between the draft rollers, where they are drawn out slightly. The cotton emerges from the rollers as one sheet, is pressed by the calender rollers, and is wound on a wooden pin between two broad steel flanges into a roll from 12 to 14 inches in diameter. This machine is provided with two stop motions, one connected with a measuring clock, which stops the machine when a full ball is rolled, and the other at the back, which stops the machine whenever a sliver end breaks, preventing thin places in the lap.

Ribbon lap machine or ribbon lapper.—The ribbon lapper is a machine something like a drawing frame, and it accomplishes the same purpose, except that it draws out the cotton in the form of a lap instead of as a sliver. There are usually 6 sections to this machine, each section with four sets of draft rollers designed to draw out one lap from the sliver lapper. At the back, each section has two fluted rollers on which the lap rests to unwind. In front is a long smooth plate running the length of the frame and about the width of the lap. At one end of this sliver plate is a pair of heavy calender rollers and a device for winding the lap similar to that on the sliver lap machine. Six laps are placed, one on each pair of fluted rollers, and the ends drawn between the draft rollers, which draw out the lap to about one-sixth its former weight. The thin lap delivered at the front rollers makes a half turn, being guided onto the sliver plate by a smooth curved plate. Each succeeding lap is guided onto the one before it, so that the six laps pass between the calender rollers where they are pressed into one and rolled into a ball as on the sliver lapper. This machine has a stop motion that stops it when a full roll of lap is made, and another which stops it when a lap runs out in back.

Comber or comb.—The comber is one of the most complicated machines in the mill. It is made up of six or eight heads, exactly alike, and all working in unison. Each head takes one lap from the ribbon lapper, combs it, and delivers it as a sliver to a tray that runs the length of the front of the frame. The slivers are all drawn parallel in this tray to one end where they pass through a set of drawing or draft rollers and are finally coiled, as one sliver in a can, just as the sliver from the card is. The mechanism in each head is very intricate. The lap is laid on a pair of fluted rollers at the back of the machine and the end drawn through a pair of feed rollers. These feed rollers deliver the stock intermittently, being stopped while the combing is going on. The fibers in front of the feed rollers are held tightly between a pair of nippers while several rows of sharp needles, set about ninety to an inch on about one-third of the circumference of a cylinder, are drawn through the projecting

fibers. When these teeth have passed through the cotton, removing the short fibers and neps, which are in turn removed from the teeth by a brush and carried off through a chute as waste, the other side of the cylinder, which is fluted, in connection with a draw roller on top, draws the combed fibers forward. Before this takes place, however, but after the teeth have combed out the cotton, the delivery rollers in front turn back a little, returning some of the cotton already combed. Also, the nippers release the cotton in front of the feed rollers and another comb, this time only one row of teeth, and projecting from above, drops down slightly so the teeth will project through the cotton. Thus when the draw rollers carry the lap forward, it is drawn through this top comb, and the ends that were held by the nippers are combed. These last combed fibers join to those previously combed, and all are carried forward as one web by the delivery rollers. The feed rollers now draw in another supply which is caught by the nippers, combed, and passed on as before. The combed lap is narrowed into a sliver by a trumpet in front of the delivery rolls. This sliver is guided onto the plate in front, turned at right angles, and led parallel to the slivers from the other heads. All are drawn between a set of draft rollers where the fibers are drawn out a little, then united through a trumpet, and finally coiled in a can to be taken to the first drawing process. The comber has to be delicately set and timed, depending on the minimum length of fiber to be retained.

Sliver lap machine tender.—Sliver lap machine tenders may be either men or women, but more frequently are women. Each operative can run three machines easily. Her principal work is to keep the ends of sliver up at the back and doff the rolls when full. Given an average of 16 ends feeding up to each machine, each operative would have about 48 cans to replace with full ones as they empty. This simply requires taking away the empty can and placing a full one in position and joining the new end to the old sliver. The ends join easily by merely resting one on the other. The machine automatically stops when an end runs out or one breaks, thus relieving the operative of constant watching. When laps are full the machine stops automatically and the operative has to remove them and start new ones on the pins. While these operatives do not have to watch constantly the operation of their machines, they have to be at hand and piece up if an end breaks. They may or may not oil, but always keep their machines clean. They work standing, and fairly constantly. They are paid either by the hour or by the hank.

Ribbon lapper tender.—Ribbon lapper tenders may be either men or women, usually women, however. Three frames is the usual number assigned to each person. They start new laps from the sliver

lapper as the old ones run out and doff the ball of lap at front. Running three frames would require keeping 18 laps supplied and doffing three heads. Laps run out irregularly, and ends break, and the thin ribbon from each head often curls up on the trough in front and has to be straightened; all of which things require the almost constant watching of the operative. Ribbon lapper tenders work standing and moderately fast, but the work is not hard. They clean their machines, and may or may not oil them. There is little danger of accidents, as the machines are well protected. However, there is some lint in the air which may or may not be dangerous. These operatives are paid either on a time or piece basis, the unit of piece being a hank.

Comber tender.—Comber tenders may be either men or women, though women seem to be more generally employed at this work. Each tender runs about six frames, or combs, of eight heads each. The large number of frames assigned to each operative is made possible by the much slower delivery of combs as compared with other machines in this department. Comber tenders creel the comb just like the operatives do the ribbon lapper, and they doff the cans at the delivery end when full. Creeling and doffing do not keep the tender constantly at work, but she must be at hand for any irregularity in the working or clogging of any of the complicated parts of the comb. The tender does not adjust, but she usually oils and cleans the combs, and she has to remove the neps from underneath every once in a while. The work is neither hard nor dangerous. Comber tenders are paid either by the hour or by the hank.

DRAWING.

In the manufacture of most cotton cloth the process following carding is called drawing. For the finer grades of cloth, in which long fibers are used, there is a process between carding and drawing called combing. While drawing is the specific name for the work accomplished by the machine immediately following the card, it is a general term which is sometimes applied to the complete process between carding and spinning, for the sole purpose of all the machines—the drawing frame, the slubber, the intermediate frame, the fine frame, and the jack frame—is to gradually draw out the rope of card sliver to the fineness desired for the yarn to be spun. The amount of "drawing out" done by a machine is called the "draft" of that machine.

The machines used in drawing out the stock are of two kinds, the drawing frame and the fly frame. The latter includes the slubber, the intermediate frame, the fine frame, and the jack frame, all built on the same principle, and often collectively called roving

frames as well as fly frames. Very often the term speeder frame or speeder is given to any or all of the frames after the slubber.

Drawing frame.—Drawing frames are built in sections (1 to 5), called "heads," each head being about 10 feet long, with six or eight deliveries, and run independently of the other heads in the frame. The sliver from the cards is drawn from cans set behind the drawing frame and drawn out between four sets of draft rollers. Draft rollers are small fluted steel rollers set horizontally, one pair in front of the other a distance a little more than the length of the fiber being worked. Each succeeding pair is geared to run faster than the pair immediately behind it, and passes fewer fibers at a time, and, so, a lighter strand. By changing the relative speeds of the draft rollers, the amount of draft (drawing out) can be changed. It is usual to have six card slivers drawn, each to one-sixth its weight; then all are united at front through a trumpet and coiled as one sliver in a can. With such a draft no progress is made toward reducing the size of the strand, but the doubling of the six slivers into one results in a sliver of much more even density, and the pull of the draft rollers helps to take the natural curl out of the fibers and to parallelize them. The sliver from the drawing frames is called "drawing sliver," just as the sliver from the cards is called "card sliver." The stock is usually run through the drawing frames two or three times, and to distinguish the product of each the terms "first drawing," "second drawing" are applied, the last drawing usually being called "finished drawing."

Railway head.—The railway head is designed to accomplish the same thing as the drawing frame, and does it in the same general way. The principal difference is in the manner of feeding. Where railway heads are used, the sliver, instead of being coiled into cans, is delivered into a trough, or railway. The slivers from six or eight cards are delivered into the same trough, and all are carried along on a moving belt to the back rollers of the railway head. This railway, or connection between the card and the railway head, makes the operation of one dependent on the operation of the other. In modern mills this dependence is overcome by abolishing railway heads, and using cans to move the card sliver to the drawing frames.

Fly frames.—The term "fly frames" includes the slubber, the intermediate, the fine frame, and the jack frame. All are constructed on the same general principle, and each carries out another step in the same process—drawing—and the drawing is always accomplished by moving the stock from the slower to the faster moving rollers. The distinguishing feature of the fly frames is the manner of delivering the stock, the rollers for drawing being practically the same as those in the drawing frame, except that they grow smaller as the stock grows finer. These machines do not coil the

strand in a can, but wind it on a bobbin. The device for winding on the bobbin is called a flyer, hence the term "fly frames."

Fly frames vary from about 35 to 45 feet in length. The draft rollers are in sets extending the length of the frame. Along the front, somewhat lower than the rollers, are a number of upright spindles, one for each pair of draft rollers. The number varies from about 72 on slubbers to about 160 to 170 on the jack frames. The finished drawing sliver is fed from cans to the slubber where it is drawn out and wound on a bobbin. A slight twist is put in the strand now to make it hold together. This twist is accomplished by the flyer, an arrangement which fits on the top of the spindle, and which is shaped somewhat like an inverted letter "W" with the outer legs somewhat prolonged. The strand is threaded through the flyer and guided onto the bobbin by it. The bobbin turns with the spindle, but the flyer turns independently and either a little faster or a little slower than the spindle. The mechanism for turning these parts to put in the proper twist and to wind or "build" the bobbin is very intricate. The bobbins of roving are taken from the slubber and are set up on the intermediate frame in a creel, or rack, on upright pins set in steps so the bobbins will unwind freely. Each succeeding frame draws out the strand and winds it on a bobbin somewhat smaller (12 inches on the lubber to 4 on the jack frames). As the bobbins decrease in size and the roving becomes smaller and firmer the speed of the spindles increases (from about 700 revolutions per minute on the slubber to about 1,700 on the jack frames). While the stock delivered from all fly frames is called "roving," sometimes that from each individual frame is given a distinctive name, as "slubbing" from the slubbers, and "speeder roving" from the speeders.

Not all the different fly frames are used in all mills. The number depends on the counts being spun. All mills use a slubber. Those making coarse numbers take the roving from here directly to the fine frames, then to the spinning room. Those making medium numbers (and this includes most mills) use the intermediate and the fine frame. Only the mills spinning the finest numbers use the jack frame.

Drawing frame tender.—Both men and women are employed to tend drawing frames, men predominating slightly. Each operative runs from four to six heads. There usually are about 36 ends of sliver feeding into each head from as many cans. As the cans empty, the tender must replace them with full ones, joining the tail end of the old sliver onto the leading end of the new by twisting them together, or by laying the new on the old just as the end passes between the rollers. When the cans at the front of the frame are full, the machine stops automatically. The tender has to replace the full

cans with empty ones, breaking the sliver, which starts a new coil in the empty can. When an end breaks or laps the machine automatically stops. It is then the duty of the tender to mend the break and start the machine. Levers are placed at both ends of each frame, both front and back. Each drawing frame tender has from 100 to 140 cans at the back of his machine to replace as they empty. They are arranged to run out at irregular intervals, it taking from 2 to 2½ hours for a can to empty. The cans in front fill up in about 25 to 30 minutes, necessitating doffing that often. Sliver has very little strength and breaks more or less frequently, requiring the operative to remain in the vicinity of his machine. He has to wipe off his machines three or four times a day and usually keeps them oiled. However, in some mills the oiling is done by the fixer. In mills where railway heads are used they are run by drawing frame tenders, in conjunction with a drawing frame. The drawing frame tender is not required to work hard nor is his constant attention required. He works on his feet, moving about. The work produces a little lint which is present in the air. In some mills drawing frame tenders are time workers, in others they are paid by the number of heads run, and in still others they are paid so much a hank (a hank in cotton is 840 yards).

Slubber tender.—Men usually tend slubbers because the full bobbins are heavy, weighing from 24 to 44 ounces, and men can doff them faster. One operative usually tends two frames, which are set facing each other so he can watch both in the same alley. Slubber tenders must replace the empty cans of sliver behind their frames with full ones and piece up the ends if they break. One end of sliver is joined to another by twisting them together between the palms of the hands. The principal active labor performed by the slubber tender is when doffing. Just before the bobbins are full the operative goes along the frame with a box of empty bobbins and places two on the spindle rack beside each pair of spindles. When the machine is stopped he removes the flyers from the front row of spindles, the act of removing the flyer breaking the roving. He places the flyers on top of the roller covers in such a way that he can put each flyer back on the spindle it came off. He then goes along the frame removing the full bobbins off the front row, putting them into his roving box. When this is done he goes the length of the frame, removing the filled bobbins on the back row and placing empty bobbins on both rows at the same time. He takes off the flyer with one hand, removes the full bobbin, and sets on the empty one with the other, and replaces the flyer. When the bobbins are all changed he gives the roving that hangs from the flyer presser a twist around the empty bobbin. Then he starts his machine, slowly at first, so the ends will not break.

Doffing a slubber takes about 10 minutes, and each frame has to be doffed about every 50 to 60 minutes, depending on the count of the roving. The slubber requires more constant attention than the drawing frame, for when breaks occur the machine does not automatically stop. When a break occurs it shows up by twisting around the head of the flyer. The operative must discover breaks as soon as they occur and piece the ends together. This requires some agility, though levers for starting and stopping are conveniently placed on the frame.

Slubber tenders can not leave the vicinity of their machines, though they may not be engaged in active labor more than half the time. They acquire considerable skill and speed in doffing and piecing up ends, as it is to their advantage to keep the machines running. Sometimes two operatives will assist each other doffing and thus reduce by about one-half the time the machine is stopped. The work is not hard or dangerous though doffing requires a half bend of the body which is extremely tiring to one not used to it. The slubber tender must keep his machine wiped off and oiled, but this is only a matter of a few minutes each day. He is paid by the number of hanks delivered from his machines.

Speeder tender.—Both men and women are employed as speeder tenders, but women seem to predominate. Women can be employed to better advantage on the finer roving frames because the weight of the full bobbins is considerably less than on the slubber, sometimes weighing as low as 4 ounces on the jack frames. The work required of a speeder tender is practically the same as that required of a slubber tender. The frame must be watched more or less constantly for breaks, and the doffing is done just the same as on the slubber. The principal difference is in the manner of feeding. Instead of replacing the empty cans of sliver, as the slubber tender does, the speeder tender has to replace the empty bobbins of roving in the creel with full ones. This simply requires the taking of the empty bobbins and skewer, on which it turns, out of the sockets, changing the bobbins, replacing the skewer in its sockets again, and joining the roving by merely laying one end on the other. The bobbins run out at irregular intervals. Speeder tenders usually run two frames, placed with the front of each facing the other, though this arrangement is not always possible in some mills. The finer the frame the less often it doffs, but the operative has more spindles to watch and more roving to set in. The work grows lighter as the frame grows finer, but doffing always requires the same awkward bend of the body. Speeder tenders are usually required to wipe off and oil their machines. They are usually paid on a piece basis, the hank being the unit of piece.

Can boy.—This occupation, as the name would indicate, is usually filled by boys. However, old men who are beyond running a machine are sometimes employed. This hand is required to move the cans of sliver from one machine to the other. Cans have to be moved from the cards to the drawing frames and from the drawing frames to the slubbers. The part that is assigned to one hand depends on the size and organization of the mill. The work is not hard, the hand pushing or dragging about five cans at a time. The work is usually so arranged that one keeps busy most of the time, working leisurely. The boys sometimes hurry and have some free time when the job is up. They are paid on a time basis. This work is in the class with trucking.

Roving hauler.—Roving hauling is an occupation usually filled by men or boys. The work is absolutely unskilled, but requires a person who is fairly tall or has a good reach. This hand pushes the boxes of roving from the frames after doffing and piles the bobbins on a shelf over the creel of the frame it is to be used on. Roving is hauled from the slubber to the intermediate frame; from the intermediate to the fine frame; from the fine to the jack frame; and from the jack frame to the spinning frame. Roving boxes are about 5 feet long, 2 feet wide, and 4 feet deep. They are on wheels and can be pushed about easily. Roving haulers are usually given enough work to keep them busy, working leisurely. It is work that can be hurried, and when the job is up, these hands have a little free time. They are paid on a time basis. This work is trucking, but is usually specialized.

SPINNING DEPARTMENT.

The spinning department in most mills includes all the processes beginning with spinning and ending with warping. For convenience in arrangement, however, spinning only is treated under this head, and other operations usually in the spinning department are included under "warp preparation."

The occupations are as follows:

General:

- Second hand.
- Section hand.
- Oiler.
- Waste picker.
- Sweeper.
- Scrubber.

Spinning:

- Frame spinner.
- Mule spinner.
- Doffer.
- Bander.
- Roving hauler. (*See* Drawing.)

SPINNING.

The final process in making yarn is spinning, and this follows directly after speeding, or the last drawing process. Spinning is

putting the twist in the strand of cotton, the twisted cotton being called yarn. The machines used for spinning accomplish three distinct steps—drawing out the roving to its final size, twisting it to give it strength, and winding it on a bobbin (cop on mules). There are two very different types of machines used for spinning cotton—the mule and the ring frame. The ring frame is the more modern machine and has displaced the mule wherever possible, principally for reasons of economy. The mule, however, is still retained to spin the finer numbers and to impart a softer twist where that is desirable. Yarn is spun for "warp" or for "filling." Warp is the yarn that runs the lengthways of the cloth, while filling is that which is woven back and forth at right angles to the warp. So far as spinning is concerned both warp and filling are made in the same way, but the warp has more "twist," i. e., more twists of the fibers per inch, and is "built" differently on the bobbin.

Ring spinning frame.—The ring spinning frame is similar in appearance to the fly frame, except that the stock is delivered on both sides instead of on one, and that the spindles have no flyers on them. In place of the flyer there is a little C-shaped clip, called a "traveler" which circulates freely around a ring that encircles each spindle. The spindles are set perpendicularly, 3½ to 5 inches apart, and the bobbins fit on them and turn with them. Each spindle is driven by a round cord, called a band, which connects the whorl of the spindle with a tin cylinder that extends the length of the frame, and is connected with the driving pulley at one end, called the head. The speed of the spindles varies from 6,000 to 10,000 revolutions a minute, and is regulated to take up the stock delivered at the front rollers, putting the required twist in it. The roving is set up in a creel and is drawn out by draft rollers just as on the fly flames. After it leaves the front rollers it is led through a guide eye centered directly over the spindle, through the traveler, and onto the bobbin. The bobbin is wound, or "built," by the properly timed up and down motion of a rail, called the "ring rail," which extends the length of the frame, and to which all the rings are fastened. Bobbins are wound in two ways, depending on whether the yarn is for warp or for filling. Warp yarn is wound in layers extending the length of the bobbin, tapering slightly at both ends as the bobbin fills. Filling yarn is wound in conical layers of about two inch traverse. Some frames are built for winding warp only, and some for winding filling only. Still others are equipped so they can be used for either warp or filling. All the intricate driving gears and cams are enclosed in casing, thus removing practically all danger of accident.

Mule.—The self-acting mule is perhaps the most ingenious and complicated machine in the mill. It consists of three main parts: The beam, the carriage, and the headstock. The beam supports the creel for the roving and the rollers for drawing the stock out. The carriage contains the spindles, arranged in a single row and tilted slightly toward the rolls. On the carriage also is the drum or cylinder for driving the spindles and the fallers that guide the yarn as it winds. The carriage is made to move back and forth a distance usually of 64 inches on tracks in front of the beam. The headstock consists of the pulleys, the gears, the chains, scrolls, cams, and all the various mechanisms for operating the different parts of the mule. The headstock is a little to the right of center, dividing the machine into two parts, a long side and a short side. Mules take up a large amount of floor space. They vary in length from 50 to 100 or more feet, depending on the number of spindles (200 to 400), and they are about 10 feet deep when the carriage is out.

The mule accomplishes the same thing as the frame; i. e. draws out, twists, and winds. It does not, however, have one continuous operation as the spinning frame does, but rather four distinct motions: Drawing and twisting; backing off; winding; and reengaging, the cycle being made about four times a minute. The roving is set in a creel and drawn through a set of rollers similar to the spinning frame. When the rollers are delivering the roving in front, the carriage is moving out fast enough to keep the yarn taut, and the spindles are turning to put the twist in the yarn, the tilt of the spindle causing the yarn to slip off the top at each turn instead of winding on it. Thus drawing and twisting are accomplished at the same time. When the carriage has gone out the full distance it stops, the spindles stop, and the rollers stop, and the second operation takes place instantly thereafter. This second operation, backing off, is merely a preparation for the winding. There is a quick reversal of direction in the turn of the spindle—just enough to unwind the few turns of yarn between the top of the cop and the point of the spindle—together with a change in position of the fallers, the winding faller moving down into position, and the counter-faller moving up to maintain an even tension on the yarn. Then comes the third operation, or winding, which is accomplished by causing the carriage to move in while the spindles turn to wind on the yarn. The yarn is guided while winding by the movement of the winding faller, and it is always wound "filling wind," i. e., short cone-shaped layers. The yarn is wound into a "cop" either directly on the spindle or on a paper tube slipped over the spindle. Just as soon as all the spun yarn is wound on and the carriage has got as close as it goes to the beam, the fourth motion, reengaging,

takes place. This, like the second, is merely a change in the position of the parts preparatory to the next, or first, operation. The fallers are moved, releasing the yarn, and the mechanism for winding and twisting is set in motion ready to repeat the cycle.

The smoothness of operation of the mule makes it seem simple, but there are the most delicate adjustments for timing and speed. When winding and twisting, the rollers, the carriage, and the spindles must start simultaneously; the speed must be regulated to give the proper twist; the different parts must stop at the proper instant; and the reverse motion of the spindles must be just enough to do its part. The builder motion, like all builder motions, is extremely intricate. All the changes from one motion to the other are accomplished with such speed that no time whatever is lost.

Ring frame spinner.—Females are employed for the most part to run spinning frames, but males are employed in some places. Overseers claim that young girls make the best spinners. Grown persons who spin usually learned when young, because it is more difficult in later life to get the knack.

Frame spinners tend the operation of the machine but are required to know very little about the mechanism. Their principal duties are to "set in roving," piece up broken ends, and clean the frame. Doffing and oiling are not done by the spinner, but by hands employed especially for that work. "Setting in roving" is setting a full bobbin in the creel in place of an empty one. This is done just as "creeling" the fly frames is, but the bobbins empty at more irregular intervals. It is possible for the spinner to change her roving before it runs completely out, what is left being thrown into a receptacle for "white" waste and sent back to be run through all the processes again. Care must be taken in setting in roving not to break the other ends of roving, as the bobbins are set very close together on the creel. "Piecing up" is joining the ends of yarn between the rollers and the spindle when breaks occur there. The yarn does break here more or less frequently, depending on the grade of stock, the atmospheric conditions, etc. When a break, called an "end down," occurs, it does not affect the running of the rest of the spindles, but the cotton delivered at the rollers winds around the scavenger roller and shows up from a distance as a white ring. One must possess the knack to piece up and end, for it must be done with great speed. The bobbin is lifted off the spindle and a little yarn pulled off and the bobbin replaced. The yarn is hooked under the traveler, put through the guide eye, and the end put against the end coming from the front rollers. The instant the two ends meet they are twisted together by a quick movement of the thumb and finger holding the thread. The twist must be given at the proper instant, then the joint will not show. Poor twisting or no twisting leaves a lump

in the yarn, and is called "dabbing." The knack of piecing up fast and well can be acquired only from practice. The whole operation requires nimble fingers and a certain deftness which girls possess more than others.

Cleaning, the third principal function of a spinner, is perhaps more important on a spinning frame than on most other machines, and it takes more of the spinner's time. Three or four times a day the spinner must lift the covers off the top rollers and pick the lint off the strips of flannel, called top-roll clearers. She must also clean the lap or scavenger rollers, usually after each doff. The scavenger rollers are wooden rollers covered with denim which clears the bottom front draft roller and picks up the cotton when an end breaks, thus preventing a lap on the draft rollers. Scavenger rollers are about 15 or 16 inches long and it takes some dexterity to take them out to clean them without breaking down some ends. Spinners wipe off other parts of the frame several times a day, a clean machine being essential to good spinning. Great care must be exercised not to break down the ends when cleaning, and here, again, girls, on account of their small hands, have the advantage in being able to get between the threads.

Spinners do not tend both sides of a spinning frame, as a rule, but tend the sides that face each other in the same alley. Good spinners tend from 6 to 10 sides. The number of sides is usually the measure of pay. A girl tending eight sides would have approximately 800 spindles, and roving to be set in for each. The length of time a bobbin of roving lasts varies so with the number of yarn spun that it is almost useless to make any statement of the frequency with which the operative has to set in full bobbins. For coarse yarns roving runs about a day, and for finer yarns much longer.

Spinners begin by running three or four sides, and, as they become more skilled, they take an additional side or two. Some extra good spinners may run as many as 12 sides. While spinning does not require constant active labor or constant attention, the operative is required to remain on her feet in the vicinity of her machines. Sometimes, however, when the stock is running well, and the job is up, the spinner may leave her machines for several minutes. The work is light, and there is no danger of accident, except through gross carelessness.

Mule spinner.—Men only are employed as mule spinners, and for two principal reasons; first, because the work requires more mechanical skill than most women possess, and, secondly, because of the long apprenticeship. Mule spinners usually run two mules, set face to face, though sometimes a spinner will run only one when it is a very long one. The length of the mule usually varies with the

width of the mill. The mule spinner usually has full charge of the operation of the mule—oils, cleans, and makes minor repairs on it—and is provided with one or two assistants. These assistants are usually apprentice spinners. Sometimes the work of the assistants is specialized and they are given particular designations, such as, "piecers," those who help keep up the ends; "doffers," those who help to doff; and "back boys," those who set in the roving.

The mule spinner must understand the mechanism of the mule, the working of it, at least, if not the principle. He must see that the machine runs smoothly, must know when any part is out of order, and must be able to adjust it. The routine work of the mule spinner, like that of the frame spinner, consists mainly in "setting in roving," piecing up ends, doffing, and cleaning. The responsibility and direction of all these operations is the spinner's, although he is aided by his assistants. "Setting in roving," or "creeling," is done exactly the same as on the spinning frame and on all the other machines where the stock is drawn between rollers from bobbins in a creel. "Piecing up" is practically the same as on the spinning frame, a little yarn being drawn off the spindle and the end twisted to the end from the rollers. Piecing has to be done when the carriage is on its outward run, but before it is out too far for the piecer to reach to the rollers. Doffing is removing the full cops from the spindles and setting paper tubes on the spindles for the new cops to build on. This is done principally by the assistant, though the spinner helps in order to get it done quickly. Preparing the mule for doffing, and starting it afterward to build a new cop, requires the personal attention and skill of the spinner, and requires the assistance of at least one other person.

When the cop is made, i. e., built up to the desired size, the lever is thrown to stop the mule just as the carriage reaches the end of its outward run, there being enough momentum for the mule to "back off" and the carriage to run in a little way. The rim band is turned back a little by hand to allow the yarn to slacken, and the winding faller is depressed to the base of the spindle and is held there by putting a wooden block between the faller arm and the counter-faller shaft. The counter-faller is held down by a hook on the shaft for that purpose. The "quadrant" and "builder motion" (driving mechanism) are reset into position to begin winding a new cop. The lever is thrown on for an instant, causing the carriage to run in for about three inches, winding a few coils of yarn around the spindle below the paper tube on which the cop is wound. This binds the yarn so it will start to wind in a tight coil when the mule is started again. The cops are now removed and new paper tubes set on the spindles. The block of wood is removed, allowing the winding faller to assume its proper position for winding a new cop, and the tubes are forced

down on the spindles by a wooden block called a "tube setter." Care must be taken in releasing the counter-faller so as not to let it fly up and break the yarn, one person holding the faller while another releases the catch. The mule is now started slowly and carefully, and the counter faller allowed to rise gradually. The damage that will result from carelessness or incompetency in starting is considerable. Getting a good start, building a good bottom, is the secret of winding a good cop.

The remaining duties of the mule spinner are cleaning and oiling, work that needs no special description. The roller clearers have to be taken off and cleaned and this requires care not to break the ends. Mule spinners work on their feet, and the job is so arranged that they have little time to sit down or leave their machines. They are usually paid on a piece basis, so much a pound.

Doffer.—Doffer is the term applied to the boys or young men who doff the spinning frame. Nearly all the machines in the mill have to be doffed, i. e., have the finished product removed; but the occupation term is here confined to those mentioned above.

The specific work of a doffer is to remove the full bobbin from the spindle and set on an empty one. Doffers usually work in teams of two or four. Both sides of a frame are doffed at the same time, and the greater the number who work on it the less time it is stopped, and production is increased by that much. There are two distinct methods of doffing a spinning frame, "stick" doffing and "twist" doffing, the former being the most common method.

When the stick doffing method is used one of the doffers stops the frame and pushes the ring rail down as far as it will go. The lever is then thrown on and off with a jerk, winding the yarn a few times around the spindle below the bobbin and leaving the yarn slack so the ends will not break. The guide rail is thrown back out of the way. The doffer takes as many bobbins from his bobbin box as he can hold in one hand, and he pushes them as he goes along the frame. With his free hand he lifts off the full bobbin and with the other pushes an empty one down on the spindle. When he lifts off the full bobbin he breaks the yarn, and the yarn that was twisted below the bobbin now winds around the blade. So when the empty bobbin is pushed down on the spindle the yarn is held fast between the spindle and the bobbin and will start winding as soon as the frame is started.

When the twist method is used the ring rail is not run down so far, but is stopped a little below the middle of the traverse. The yarn is not wound around the spindle as before, but a little slack is left. The doffer takes his empty bobbins in one hand and lifts off the full one with the other as in the stick method. But before he puts the empty bobbin on the spindle and before he breaks the

yarn, he moves the empty one in such a way that the yarn is wound two or three times around it. With this little start the yarn will wind immediately the machine is started.

The stick method is much the faster, and it has the advantage of a smooth wind from the start, which is particularly important for filling going right to the loom. However, this method is not possible on the old type of frame, as the spindles were not made so the yarn could be wound around them below the bobbin.

Doffers acquire considerable skill, and can change bobbins with great rapidity. In addition to changing bobbins they are required to know something about the machine and how to piece up ends. Each time they doff, before starting the machine, they have to wind the builder motion back to its starting point. They must start the machine without a jerk so the ends will not break down, and they must piece up the ends that do break. "Piecing up" is slightly different from that done by the spinner because the bobbin is empty and there is no end to wind off to join that at the rolls. The doffer holds a full quill under his chin and lets some yarn wind off that on to the bobbin. Then he has an end which he can join to that coming from the rollers, so he pieces up just as the spinner does.

Two good doffers could doff a frame in about three minutes. Small boys usually make the best doffers. They do not have to bend as far as taller persons, and they are more agile than older persons. Doffers can work only when the frames are ready, i. e., when the bobbins are full. There must be enough doffers employed to have some ready to doff as soon as the frame is ready, so there are necessarily periods of waiting. This time is free time, and in many mills equals the actual working period. Doffers are paid usually by the day, but some mills are adopting the piece method, basing the pay on the number of doffs per side. Boys begin doffing at the earliest age possible, but seldom remain to maturity. The work leads to section hand in the spinning room, but most of the boys turn to some other occupation.

Bander or band boy.—Banding is an occupation that is often used as an intermediate step in the promotion of a doffer to a section hand. The work of a bander is to replace broken bands on a spinning frame with new ones, bands being the cords which transmit the power from the cylinder, or drum, to the spindles. Three or four times a day, as necessity requires, the bander goes around the spinning room looking closely for spindles that are not running. This indicates a broken band. To put on a band the bander attaches a weight of some sort to the end, and with a stick having a hook on the end he puts it over the cylinder. He draws it around underneath and ties it around the spindle just under the whorl. When it is tied he slips it up around the whorl.

Banding seems simple, but it requires great care and a reliable man. The knot must be a square one that will not interfere with the running, and it is of the greatest importance that the band be just tight enough. A band can be put on in about a minute, and the number to put on each day varies greatly. Banders are generally required to put bands not only on spinning frames, but on other frames, such as twisters, spoolers, and quillers, as well. Often this work is combined with that of oiling. Banders are paid on a time basis.

WARP PREPARATION DEPARTMENT.

Under this head are grouped several processes in the preparation of the warp for the loom. The grouping here is merely arbitrary for convenience in arrangement. Some of the processes in most mills are under the supervision of the overseer of spinning and some under the boss weaver. In some large mills many, and perhaps all of them, would be combined into a distinct department.

When yarn is spun, it is spun either for warp or for filling. The method of spinning is usually the same, but more twist is put in warp yarn. Filling yarn is ready to go to the loom from the spinning frame or mule, but warp has to be "prepared," i. e., several threads are drawn parallel and wound on a beam, then slashed or sized before being taken to the weave room.

The occupations of this department are as follows:

General:
- Second hand.
- Section hand.
- Oiler.
- Trucker.
- Sweeper.
- Scrubber.
- Yarn hauler. (*See* Trucker.)
- Bobbin hauler. (*See* Trucker.)
- Bobbin checker (usually a section hand).
- Beam changer. (*See* Trucker.)
- Spool hauler. (*See* Trucker.)
- Warp roller. (*See* Trucker.)

Spooling:
- Spooler tender.

Warping:
- Creeler (tie-over girl, changer, tying-in girl).
- Beam warper tender.
- Ball warper tender.

Beaming:
- Beamer (chain) tender.

Slashing:
- Slasher tender.
- Slasher tender's helper.
- Size maker.

SPOOLING.

The first step in the preparation of the warp is spooling, i. e., winding the yarn of several spinning bobbins onto one spool so it can be more easily handled. Spooling is a step made necessary by the fact that it is desirable to have the warp of considerable length, together with the fact that only a limited number of yards can be wound on a bobbin at a spinning frame or mule.

Spooler or spooling frame.—The spooler is a frame about 4 feet wide, 4 feet high, and from 25 to 30 feet long. There are from 50 to 75 spindles in a row on each side of the frame. There is a tin cylinder or drum running the length of the frame from which all the spindles are run. In front of each spindle and a little below it is a bobbin holder and between these is a guide eye. Below the bobbin holder is a box running the length of the frame in which the bobbins from the spinning frame are kept. On top of the frame is a rack where the full and the empty spools are kept.

The spools, which are 6 or 7 inches long, with heads about 5 inches in diameter, are put on the spindles. They do not fit the spindle tightly as the bobbins on a spinning frame do, but rather rest on broad flanges and are turned by the friction of their weights on the flanges. The bobbins are placed in the bobbin holders so they will lie in an almost horizontal position. The yarn is drawn under one of the side guides, through the guide eye to the spool. The yarn is unwound off the bobbin as it winds on the spool, the turn of the spool causing it to wind on the one and off the other. When yarn is taken off cops instead of a bobbin holder there is a dead (stationary) spindle on which the cop is set, and the yarn drawn off the end. The yarn is laid on the spool in layers by the action of the guide eye, which is made to traverse up and down. It is set to run the proper distance, and usually a little slower in the middle than at the extremities so as to build the spool up barrel-shaped. When the spool is full it rubs against a small board, or brake, which stops it.

Spooler tender.—Females are employed as spooler tenders. A spooler tender usually tends one side of a spooler, i. e., from 50 to 75 spindles or spools. She is required to keep the yarn winding on the spools. As soon as a bobbin empties she replaces it with a full one from the bobbin box or trough. When a spool is full she takes it off the spindle, puts it on the rack on top, and puts an empty one on the spindle. In either case she has to tie the end of yarn on the bobbin to the end on the spool, first threading the former under the swinging guide of the holder and through the guide eye. In modern mills the spooler tenders are supplied with a Barber knotter. This is a little machine which is strapped to the left hand and is operated by pushing a little lever that fits on the left thumb. The mechanism

consists principally of a small bill-like arrangement which is made to turn. The two ends to be knotted are laid parallel over two little prongs. Pressing the lever causes the bill to draw the threads around it, forming the loop, while the ends are clamped till the knot is drawn tightly. A tiny knife comes into play, cutting the tail off short. Then the clamps release the ends. It takes only a fraction of a second to tie a knot, and then there is the added advantage of tying a small, firm knot with the smallest possible tail. Spooler tenders keep almost constantly at work. They never have free periods of any length, because bobbins will empty in a very few minutes. Spools do not have to be replaced so often, since one spool holds the yarn from several bobbins (about 15 bobbins of 30 yarn.) Spools fill and bobbins empty at irregular intervals, requiring practically constant watchfulness on the part of the tender. These operatives stand while at work, but they have the advantage of not having to remain in one place. The work is not hard, yet it requires a little more muscular activity than spinning. Little skill is required, but speed is essential, so for this reason spooler tenders are usually paid by the amount of work they do, measured, as a rule, by the number of bobbins of yarn.

WARPING.

Warping is arranging several threads parallel and in one sheet. The several threads or ends are drawn from as many spools, laid an equal distance apart, and wound on a beam. The spools are arranged in a creel so they will unwind without tangling. Changing the spools in a creel is a distinct occupation known as "creeling" or "tying-over." Warp which is to be dyed is not wound on a beam but is gathered into a rope called a "chain" and is wound into a ball. This requires a slight change in the machine, so warpers are called "beam warpers" in the first instance and "ball warpers" in the second, and the occupation "beam warper tending" and "ball warper tending," respectively.

Beam warper.—The beam warper is one of the simpler machines in the mill. There are three principal parts to it—the creel, the combs, and the beam drive. The creel consists of two upright frames or racks placed together at one end and opening in the shape of the letter V. Each rack has several upright bays in which the spools are placed on skewers, one over the other. The creels stand about as high as a person can reach, and they are built in different sizes, holding from 300 to 1,000 spools. The combs are about 4 or 5 feet long and are held in place, one in front of the other, by the two uprights which constitute the frame of the machine. The combs are "expansion combs," i. e., the teeth are capable of being moved closer together or farther apart. The spaces between the

teeth, called "dents," are always of uniform sizes. The back comb has a cap on, and is usually called a "reed." Between the combs are two fixed rollers over which the yarn passes, and between these is a drop roller which rests on the yarn and drops when the yarn slackens, thus preventing tangling. This drop roller also acts to avoid any jerk on the yarn when starting, and thus prevents breaks. In front of the combs and somewhat lower is the driving drum, a roller about 18 inches in diameter. This roller is driven positively. The beam on which the warp is wound rests on this roller and is driven by friction. The turn of the beam pulls the yarn off the spools, the combs guiding the threads parallel and equidistant. Warpers have a measuring motion (device) and a stop motion (device) which operate when a thread breaks, for it is important to have the proper number of threads at all times. When a mechanical stop motion is used, drop wires are set up in front of the combs; when an electrical stop motion, the drop wires are attached to the uprights of the creel. The principal in both cases is that when a thread ceases to come, the wire drops and operates a mechanical or electrical device that stops the machine.

Ball warper.—The ball warper is the same as the beam warper, except in the manner of winding the warp. Instead of the warp being wound directly onto the beam, it is drawn off in front of the warper for about 12 feet, where it is guided narrower by a U-shaped fork, passed around a return wheel and back to the warper, being gradually narrowed until it is a strand or ribbon a little more than an inch wide.

In this form it is called "chain." The device for coiling the chain is called a "balling attachment." It consists of two rollers in the same horizontal plane, positively driven. The chain of warp winds on a wooden roller which is driven by the friction of its weight on the driving drums, and is guided to wind spirally by a traveling eye.

Creeler.—"Creeling" is a hand occupation in which women are employed for the most part. Men sometimes creel, however, The work requires little or no skill, and not a great deal of physical effort. Creeling is changing the empty spools in the creel for the full ones, the warper being stopped while the creeling is done. Spools are not allowed to empty, because it would cause a great deal of trouble in warping if the yarn on the spools ran out. So the "empty" spools the creelers take down are not really empty but may have a great deal of yarn on them.

Creelers work in groups of from two to six, the organization and particular kind of work determining the best arrangement. They distribute themselves in the V-shaped space between the racks. The empty spool and the skewer on which it turns are lifted out of the sockets, the empty spool slipped off the skewer, and the full one put on. The thread is broken on the "empty" spool, and the

end left threaded in the machine is tied to the end of the full spool. The full spools are taken from one box and the empties are put into another.

Creelers work in a cramped space. They have to reach high and bend low. They have to work fast while creeling, for production is stopped. One creeler can change about three spools a minute. Creeling has to be done after the last warp that can be obtained from a set of spools is wound off, and it is difficult to time warpers to keep creelers busy. The management has to choose between having creelers idle waiting for warpers to creel or having warpers (hence production) stopped waiting for creelers to get to them. At best, creelers will be idle a part of their time, and where labor is cheap they are idle from one-third to one-half their time. They are paid on a time basis.

Beam warper tender.—A beam warper tender is an operative who runs a beam warper, each operative running from 2 to 6 machines. Women are employed almost exclusively. The work requires little or no skill and not a great deal of physical effort. All the tender has to do is to see that the required number of ends are winding on the beam. They neither change the spools in the creel nor change the beam. When an end breaks, the machine stops automatically. Then the tender has to tie the ends together, threading through the combs if necessary. They watch for poor thread and break it out. When the required number of yards is wound on the beam the knock-off motion stops the machine and the operative cuts the warp, twists the ends so they will not tangle, and tucks the strand under a few of the coils so it will not unwind. When the trucker removes the beam and sets up a new one, the warper tender fastens the ends of the new warp, which are tied together, on a hook in a depression on the beam. When the work calls for a change in the number of ends on a warp, the warper tender must adjust the expansion combs so the threads will be an equal distance apart on the beam. There is a little crank at the end of the comb, and all that is required is to turn it one way or the other. These operatives oil and clean their own machines. They do not have to watch their machines constantly, because the machines stop automatically. They have to remain near, as breaks may occur at any time.

Ball warper tender.—A ball warper tender is an operative who runs a ball warper. Men are usually employed. The work does not require much skill, but some strength is needed to doff the balls of warp.

It is the operative's duty to see that the required number of ends are being wound in the warp. Whenever an end breaks the machine automatically stops and the tender ties the ends together, thread-

ing through the combs, if necessary. Every so often, usually every 500 yards, the warper tender has to "take a lease," and when the required number of yards are wound he has to doff, i. e., take off the full ball and start another.

"Taking a lease" is separating the alternate threads or alternate groups of threads, so when a rod or string is passed through the threads or groups of threads will alternate over and under the lease rod or lease string. The usual lease takes every other thread and is called a "thread lease." Ball warpers are provided with a "knock-off" device on the measuring motion which is set to stop the machine when 500 yards are wound on, so a lease can be put in. he reed has every other dent partly blocked with solder, so when the reed is raised or lowered the alternate threads are raised or lowered. The ball warper tender first raises the reed and puts a string through the shed formed. Then he lowers the reed, forming a new shed in which the threads that were higher in the first are lower in this, and he puts a string through this shed. When both strings are in, one string is over the threads that the other is under. The ends of the two strings are tied, so the strings will remain in place. Lease strings are put in so, if the warp tangles in dyeing, it will be possible to straighten the ends out in the same flat sheet they formed going through the warper.

When the required number of yards are wound on the ball (4,000 to 6,000 yards) the machine automatically stops. The tender puts a lease in, runs about 10 yards more, puts another in, cuts the warp with a jacknife, and puts the end under a coil so the ball will not unwind. The front part of the upright guide arms can be removed, allowing the ball to be rolled out. The tender removes the pin, puts it into an empty shell or roller, places it on the driving rollers, and puts the guide arms back in position. There is a hook in a depression in the shell which holds the new warp while starting the ball. The operative always starts a warper on slow motion, so as to minimize the strain on the yarn and prevent breaks.

These operatives run from two to five machines, depending on the number of the yarn and the amount wound on a ball. If the yarn is good it breaks less frequently and the operatives have less piecing up to do. They work standing, but move about. Sometimes they have a little time to sit around near their machine, but not often. The work is fairly heavy, as balls of warp weigh from 150 to 300 pounds.

CHAIN DYEING.

Chain dyeing is the process of dyeing great lengths of yarn after it has been warped. Balls of yarn from the ball warper are trucked to the dyehouse, where they are put through the necessary proc-

esses, and then delivered to the beamers to be wound on a beam. For a description of this process see pages 201 to 205.

BEAMING (CHAIN).

Beaming is a process made necessary by dyeing the warp. It is restoring the warp, which was made into a chain on the ball warper, to its original sheetlike form and winding it into layers on a beam. After beaming the dyed warp is at the same stage in the process as white warp after beam warping, i. e., on a back or section beam ready to be run through the slasher.

Chain beamer or beaming frame.—The beaming machine consists of two principal parts, one about 30 feet in front of the other. The front part is called the head, and the back part the tension. The head consists of two uprights which support the section beam. Across the top is an expansion comb just like that on the warper. From arms (called an arch) projecting from the tops of the uprights are hung leather straps which support a swinging comb. The tension consists of two steel drums, about 10 inches in diameter and 15 inches long, supported by uprights. They are placed one above the other and parallel to the beam in the head. The power is applied to turn the beam and is regulated by a treadle on which the operator must keep his foot while the machine is running.

The coil of chain or warp is placed on a revolving table between the head and the tension, a little to one side. The end is drawn through an eye about 10 feet from the floor and passes around the drums, under the lower and over the upper one, two or three times to give it the proper tension. Leaving the top drum it passes to a small return wheel that is placed near the floor just behind the head of the machine, back to a return wheel on the tension drums, then to the head again. Here the threads are separated, each passing through a dent in the striking comb, and one in the expansion comb. The sheet of warp is then wound into layers on the beam, the lease string enabling the operative to lay them in the same order as on the warper.

Beamer (chain) tender.—A beamer tender runs a beamer or beaming frame. It is his duty to see that the threads in the chain are separated in their proper order and wound on the section beam. He must constantly watch for broken threads, tie them up, and if one end is missing, supply the yarn from a bobbin kept on hand for that purpose. It is important that the full number of ends be wound on the beam, and that there be no broken, or flying ends. The beamer tender operates his machine with his foot on a treadle or shipping stick. He stands constantly with one foot on the treadle, holding the swinging comb in one hand and his eyes fixed on the expansion comb. As soon as an end ceases to come through a dent

in the comb he must stop the machine, find the ends and tie them up. If the yarn is tangled he knows it by the pull on the swinging comb and so can stop the machine before the ends break. Beamer tenders set up the empty beams in their frames and take down the full ones. When a warp is about all beamed, the end is tied to the end of a new one so as to keep a continuous run. Each new warp must be threaded in the combs, however. The operatives acquire a certain knack in threading the comb ("laying in the warp," they call it), which enables them to do it very rapidly. The value of putting in the lease strings at the warper now becomes apparent, because the beamer tender can determine the original order of the threads by their alternating position over and under the lease string. An ordinary beamer tender can lay in about six ends with one movement, while some experts can lay in twelve. It is important to have an end in each dent in the comb, and if one gets lost a space must be left and thread supplied from a quill till the lost end shows up. When the threads are all laid in, the comb must be adjusted so they will be spread equidistant on the beam. The swinging comb is not threaded, but is put through the warp near the expansion comb after the latter is threaded, so that there is usually one and seldom more than two ends in each dent. A cap is put on the swinging comb so the ends will not fly out. Beamer tenders are males, usually grown men. Each runs one machine; he oils it, and cleans it. These operatives are paid on the basis of the number of yards beamed, so it is to their advantage to keep the yarn winding on the beam, and to discover and tie up broken ends, and to lay in the warp as quickly as possible. This is one of the very few occupations in the mill that require the operative to keep his foot (or hand) on a lever in order to operate his machine. This is also one of the few that necessitates his standing in one place while working. The worker is not required to work constantly. He may leave his machine, but while away the machine is stopped, production is lessened, hence his earnings are, too. The work is not hard though it requires some little strength to move the warps and change the beams. With certain dyes (logwood) there is a fine dust which is knocked off the yarn when it strikes the swinging comb and flies right into the worker's face. This occupation leads to no other.

SLASHING.

Slashing is the process of coating the threads of the warp with a starchy substance called size. Strength is thereby given to the yarn and the fibers are made to adhere closely, enabling the yarn to stand the continued beating up of the reed in the loom. This is an important process, for poor slashing can cause no end of trouble in the weave room. In the preparation of warps for some kinds

of goods, certain substances are put into the size to add weight. After the yarn passes through the slasher it is wound on the beam which goes in the loom, and which must carry the exact number of ends called for by the cloth to be woven. As the section beams wound on the warper or beamer carry usually about 500 ends, and, as the loom beams carry from 1,500 to 3,500, it is evident the warps of several section beams must be joined. This is done in the slashing process. Where pattern work requires warp of different colors they are arranged at the slasher.

Slasher.—The slasher is a large machine occupying a floor space 30 feet to 40 feet long by 7 feet wide. It consists of four principal parts—the creel, the sizing apparatus, the drying apparatus, and the headstock. The creel is an iron frame with bearings to hold the large section beams. When space permits the creels are horizontal, otherwise they are upright, the beams being set in one over the other. The sizing apparatus consists of a copper-lined box about 12 inches long, 12 inches deep, and the width of the machine, together with an immersion roller and squeeze rollers. The size box is provided with a perforated steam pipe in the bottom or a steam jacket around it in order to keep the size hot. The drying apparatus consists of either one or two large copper cylinders (when one, it is about 12 feet in diameter; when two, one is about 7 feet and the other 5 feet) which are kept filled with steam. The headstock consists of various parts, the principal ones being: A number of upright arms or brackets, for holding steel rods, called split rods; an expansion comb; a pair of drag rollers; the mechanism for turning the beam; and finally a beam presser. There is a measuring motion, connected with which is a device for putting a mark at each cut for the guidance of the weaver.

A number of section beams (3 to 8) are set in the creel so the warp will unwind in a horizontal plane. The warps from all are joined in one sheet; passing over the guide roller, they are directed through the hot size under the immersion roller, and are drawn between two pairs of squeeze rollers, which squeeze out the excess size and cause the size to penetrate the yarn. From here the warp passes almost around the steam-filled cylinder and comes off dry. It is then drawn to the headstock, passing, on the way, a fan, which cools the yarn. The threads, which the size tends to make adhere one to the other, are separated by the split rods (one less than the number of section or back beams); pass through an expansion comb, which lays them all parallel; and are drawn between the drag rollers, which give tension. They are then wound on the loom beam, the beam presser causing them to wind evenly and firmly.

Slasher tender.—The slasher tender runs the slasher. It is necessary for him to watch his machine rather constantly, for it is his

duty to see that the yarn is unwinding off the beams properly and not lapping; that there is sufficient size of the proper consistency; that the yarn is dry, but not burned; that it is not caked with hard size; that the tension on it is just enough; and that it is winding on the loom beam properly, fitting the heads snugly. Then, also, there are the loom beams to be doffed when full, and a new set of section, or back, beams to be set in when one set runs out. This latter duty, "changing a set," is a good-sized job, and the slasher tender is usually assisted by a helper or another tender.

The machine is not allowed to become unthreaded. It is stopped as soon as the yarn on one of the beams runs out. The immersion roller is raised so the yarn does not remain in the size while the machine is stopped and thus become caked. The warp is cut just in front of the size box, and any yarn that is left on the beams is drawn off and goes as waste. The empty beams are taken out of the creel and full ones put in. Most mills have a chain hoist for lifting the full beams up on the creel, for they are very heavy. Starting with the beam farthest back, the warp is drawn off by hand, joining that from each successive beam until all are joined at the front beam. The new warp is tied to the old in six or eight places, the immersion roller lowered, and the machine started in slow motion. As soon as the knots pass, a striking comb is turned up in front of the size box, and tapes are placed in the warp so as to separate the yarn from each beam. When the tapes come along the striking comb is turned down and the operative goes to the front of the machine.

When the knots joining the old warp to the new reach the front, the split rods are taken out and the expansion comb turned down. The loom beam is then doffed and a new one set in, the new warp being attached to it when the good yarn comes along. There is usually considerable waste here, where the two were tied and where size has caked or where the yarn got burned on the cylinder when the machine was stopped, all depending on the various differences in product and organization.

The expansion comb is now turned up again, and when the tapes come along the split rods are put in, making the same separations the tapes did. The tender passes a pointed stick over the ends at each split rod, removing any overlapping of the threads. The expansion comb is adjusted to the proper width, is turned down, then up again. This time the proper number of ends passes through each dent, because the warp is spread out evenly. If the comb does not pick up the proper number, the tender shifts a few by lifting them over the comb. When this is done, the tender sets back the measuring clock, throws the machine into full speed, and the work of changing a set is complete. All through this operation the tender is assisted by another hand, usually called a helper.

A set of section beams will run from a half to a whole day filling several loom beams, so these latter have to be doffed more often than the set has to be changed. Doffing does not necessitate stopping the machine, so there is no caking of size or burning of yarn. The belt is thrown on the slow pulley. Just as the beam is about full the tender contracts the expansion comb, gradually narrowing the warp on the beam. This is done to prevent tangling. When a cut mark comes the warp is cut, the ends on the beam being kept spread out in a sheet by pasting a piece of gummed paper (other methods are also used) on them. The beam is then dropped a few inches onto a truck or onto scales. The empty beam is set in and the sheet of warp clamped to it, the beam presser adjusted, the comb expanded, and the machine thrown in full speed to run till another beam is full. The tender must be careful to see that a good firm beam is started, with the warp evenly spread out and fitting the heads snugly.

In addition to creeling and doffing the slasher tender has more cares than the ordinary machine tender in a cotton mill. He must feel of the yarn to see if it is properly sized and dry; he must watch the size to see that it is sufficient and of the right consistency; and he must look for "laps" or broken ends. When an end breaks it leaves a lap on the section beam. This has to be cut off and the end found and started along with the rest of the ends. The tender usually tucks it under a few ends, marking the point with a piece of different colored yarn. This he does so when it gets to the comb in front he can be there to put it through a dent.

The slasher tender must raise the immersion roller out of the size and raise the squeeze rollers when he leaves at noon, and at night he must not only do these things but he must wash off the rollers thoroughly, run the size out of the box, and wash it out with boiling water. He has to keep the machine wiped off and oiled. He must understand enough about steam to keep the right pressure in the cylinder and must be careful to adjust the vacuum valve when he shuts off the steam; otherwise, when the steam condenses, the vacuum formed might cause the cylinder to collapse.

Slasher tenders have to be more skilled than many textile machine tenders. Each tender runs one slasher, but has the assistance of a helper in creeling and doffing. In some organizations, instead of this arrangement, there is one man on the fronts of two or three slashers and one on the backs. The slasher has to be creeled once or twice a day and it takes only 10 to 15 minutes to do this. The loom beams are doffed every 40 minutes to 2 hours, and it is only a matter of two or three minutes each time. When creeling or doffing or cutting off a lap, the tender works fast, but at other times he works leisurely, and when his job is up he may, once in a while, have a

few minutes of free time when he can leave his machine. The work is heavy enough to require a grown man, but it is not hard for him. Slasher tending does not lead to any other occupation. Slasher tenders are paid on a time basis.

Slasher tenders' helper.—The slasher tenders' helper, as the designation would indicate, helps the slasher tender. There is usually one helper to every four or five slashers. Helpers are needed principally to assist in creeling and doffing, though they are general handy men as well.

The various steps in creeling and doffing are explained under "slasher tender." In these operations the tender and helper do the same kind of work, one on each side of the machine. In addition to this work the helper usually trucks the full and empty beams up to and away from the slasher, sweeps around the machine, and makes himself generally useful.

This is one of those occupations that may be in one organization and not in another, and where there is such an occupation the work required may not be the same in any two. Some mills may even call the helper a slasher tender. The pay of a helper is somewhat less than that of the tender and the work required of him necessitates greater physical exertion than that required of the tender. Helpers usually become slasher tenders if they show any aptitude for the work. They are paid on a time basis.

Size maker.—The size maker is the man who prepares the size. The various ingredients—starch, tallow, water, etc.—are put into a vat or kettle and boiled while agitators turn slowly to thoroughly mix them. The size maker measures and puts in the ingredients (but does not determine the kind or amount) and sees that they boil the proper length of time. Where the size is pumped to the slasher he runs the pump. He oils and keeps his apparatus in repair. The work is disagreeable and requires a great deal of cleaning. In a great many mills there is not enough work to keep a man at this job, so the duties of size mixer and slasher tenders' helper are combined. He is paid on a time basis.

WEAVING DEPARTMENT.

The weaving department is the division of the mill where the cloth is made. In most mills slashing is under the direction of the boss weaver. In mills that have a separate department for slashing and beaming, drawing-in may also be included. For convenience here drawing-in will be included in the weaving department. Some mills inspect the cloth in the weave room before sending it to the cloth room. As inspecting is clearly a cloth room process it will not be included here in the weave room.

Following are the occupations of the weaving department:

General:
- Second hand.
- Section hand.
- Oiler.
- Trucker.
- Sweeper.
- Scrubber.
- Shafting man. (*See* Oiler.)

Drawing-in, twisting-in, and tying-in:
- Drawer-in.
- Hander-in.
- Twister-in.
- Warp-tying machine tender.
- Warp-tying machine tender's helper.

Weaving:
- Loom fixer.
- Weaver.
- Smash hand, or room girl.
- Filling carrier.
- Quill boy.
- Harness man.
- Harness builder. (*See* Harness man.)
- Harness cleaner. (*See* Harness man.)
- Harness set man. (*See* Harness man.)
- Assembler. (*See* Harness man.)
- Cloth hauler.
- Cloth checker.
- Ticket maker. (*See* Cloth checker.)
- Pick out hand. (*See* Smash hand.)
- Loom cleaner. (*See* Weaver.)
- Inspector. (*See* Cloth room department.)

DRAWING-IN, TWISTING-IN, AND TYING-IN.

Drawing-in, twisting-in, and tying-in are three different methods of accomplishing the same thing, namely, putting each thread in the warp through a heddle eye in the harness and through a dent in the reed. The first two are hand methods and the last a machine method. The harnesses and reed are parts of the loom.

Drawing-in is the most common method and is the term often used to include all three. In this method a small hook is put through the eye and the thread drawn through. This is the method which until recently was almost universally employed. It is still used for warps of different colors and when there are no warp ends in the harnesses and reed.

Twisting-in is a method which can be employed without taking the reed and harnesses out of the loom, and therein lies its advantage. There must be a thread through the eye else twisting-in can not be employed. In this method the end to be drawn through and the

end already in are twisted together sufficiently to hold while pulling the end through the eye.

Tying-in, like twisting-in, can not be employed unless a warp is in the reed and harness. In this method the ends are tied and then pulled through the heddle eyes and reed. This method is made possible by the use of a knot tying machine which ties the ends with great rapidity. This is the fastest method (one machine takes the place of about 15 drawers-in), and is being employed wherever possible. This method is used on all plain work and can be used where there are two colors, if the patterns of the new and old are identical, by tying each color separately.

The Barber warp-tying machine.—The Barber warp-tying machine consists of six main parts or groups: (1) The beam truck, (2) the loader (3) the lower frame or base, (4) the upper frame, (5) the overhead carrier, and (6) the carriage or machine.

The beam truck consists principally of two uprights on wheels which move on tracks describing an arc. The tracks are laid so that the truck can be swung up to the back of the frame, being guided by an arm connecting one end of the truck with a pivot. There are supports for the beam, a brake to keep it from turning, and a pin rail with weights attached to keep a tension on the harness warp when tying. There is a corresponding truck on similar tracks which can be swung to the same point from the opposite position.

The loader is an iron stand, placed alongside of the base, with brackets on which to hang the harnesses, and two parallel guide rails over which the harness warp is drawn. There is also a piece of card clothing along the front to hold the ends in position.

The lower frame or base of the machine consists mainly of two uprights about 8 feet apart, standing about 3½ feet high and connected by a rail or track on which the tying mechanism moves. There are also two parallel guide rails over which the beam warp is drawn.

The upper frame consists merely of two guide rails or insertion bar devices for clamping the warp to them. This part is connected to the overhead carrier, a light frame which can be moved along a track suspended over the frame and loader.

The carriage, or machine, is a complicated, though compact, mechanism which moves along the rail on the lower frame, selects the threads, and ties the knot. There are many delicate and intricate parts to this group, the most important of which are: The selectors, needle-like devices, for selecting the threads to be tied; the slide, which draws them together; the knotter, the device for tying the knot, itself consisting of a spring which holds the ends, a bill which turns and forms the loop, and a blade which cuts off the tail of the knot; the clearer, which throws the tied ends out of the way; and an air tube, at the end of which is a suction fan which sucks

the cut-off tails from the knotter and deposits them into a small receptacle. The machine is run by a small electric motor attached to the carriage.

There are two operations preparatory to putting the warps on the frame and tying them, viz: Parallelizing the beam warp and parallelizing the harness warp. These are both done for the next set while one set is being tied. The beam of warp to be drawn in to the harness and reed is set up in supports on the beam truck. The ends are brushed out parallel and are held in that position by a felt clamp. The harness warp is brushed out on the loader, the ends being held parallel there by pulling them over the card clothing. When ready the beam truck is swung up to the back of the base and the sheet of warp drawn over the guide rails, being held firm and taut by clamping an insertion bar in the rail. The upper frame is wheeled over to the loader and suspended from the overhead track, and the harness warp is clamped to it in a way similar to the beam warp. The upper frame with the harnesses and warp is returned and placed in position on the bed. The two sheets of warp are now in horizontal planes about 2 inches apart and all the threads are parallel. The machine is moved along into position to tie the knots. It is operated for the first knot or two by turning a little handwheel, then the lever is thrown and it operates automatically. The selectors pick the end threads every time and if they are not in the same vertical plane the upper frame moves either back or forth till they are. If the space is too great, or if the threads overlap, or, if for any other reason the selector does not get the thread after five attempts or picks, the machine automatically stops. When all the threads are tied the machine is pushed back out of the way, the upper frame is raised and moved along to the loader, the warps are released from the clamps, and the beam truck is swung back away from the frame. The knots are then pulled through the heddle eyes in the harness and through the reed, and the warp is ready for the loom.

Drawer-in.—Drawing-in is a hand occupation in which women are employed for the most part. They perform two operations—"drawing-in" and "reeding." Drawing-in specifically is drawing the threads through the heddle eyes of the harnesses, while reeding is drawing the threads through the dents in the reed. Warps for certain looms have to be drawn through drop wires as well.

The beam of warp to be drawn in is set up in a frame by a floorman. The drawer-in pulls the end of the warp over a guide rod, which allows the ends to hang freely. She then hangs the harnesses on arms suitably located on the frame, usually resting the lower part of the harness in her lap. The threads hang behind the harnesses. Taking a few at a time she holds them taut with the fingers of the left hand. With her right hand she puts her drawing-in hook (a straight steel

blade with a handle and with a notch at the end to catch the thread) through the proper eye in the harness, catches the thread, and pulls it back through the eye. When the ends are all drawn through the harnesses, they are drawn through the reed. This work is known specifically as "reeding." The reed is suspended by straps, with the lower edge resting on the lap of the operative. A few ends at a time are drawn over the first finger of the left hand and held taut by the thumb. The operative pushes the reed hook (similar to drawing-in hook, but shorter) up from the underside of the reed, hooks the required number of ends, and draws them through the dent as she draws out the hook.

When a warp is to go into a loom that has a warp stop motion, each thread has to be drawn through an eye in a drop wire, as well as through a harness and a reed. Drawing through these and drawing through the harnesses are practically the same. Drop wires are at the back of the loom, then come the harnesses, then the reed; so the ends have to be drawn through each in that order.

Drawers-in sit at their work. It is light work so far as physical effort is concerned, but it is exacting. The threads have to be drawn-in in their parallel order, certain ends through certain harnesses. The workers acquire considerable skill, and draw the threads accurately and fast. Reeding is particularly exacting, the wires being so very close together. Drawers-in are usually paid on the basis of a thousand ends, or the number of warps, though sometimes by the hour. The continuity of the work depends on the worker.

When drawing in a pattern warp, the ends are handed to the drawer-in by an assistant known as a "hander-in."

Hander-in.—Handers-in are for the most part young women or girls. Their work is indicated by their designation. They sit opposite the drawer-in, in a shed formed by drawing the warp over two parallel guide bars, and hook the warp ends in the proper order each time the drawer-in inserts her hook. The hander-in follows the order of threads as indicated by the lease string, or follows a diagram made by the designing department. The work is light and requires little skill. These hands are used only for striped or pattern warps. They aim to become drawers-in in time.

Twister-in.—Twisting-in is an occupation that is not very common since the adoption of the warp tying machine. Men are usually employed as twisters-in. They work right at the loom. The harnesses and reed are left in, and the new warp is set in position in the loom. The twister-in wears a belt with two rings through which the ends from the harness and ends from the beam are drawn so that he can select the ends in order, and, by manipulating them between his fingers, untwist the ends slightly and then twist them together. He cuts the tails with a small blade on the belt. When all the ends are

joined they are pulled through the harnesses and the reed from the front of the loom. Twisters-in acquire considerable skill and can twist the ends and cut off the tails with remarkable rapidity. They work standing in one place while actually twisting-in, but it does not take very long at one loom. They have free periods of irregular length and coming at irregular intervals, as the need for changing a warp determines. They are usually paid by the number of ends twisted.

Warp-tying machine tender.—The warp-tying machine tender is a fairly skilled mill operative. The preparation of the warps and the mere tending of the running are simple enough, but the operative must in addition understand the delicate mechanism and keep it in repair. Each tender runs one machine, but he has a helper who performs some of the operations. For the most part the tender works at the front and the helper at the back of the machine.

While the machine is running the tender gets a harness warp, puts it on the loader, brushes out the ends, and runs a lease rod through them to be sure that they lie perfectly parallel. When he is ready to tie a warp, he first clamps the sheet of beam warp on the lower frame, then clamps the upper frame on the harness warp and moves it over and places it in position on the lower frame. He moves the machine up till the selectors are near the end threads, turns the handwheel till a few knots are tied, then throws on the lever and lets it run itself. When the machine is tying it makes a clicking noise which can be heard some distance away. When the clicking stops the operative must ascertain the trouble and adjust it, and start the machine again as before. While the machine is running the tender goes behind and fastens the cloth on the back of the harnesses over the pin rail on the beam truck. When the warp is tied, he pushes the machine out of the way and removes the clamps which release the warp, and the weight connected with the pin rail pulls the threads back with a jerk, tightening the knots.

The machine will tie about 300 ends a minute, but working under ordinary conditions a warp of 2,000 ends can be tied every eleven minutes. The operative stands all the time, but works leisurely. He is not confined to the machine all the time, but must be within hearing distance of the clicking sound. These operatives are time workers.

Warp-tying machine tender's helper.—The warp-tying machine tender's helper is not a general helper, but has definite duties which supplement the work of the tender. He trucks the beam to be tied-in to the machine, sets it up in the beam truck, brushes the ends parallel, and clamps them in the felt clamp so they will remain in order. He draws off enough of the warp to stretch over the guide rollers on the base of the machine and sets the break so the beam

will not turn. When the tender has finished tying a warp the helper swings the beam truck out and swings the one to be tied up to the frame. He looks over the tied warp to see if there are any ends untied, or if there are any doubled, and does whatever is necessary to complete the knotting. He pulls the knots through the harnesses and reed, and leaves the warp in condition ready for weaving. He then lifts the beam off the beam truck and trucks it out of the way. The helper should be a fairly strong man, for the work is heavier than the tender's, though it is not very hard. Helpers are usually promoted to tending the machine. They are paid on a time basis.

WEAVING.

Weaving is the final process in the making of cloth. It is the process of interlacing various threads of yarn, one group, called "filling," being inserted at right angles to the other group, called "warp." The yarn to be used for filling goes directly from the spinning machine to the loom to be woven (except in some mills it goes through a conditioning or moistening process to lessen the tendency to kink). The yarn to be used for warp goes through several processes preparatory to weaving, e. g., spooling, warping, slashing, and drawing-in. Warp yarn, as we have seen, goes to the loom wound on a beam, each thread being several hundred feet in length. Filling yarn goes in very much shorter lengths wound on a bobbin or in a cop.

Loom.—There are various types of looms for weaving the various styles of cloth, but all are the same in principle. The commonest type used in the manufacture of plain cotton cloth is called the plain loom, and, if it has an attachment for automatically changing the filling, it is called an automatic loom. Looms vary greatly in size. A brief description of a common size will be given below in order to name the parts and show their relative sizes and positions for operation.

A common-sized cotton loom occupies a floor space about 4 by 5 feet and stands about 3½ feet high, with an arch across the middle extending about a foot and a half higher. The bulk of the machine is an iron frame capable of supporting the various parts. Supported in bearings at the back of the frame is the "loom beam" on which the warp is wound. This is a wooden cylinder a little shorter than the width of the loom with iron heads about 2 feet in diameter. A little in front of this are the "harnesses" hung by leather straps from the arch. Harnesses are wooden frames about 3 or 4 feet long and 10 or 12 inches wide. Just inside each long side is a small rod between which are strung wires, or varnished cotton strings, with eyes in the middle called "heddles." The harnesses are placed one in front of the other, hung on separate straps, and

made to move up and down by treadles below them with which they are connected by sticks, called "jacks." Just in front of the harnesses is the "lay of the loom." The lay is a heavy wooden stick laid horizontally and supported by uprights called "swords," which connect with a rocker shaft near the floor and which cause it to oscillate when in operation. On the top of the lay is a smooth piece of iron or hard wood, called a "race plate," on which the "shuttle" runs. The shuttle is made of wood with flat sides and pointed ends. A typical size would be about 11 inches long with 2-inch sides. In the center is a spindle which holds the bobbin and at one end is an eye through which the filling passes. At both ends of the lay are "shuttle boxes" which guide the shuttle. Sticks, called "picker sticks," are so placed at each end of the lay that when in operation the top end knocks the shuttle, causing it to fly to the other side at the proper instant. Attached to the back of the lay is the "reed," a rectangular frame about 3 feet long and 4 or 5 inches wide, with narrow, flat strips of steel, called "splits," inserted parallel with the short side and very close together. This stands on end with the splits perpendicular, and the greater portion of it projecting above the lay. At the front of the loom is a board, called a "breast beam," over which the cloth passes to a roll just below it, called a "sand roll." This is a cylinder about 5 inches in diameter covered with sandpaper or "burred" so as to draw the cloth tight. Two small clamplike devices, called "temples," are fixed to the frame just back of the breast beam so as to keep the cloth stretched to the desired width as it weaves. There are various shafts, cams, and gears in the lower part of the frame, all set to operate the different parts at the proper instant.

Automatic looms are the same as plain looms except that there is an attachment connected with one of the shuttle boxes by which empty bobbins are ejected from the shuttle and full bobbins put in without stopping the loom. The only difference in the outward appearance of the loom is that at one side, directly over the shuttle box when the lay is back, there is a receptacle for the full bobbins, called a "hopper" or "battery." This is a cylindrical device capable of holding about 20 bobbins set around it with their axes parallel with the axis of the cylinder. When a full bobbin drops into the shuttle, the hopper turns a notch putting another full one in position.

Fancy looms have several devices necessary in making fancy weaves, such as additional shuttle boxes, for different colored filling, and dobbies, a system of levers which takes the place of harnesses where several shedding arrangements are necessary. For the most fancy and complicated weaves, where the variations in shedding are so complex that it is necessary to control separately every

thread in the warp, an entirely different type of loom, called a "Jacquard," is used.

The loom beam, as we have seen, is taken out of the loom and the warp wound on it at the slasher. The harnesses and reed are also taken out of the loom and the ends of warp drawn through the proper heddle eye and dents by the drawers-in. When ready for weaving the full beam with the warp drawn in is set in position, the harnesses are strapped up, the reed is set in place, and the ends are tied to a piece of cloth so as to wind up in front. The bobbin of filling is put into the shuttle which is inserted into one of the shuttle boxes. Then the loom is ready to weave.

The weaving operation consists of three principal or fundamental movements—the shedding, the picking, and the beating-up movements. In addition to these, looms are provided with five other motions—a let-off motion, a take-up motion, and three automatic stop motions—the filling stop motion, the warp stop motion (not on all plain looms), and the protector or bang-off motion.

The shedding motion is the raising and lowering of the harnesses in their proper sequence in order to form the "sheds" through which the filling is laid. The picking motion is the driving back and forth through the sheds of the shuttle by the action of the picker stick in order to lay out the filling. The beating-up motion is the oscillating back and forth of the lay, the reed pushing the threads of filling up close to the cloth already woven. These motions are accurately timed to work in harmony.

The let-off motion is the turning of the loom beam to unwind the warp at the proper speed. The take-up motion works in harmony with this, it being the turning of the sand roll to take up the cloth as it is woven. The speed of these motions determines the number of picks per inch in the cloth, i.e., the number of filling threads interlaced through an inch of warp, just as the number of ends drawn through a dent in the reed determines the number of warp ends per inch of filling.

The stop motions are for the purpose of stopping the loom when something goes wrong, so as not to weave imperfect cloth or break down the ends. The filling stop motion is a forklike device, which at each pick of the loom comes in contact with the filling and is caused to tilt slightly. If there is no thread of filling across the lay, the fork is not tilted, and a hook on the end comes in contact with a lever, which operates the knock-off motion and stops the loom. The warp stop motion is not on all plain looms, but is on all automatic ones. Each thread of warp is put through a drop wire back of the harnesses. When a thread breaks the drop wire drops down out of position, and by coming in contact with other and complicated parts stops the loom. As these two stop motions stop the loom in order

to prevent making imperfect cloth, the third one, the protector stops the loom in order to prevent breaking the ends of warp or even parts of the loom. This is connected with the shuttle boxes, so that if the shuttle does not go into the box at all, or only partly in, a little device known as a "dagger" comes in contact with a "frog," and thus operates the knock-off motion and stops the loom. Whenever this protector stops the loom the loom is said to "bang off."

Loom fixer.—Loom fixing is an occupation for men and is perhaps the most important in the weave room. The work requires a knowledge of weaving and some mechanical ability. Loom fixers are assigned a certain number of looms (from 50 to 80 in cotton weaving), called a section. In their respective sections they act as section bosses, are responsible for the care of the looms, and put in new warps.

Putting in new warps constitutes the bulk of their work. Weavers have some sort of signal they display on the loom when a beam of warp runs out. The fixer cuts off the cloth and takes out the empty beam, together with the harness and reed. After the loom is thoroughly cleaned (not cleaned by fixer) he sets in the full beam. The warp is drawn over to the middle of the loom, and the harnesses are hung on the straps and connected to the jack straps underneath. The reed is fixed in the lay and the reed cap put on. The warp is tied in several places to strands from a piece of cloth called the "apron" which extends over the breast beam and around the sand roll. This serves as an extension of the warp till the new cloth is woven a sufficient distance to reach the sand roll. The harnesses are alternately raised and lowered and the lease rods put in behind them to keep the ends from tangling. The fixer then examines the various parts of the loom, changes whatever gears or cams are necessary, sees that the nuts are all tight, etc. When all is ready he puts in a shuttle and weaves a few inches of cloth, observing whether or not the loom is running properly, and then turns it over to the weaver. The loom is cleaned and oiled when the beam is out. This is usually done by the weaver, but some mills employ hands especially to do it. It takes 15 or 20 minutes as a rule to change a warp, and in many mills from 5 to 10 are changed in a day. There is always more or less fixing to do, both of looms and shuttles. Loom fixers have to see that the weavers in their sections do their work properly and keep the loom properly cleaned and oiled. They also must see that the cloth is weaving properly, and they must know enough about the different kinds of cloth to tell by the appearance and feel that it is as it should be. Loom fixers are day workers. The work requires a rather dependable man because he works largely on his own responsibility Weave room second hands are chosen from the loom fixers.

Weaver.—Weaving is a machine occupation in which men and women are employed in almost equal proportion. Children are not employed as weavers, though they sometimes start to learn as young as 16 years.

Weavers are usually pieceworkers. They are paid by the cut or by the yard, so their object is to weave the most cloth possible. But the cloth woven must pass inspection, and, if there are flaws in it, it goes as "seconds." While weavers are paid for seconds, the rate is considerably less (about one-half the rate for "firsts"). The number of looms a weaver will run depends on the cloth woven. Fine goods requires closer attention than coarse goods, so fewer looms are run. Four to six would be an average for a medium plain weave. Where automatic looms are used the number run by each operative is more than doubled. Weavers must watch carefully the cloth being woven, and on plain looms change the filling. This latter requirement is made unnecessary by the automatic loom. Other duties of weavers are to piece up threads that break in the warp and to take off the cloth when a cut is woven. But the important work of putting in new warps and preparing them for weaving is not required of weavers. In most mills weavers oil and clean their looms, but in others hands are employed especially for that work.

Changing the filling is an important part of the work of a weaver, except on automatic looms. An extra shuttle is always kept filled in the shuttle pan on the arch of the loom so as to be ready to be put in when the other runs out. When the loom is stopped the empty shuttle is pushed out of the shuttle box by hand, and slid out through the warp. The full shuttle is pushed into the box in its stead, and the end of filling held in the hand until a few picks are put in. Then it is broken off close to the cloth. The empty bobbin is taken off the spindle in the shuttle that was taken out of the loom, a full one is put on in its place, and the end threaded through the eye, making the shuttle ready for the loom.

When an end breaks in the warp, it has to be found, threaded through the harness and reed, and held in position till enough picks have been made to bind it, when it is cut off close to the cloth with a knife. If there is no warp stop motion on the loom and an end breaks, the cloth will weave with an end short until the weaver discovers it and mends it. Sometimes the weaver will discover a place in the cloth that was imperfectly woven. He has a very fine metal comb with which he can pick out the filling down to the perfect cloth. This is called "picking out."

Looms are placed face to face so the weaver can run two rows from the same alley. The work is light, but requires the operative to be on his feet most of the time, though in most mills a seat of some

kind is provided to be used whenever possible. Close attention directly affects the pay, because it lessens the chances of weaving seconds. Some weavers prefer to run fewer looms and work leisurely, while others prefer to work constantly with the chance for greater pay.

Smash hand.—"Smash hand" is a designation usually given to a sort of spare hand about the weave room. Smash hands may be either men or women, though usually they are the latter. The work required of these hands varies in different mills, but as a rule their work is emergency work, assisting or relieving weavers in emergencies. The designation "smash hand" is given them from the fact that a large part of their work is repairing "smashes," i. e., several broken ends in the warp, caused by a shuttle flying out or something of that sort. Sometimes they pick out filling, sometimes they help the loom fixer, and a large part of the time they run a set of looms, when the weaver leaves them for a short time. Their work is light, and very irregular, but they have to be on hand always for an emergency. They are sometimes called "spare hands," or "room girls," but are not to be confused with spare weavers who are kept on hand to run a set of looms when a weaver lays off. They are paid on a time basis.

Filling carrier.—Filling carriers are boys or low-priced men. They are required to keep the filling boxes at the looms supplied with full bobbins of filling. They have a truck on wheels which they push from the filling bins to the various looms. The work is light, involves very little responsibility, and usually permits of more or less free time whenever the job is up. They are paid on a time basis.

Quill boy.—Quill boys are required to remove the empty quills from the quill boxes at the looms and truck them into the spinning room. The work is light and permits of more or less free time. Low-priced men are sometimes used for this work. They are paid on a time basis.

Harness man.—"Harness men" is the designation given to the workers who have the care of the harnesses and reeds. In most mills all harnesses and reeds when taken out of the loom are brought to the harness men to be cleaned, examined thoroughly, and repaired. Cleaning may be done with a brush or compressed air. A change in the style of the cloth may require fewer or more heddles, and it is the duty of these hands to make the changes. They also group the harnesses in sets to be drawn in. In some organizations the work is divided, and the terms "harness cleaner," "harness builder," "harness set man" are used. All the work can be done either sitting or standing. It is considered light work for some of the older men. They are paid on a time basis.

Cloth hauler.—Cloth hauling requires a little more strength than boys possess, so men are usually employed. It is their work to

gather up the rolls of cloth that weavers put in the side alleys near their looms, and truck them to the cloth room, or to one end of the weave room where they transfer them to a chute or conveyor which takes them to the cloth room. The truck is large and requires considerable strength to move when it is full. These hands often work in pairs. They make two or three trips a day and in most mills have a little free time between trips. They are paid on a time basis.

Cloth checker.—The cloth checker is a male employee as a rule. He checks and marks the cloth in some way so the weavers get credit for it. In some mills it is checked before it is taken off the floor, while in others it is checked after the haulers gather it up. In most mills checking alone does not make a full job. Other work, such as making out the tickets that the weavers paste on the cut to identify it, is assigned to the checker. The work is light and might properly be considered clerical work. Checkers are paid on a time basis.

CLOTH ROOM.

After the cloth is woven it is brought to that department of the mill known as the "cloth room." What happens to it here varies in practically every mill. There must be at least two operations in this department—some sort of inspection, and preparation for shipment. Where plain cloths are woven to be sent to a converting plant, these two operations, together with a brushing of some sort, are all that are carried on in the cloth room. Where fancy cloth is made, or any cloth that does not go to a converter, there are several finishing processes carried on, and the department is called the "finishing room" instead of the "cloth room." For the purposes of this description a plant of the first type only will be considered, where plain cloths are woven to be sent to a converting plant, i. e., a bleaching, printing, or dyeing plant.

The cloth direct from the weave room is checked in some way and sorted in bins according to the grade and style. When a sufficient number of cut rolls are accumulated in any bin, they are trucked to the sewing and rolling machine, where several cuts (usually about 20) are sewed end to end and rolled as one continuous length into a large roll. This does not affect the cloth in any way, being done merely to aid in the subsequent processes. The cloth now takes one of two courses; either it goes to the shearing and brushing machine where its face is sheared to a smooth surface and brushed, or brushed alone without any shearing; or it goes to the inspecting and trimming machine, where it is lightly brushed on both sides and inspected as it passes out of the machine. Heavy cloths usually are treated in the first way and fine cloths in the second. Cloth that is run through the shearing and brushing machine may be run over the

inspecting table of a trimming and inspecting machine for machine inspection, or it may go directly to the hooker machine, and be inspected later by hand in the folds. Cloth that is run through the trimming and inspecting machine only is taken from there to the hooker machine. Here the cloth is laid out in piles or folds a yard or a yard and a fraction long. As each cut is folded, the operative rips out the stitches, leaving each cut to be handled by itself thereafter. Cloth from the hooker machine is hand inspected in the folds either as the original and only inspection or as an inspection supplemental to the machine inspection. After inspection the cloth is folded or doubled to a size convenient for handling, and girls, called "knotters," bind the ends of the fold so it will hold. The cloth may now be taken to the stock room, or, if it is to be shipped, it is taken to the baling press. An employee, usually called a "caller," calls off the style and number of yards in each cut to a girl who records them. He also gets the total weight of the cloth and that is recorded. The cloth is then baled. An employee, known usually as a "stenciller," marks the bale suitably, and it is then ready for shipment. In some mills the cloth is not baled; neither is it folded. After it is brushed and inspected it is rolled into a substantial roll and shipped to the converter in that form. This latter is the least expensive method, and it is the most convenient for the converter; so it is gaining in popular practice.

The occupations of the cloth room are as follows:

General:
- Second hand.
- Section hand.

Cloth room:
- Trucker.
- Fixer.
- Oiler.
- Sweeper.
- Scrubber.
- Sewing and rolling machine tender.
- Machine inspector.
- Shearing and brushing machine tender.
- Hooker machine tender.
- Hand inspector.
- Knotter (stitcher or tacker).
- Baler.
- Trimmer. (*See* Machine inspector).
- Pressman. (*See* Baler).
- Header. (*See* Baler).
- Grader. (*See* Folding).
- Sorter. (*See* Finishing and converting).
- Brusher tender. (*See* Shearing and brushing machine tender).
- Cloth matcher. (*See* Finishing and converting).
- Roller machine tender. (*See* Finishing and converting).
- Yardage caller. (*See* Finishing and converting).
- Adding machine operator. (*See* Finishing aud converting).
- Stamper. (*See* Finishing and converting).

Sewing and rolling machine.—The sewing and rolling machine, as the name would indicate, consists of two distinct parts, a sewing mechanism and a rolling mechanism. The sewing mechanism is like an ordinary sewing machine which is made to move across the frame on tracks, inserting stitches that can be easily ripped out. The rolling mechanism consists of two positive-driven, sandpaper-covered rollers on which the roll of cloth rests and is wound by friction. The roll of cloth from the weave room is put into a cradle at the front of the machine, and the end drawn up and fastened over two pins which hold it stretched and in position to stitch evenly. Before this is done, though, the tail end of the piece just previously rolled is fastened to the pins in a like manner so the new piece overlaps the old. A small hand lever starts the sewing mechanism, which moves across the frame inserting the stitches. When the pieces are sewed together the machine head is moved back out of the way and the operative runs the rolling machanism by keeping his foot on a treadle while it is running.

Sewing and rolling machine tender.—Sewing and rolling machine tenders are usually boys under 18. They put the cut rolls into the cradle, fasten the ends on the pins, and start the sewing mechanism by throwing the lever. When the stitching is done they push the sewing machine back to the other end, raise the cloth off the pins, and operate the rolling mechanism with the foot treadle. That is all there is to their work until sufficient cuts are run (about 1,000 yards), when the operative has to doff the roll of cloth, take out the pin and give the new end a twist around it, thus starting a new roll. In doffing, the operative may have to raise the roll an inch or two, one end at a time, but it is not hard for any boy to do this. In addition to running, the boys usually clean and oil their machines. This work does not change the appearance of the cloth, nor is there much chance of spoiling it, so boys can be used profitably. The work requires the boys to stand in one place almost constantly, and in most mills there is little or no free time. They are paid on a time basis.

Trimming and inspecting machine.—The trimming and inspecting machine occupies a floor space of about 6 by 6 feet and stands about 4 feet high. It is a closed boxlike arrangement with a top sloping toward the front at about a 40° angle. This top is the inspection board. Inclosed within the frame are two roller brushes, and there are guide rollers to guide the cloth. In back of the box is the roller head, a positive-driven, rough-surfaced roller with uprights to guide the roll of cloth as it grows in size.

The cloth is fed to this machine either from a large roll made at the sewing and rolling machine, or from small rolls as they come from the weave room. In the former case the roll is set up in bearings,

which allow it to unwind freely, and is led to the machine over guide rollers. In the latter case there is a cradle attachment built above the inspection table in which the small rolls can be placed and the cloth guided over the top and down the back of the frame by guide rollers. In both cases the cloth enters the back of the frame and is so directed that the first brush brushes one side and the second the other. The cloth then passes over the inspection table from the back down to the front, is guided down under the frame to the roller head, where it is wound into a roll. Sometimes the brushes are not used, in which case the machine is used only as an inspection table.

Machine inspector.—Machine inspectors are female operatives. They sit at the trimming and inspecting machine and operate it by pressing on a board with their feet. The cloth passes over the inspection board at the rate of about 30 to 40 yards a minute. The inspectors watch the cloth closely and feel it with their hands. Whenever an imperfection comes along they stop the machine instantly by raising their feet off the board. If the imperfection is a knot, they pick it out with a burling iron; if a prominent warp thread, they pick it out and comb the ends over it with a fine steel comb, so the space will not show; they do what they can to remedy the defect and wherever they can not do it quickly and easily, place some distinguishing mark in the selvage (usually a colored thread) so the place will be noticed by the final inspector.

Inspectors do not have to set up the cloth to run through the machine or to doff the rolls inspected; neither do they clean or oil their machine. There is usually a floor man around to do that heavy work. Inspecting would seem to be hard on the eyes. These operatives become so skilled that they can detect the most minute imperfection when the cloth is passing as fast as 50 yards a minute. They are paid on a time basis.

Shearing and brushing machine.—The shearing and brushing machine is essentially a large box in which are a number of roller brushes and roller shears so situated that, as the cloth is drawn through the machine, the rollers will act, some on the front and some on the back of the cloth. The rollers may be roller shears, bristle rollers, card rollers, emery rollers, or beaters, the number and kind being changed according to the needs. The cloth may be fed to this machine from a roll or from folds on a truck, and upon emerging from it may either be wound into a roll or plaited down on a truck. Dust and flyings fall into boxes in the lower part of the frame, and have to be removed daily. The driving mechanism is simple, but there are several gears, pulleys, and belts, some of which are exposed on the side of the frame.

Shearing and brushing machine tender.—Operating a shearing and brushing machine requires a fairly strong man. He has to set the

large rolls of cloth up in the stand behind the frame, and he has to remove the roll at the other end. In neither case, however, is he required to raise it more than a few inches, and then only one end at a time. The machine is not threaded each time a roll is run through, but the new roll is sewed to the end of the old to make a continuous run. To sew the rolls the operative has a "railway" sewing machine on a light carriage which can be moved about easily and which is operated by turning a hand wheel. When the new roll emerges at the front the machine is stopped, the stitches are ripped out, the full roll is doffed, and the end of cloth started around the rolling pin. The tender controls the operation of the machine and has to start and stop it. He has to watch the operation rather closely and when a seam comes along he has to raise the cloth guides so the seam will not come in contact with the shears. This he does by moving a lever at either side of the machine. When the machine is used only for brushing, and is not equipped with shears, this does not have to be done. The work requires the operative to be on his feet all the time and requires quite constant attention. In addition to operating he has to clean and oil his machine. He is paid on a time basis and seldom rises above this position. These machines vary so, and the finish desired differs so greatly, that the requirements of this occupation are different in practically every establishment. It is common to have one man at the backs of three or four machines and one man at the fronts of as many. There are other arrangements as well.

Hooker machine.—The hooker machine, or folder, consists essentially of a table hinged in the middle with iron jaws projecting over each end, and springs to hold the table up against the jaws. The cloth is guided by a blade, or "knife," which is made to swing back and forth hooking the cloth under the jaw at each end. The table depresses just enough for the blade to insert a fold, and, as the blade moves out, the spring acts to bind the fold. The jaws are usually a yard or a yard and a quarter apart, and the arms work smoothly and evenly, laying out the cloth in piles of the desired length. A measuring clock is usually attached to count the folds.

Hooker machine tender.—Hooker machine tenders are usually women or older girls, but when heavy goods are being folded men are employed. Each person runs one machine and has the entire care of it, oiling and cleaning as well as operating it. When women are employed the rolls of cloth to be folded are set up in the standards by floormen. When men are employed they usually "jack up" their own cloth. Each time a new roll is started the cloth has to be threaded over slats to give it a little tension. The end is caught under one jaw, and the machine is started by throwing a lever. When a seam comes along, showing the end of a cut, the machine

is stopped and the seam ripped out, or the cloth cut near it. A foot lever depresses the table enough to remove the folded cloth, which is taken out and put on a bench to be hand folded. This may or may not be done by the hooker machine tender. This operation is performed for each cut, of which there may be several in a roll. The hooker machine tender usually pastes a sticker on the cloth showing the yardage. She has rubber stamps with which to mark the stickers each time. This is usually done while another cut is being "hooked." These operatives have to watch for the ends of the cuts, and stop the machine as they come along. This keeps them almost constantly at work while there is cloth to be folded, for it takes only about a minute to fold a cut of fifty yards. They work standing, but get periods of rest in most mills while waiting for cloth. There is some chance of catching the fingers in the jaws of the machine, but such accidents are said to be infrequent. Hooker machine tenders are paid on a time basis.

Hand inspector.—Hand inspection differs from machine inspection in that the cloth is examined after being folded instead of before. Hand inspection may take the place of machine inspection or may supplement it, it being the usual custom to follow machine inspection with a final inspection by hand. In the former case inspectors are always women, in the latter they are usually women, though men are sometimes employed.

When hand inspection is the original and only inspection the folded cloth is laid on the inspecting table and each fold is turned over first one way, then the other, so that the whole length of cloth is eventually exposed to the view of the inspector. When hand inspection is supplemental to machine inspection, instead of turning over every fold, the inspector opens the cloth only at those places indicated by the strings or markers put on by the machine inspector.

The inspector looks for any imperfection in the cloth. Among the common imperfections found are: "Ends out," where a warp end is missing due to a break not being replaced at once; "mispick," where two picks are in the same shed; "broken pick," where the filling broke part way across the shed and was not removed; "smashes," where several ends of warp have broken and have not been mended by the weaver in such a way as to hide the break; "thin places," where there is not enough filling in some places, compared with the rest of the cloth; "thick places," where there is too much filling; "floats," where the warp has tangled, causing imperfect weaving; "slubs," thick places in the yarn; "knots," where the yarn has been tied, leaving a large knot, or a large tail; "spots" caused by grease or oil; and "bad selvages."

It is the inspector's duty to remove all imperfections she can. She is supplied with scissors to cut off loose ends of yarn and also to

cut the cloth; a burling iron or cloth nippers for picking out knots and slubs; a weavers' comb, with very sharp teeth, for scratching the yarn to make it spread more evenly over thin places; and a wooden board, a cloth rubber (a piece of wood corrugated on the bottom and a handle on top), and water and soap to wash out any oil or grease spots. Whenever the faults can not be removed, the imperfect cloth has to be cut out, leaving remnants of perfect cloth, or the whole piece goes as a second. When the cut has been inspected, the inspector folds it once or twice into a smaller fold convenient for shipping.

Cloth inspecting is responsible work in most mills. Inspectors determine what cloth shall pass as "firsts" and what shall go as "seconds." Inspectors usually stand most of the time, and the work entails more muscular activity than most other mill occupations. Then, too, there is the constant use of the eyes, which probably amounts to a strain in some cases. Inspectors are paid on a time basis.

Knotter (*stitcher or tacker*).—Knotting is a hand occupation in which girls or women are employed exclusively. It is their duty to take the cloth after it has been hand folded and bind the ends so it will remain folded. They have a strong needle threaded with heavy thread or string. They usually put two stitches into each end of the cloth, each stitch binding the top fold to the bottom one. They have a little pair of scissors with which to cut the string when the stitch is made. These workers usually sit on a stool and work at a flat bench. The work is very light, but they usually have to keep fairly busy to keep up the job. The knotters often cause wounds on their fingers by sticking the needle into them. Most knotters thumbs are pretty well scarred up. They are paid on a time basis.

Baling press.—There are two kinds of baling presses in general use in mills; one, the hydraulic press, being used where considerable compression is necessary, as for foreign shipment; the other, the toggle-joint press, being used in compressing bales for domestic shipment. Mills have either one or the other. Both consist of a substantial base and a head with four steel uprights, one in each corner. In the case of the hydraulic press the base is made to move up toward the head while in the case of the toggle-joint press the head is made to move down toward the base. In both cases the base and top are grooved so the ropes or bands can be put in while under pressure.

Baler.—Balers are strong men. They not only have to build the bales, but they have to move them about when made. Balers usually cut the burlap, the paper, the ropes, and bands into the proper sizes in large quantities and have them ready before they begin to build a bale. When a bale is to be made, two and sometimes three balers work together. A piece of burlap is cut to the

right size and laid on the base and over it is placed a piece of paper, if paper is used. The required number of cuts are piled on these and on top of them is another piece of burlap. The press is then started and run till the bale is compressed to the proper size, when the burlap is spread over the sides and the ends are sewed together by hand. The bands or ropes (whichever is used) are put through the grooves and fastened. Then the press is released and the bale trucked away. Bales are made differently in different mills. In some mills the workmen just band the bale in the press and sew the heads on it after they take it out on the floor. The continuity of the work of a baler depends on the size of the mill and the goods being shipped. In small mills other duties are given to balers to make up a job. They are paid on a time basis.

DYEING DEPARTMENT.

Dyeing in a cotton mill is usually confined to dyeing the raw stock and dyeing the yarn after it is spun. The former is called raw-stock dyeing and the latter chain dyeing, "chain" being the term applied to the strand or ribbon of several ends of yarn laid side by side as arranged in the ball warper. Some mills do some skein dyeing, but the chain method has largely superseded it. Piece dyeing is usually done at a converting plant as distinct from a cotton mill.

The occupations of the dyeing department are as follows:

General:
- Second hand.
- Section hand.
- Oiler.
- Fixer.
- Spare hand or helper.
- Trucker.
- Sweeper.
- Warp hauler. (*See* Trucker.)

Raw-stock dyeing:
- Raw-stock dyeing-machine tender.
- Extractor tender.
- Blower man.
- Raw-stock dryer tender.
- Feeder. (*See* Raw-stock dyeing-machine tender).

Chain dyeing:
- Box tender.
- Vat tender.
- Drying-can tender.
- Coiler man.
- Chain dyer. (*See* Vat tender.)
- Washer. (*See* Box tender.)

RAW-STOCK DYEING.

Mills dyeing cotton in the raw stock introduce this process immediately after opening and before picking. The cotton from the

opener is blown or conveyed in some manner from the opening room to the dyehouse. There it is received in a bin or in a revolving wire cage from which it is trucked to the raw-stock dyeing machine. It remains in this machine until it is thoroughly impregnated with the dye. It is then taken out and run through a hydroextractor to remove as much of the liquor as possible. From here it is put into a trunk or pipe and is blown to the dryer. It passes through the dryer slowly enough to become thoroughly dry, is delivered into a chute and blown to the picker room, or, in some mills, back to the opening room, thence to the picker room. Some mills are not quipped with blowing apparatus, but bale the cotton and truck it from one place to the other.

Raw-stock dyeing machine.—The raw-stock dyeing machine consists principally of a large cylindrical container which rotates in a vat. The vat is about 15 feet long, 10 feet wide, and 8 feet deep, and has open steam pipes in the bottom. The cylinder, which is supported horizontally with the upper half projecting above the top of the vat, is about 15 feet long and 10 feet in diameter. Its surface is perforated. Within the cylinder is a smaller cylinder or drum which turns on the same axis. On the outside of this drum and on the inside surface of the cylinder are spikes or prongs which are designed to keep the stock from matting.

The cylinder is about half filled with cotton (about 1,000 pounds) for each batch. The covers are fastened and the vat is filled with dye liquor which is heated and the machine started, causing the cylinder to rotate in the dye. Each batch runs about two hours, the lumps of cotton constantly being torn apart by the prongs so the dye will get to every particle of it. When sufficiently dyed, the liquor is drawn off and the vat filled with water. The cotton is run about 20 minutes in this, then the water is changed, and the cotton is washed again. The dyed and washed cotton is then drawn out on the floor.

Hydro-extractor or centrifugal dryer.—The hydro-extractor consists of a cup-shaped receptacle about 3 feet high and 4 feet in diameter. Within this is a metal basket with its sides perforated. The cotton is packed in the basket, which is then turned on a pivot about 800 to 900 revolutions per minute. The centrifugal force caused by the rapid rotating of the basket causes the water to be expelled through the holes in the side. The water is drawn off through a pipe in the bottom of the receptacle.

Raw stock dryer.—The raw stock dryer is a machine for drying the dyed cotton after the water has been extracted. It is a box-like arrangement about 13 feet wide, 7 feet high, and 50 feet long. Running through the dryer on one side and extending the whole length

is a series of steam pipes. On the other side, and running the whole length, is a moving screen apron about 8 or 9 feet wide.

The loose cotton from the extractors is blown up through pipes to the drying room, where it falls into the hopper of an automatic feeder. The cotton is drawn up on the apron of the feeder and dropped on the screen apron, which moves slowly carrying the cotton to the other end, where it falls off the revolving screen into a pipe and is blown to the opening room. While the cotton is moving along the screen, hot air from around the steam pipes is circulated through it by fans. It thus becomes thoroughly dry.

Raw stock dyeing machine tender.—The raw stock dyeing machine tender is a low grade of semiskilled machine worker. It is his duty to pack the loose cotton in the cylinder of the machine, putting about a thousand pounds into each batch. Then by throwing a lever he starts a pump which draws the dye liquor from a container below the floor, shutting off the supply when the vat is full. He then closes up the covers on the machine and starts it running. Each batch runs a considerable time (about two hours) before it is sufficiently dyed. When dyed the tender opens a valve to draw off the liquor, then fills up the vat with fresh water. After the water has been changed a second time and that drawn off, he opens the cover on the cylinder and rakes the cotton out onto the floor. A man can usually run two machines but the usual way is for the men to work together, no man remaining idle while any machine needs packing or emptying. The work is not hard, but it is rather disagreeable and the atmosphere very humid. He is paid by the day.

Extractor tender.—The extractor tender is a rather low grade of semiskilled machine operative. He takes the cotton by hand from the floor after it has been raked out of the dyeing machine and packs it compactly in the basket of the extractor. When the machine is full he starts it and lets it run from 8 to 15 minutes until most of the water has been expelled. He then unpacks the basket by hand, putting the dried cotton on the floor apart from the wet. One man runs one extractor. It keeps him fairly busy handling the cotton from one dyeing machine. It is necessary for him to keep his machine cleaned and oiled, and he must keep the floor around his machine clean as well. He works in humid air and is required to bend a lot while working, but his work is not hard nor does it require especial strength. He is paid on a time basis.

Blower man or fan feeder.—The blower man is an unskilled hand. He is merely required to feed the loose cotton from the extractors into the pipe through which it is blown to the dryer. He takes it by handfuls from the pile on the floor or from a bin and puts it into the pipe. The work requires no skill nor strength. He works in humid air and has constantly to bend his body. He is paid on a time basis.

Raw-stock dryer tender.—The raw stock dryer tender runs the dryer. He is a semiskilled operative. It is his duty to start and stop the dryers, see that they run properly, and see that the cotton is getting thoroughly dried. When cotton is about to be blown through the pipes, he gets a signal so he can start the dryer. If the cotton is not drying thoroughly, he stops the apron for awhile and lets it remain longer in the hot air. If it continues not to dry he has to see that more steam is put into the pipes to heat the air more. One man looks after two dryers. He keeps them oiled, besides looking after the cotton. He also keeps the room clean. He does not have to work hard, and has some time to rest. The room is hot and there is some lint in it. He is paid by the day.

CHAIN DYEING.

Chain dyeing is the process of dyeing the spun yarn in great lengths, with several hundred ends together in the form of a strand or ribbon, called a "chain." The different steps in dyeing vary somewhat with the kind of dye. What follows shows the steps in the process of dyeing blue yarn with indigo. The chains come wound in balls from the ball warper and are set up in stands called "warp racks." Several ends (from 8 to 16) are led through a machine called a boiling box, where they are subjected to boiling water, and again wound into balls just like the one unwound. These warps are set up in warp racks behind the indigo vats, and several strands run through these. Here the dye is applied, and the strands are again wound into balls, after being exposed to the air a few seconds to oxidize. These balls are taken to a wash box where the yarn is washed in cold water and again balled. Finally it is run over a number of copper cylinders, or "cans," filled with steam, where it is dried. The strands are not again wound into balls, but are now coiled in a pile ready to be taken to the chain beamer, or to the quiller.

Boiling box—wash box.—The apparatus used for boiling the yarn and washing it after dyeing are the same. Some dyes are put on with the same apparatus. It consists principally of an iron container or box about 3 feet wide, 4 feet high, and 16 feet long, in which are several horizontal rollers about 18 inches in diameter, around which the yarn is drawn as it passes through the box. When the box is filled with water or dye, the yarn passing over and under these rollers gets thoroughly immersed.

The balls of warp (8 to 16) are placed on warp racks which raise them a few inches off the floor so they can unroll freely. The strands are led over a rack, guided parallel by pins, and drawn by a pair of rollers down to the box. They pass alternately under a roller near the bottom of the box and over one near the top until they have passed under 4 and over 3 such rollers. This insures thorough

immersion. The liquid is then squeezed out between a pair of squeeze rollers and the yarn led into the other section of the box, over and under rollers as before, and again squeezed out at the other end. From here the strands are led through a guide eye overhead and down to ball winders which wind each strand into a ball just like the one that was brought from the ball warper. The apparatus for winding balls is just the same as that which is explained in connection with the ball warper. The box is kept threaded with a leader when there is no warp in it.

Indigo vat.—An indigo vat is an iron box or container about 12 feet long, 8 feet deep, and two feet wide. At each end inside the vat are two iron rollers about 3 inches in diameter, one directly over the other and about a foot apart. At the front of the vat is a pair of squeeze rollers placed so the liquid squeezed from the yarn falls back into the vat.

As many strands of warp as are necessary to give the required ends for the loom are usually dyed at the same time to insure uniform color. The balls are set up on warp racks, as at the boiling box, the ends guided parallel through U-eyes, and directed down into the vat. The yarn is run back and forth through the dye three or four times, guided by the guide rollers, then drawn out at the front by a pair of squeeze rolls, and again wound into balls. Vats are usually in pairs, and the warp is run through a second vat just like the first. When a deeper color is needed the yarn may be run through two or three times. Vats are kept threaded with a leader when there is no warp in them.

Drying cans.—Drying cans are large cylinders about 3 feet in diameter and from 20 to 25 feet long. There may be any number in a set, though 16 or 20 is the usual number. They are placed horizontally in tiers as high as is best suited to the space where they are located, and they are geared so they will all turn together. The cans are filled with live steam, and the strands of warp are directed several times around each can so they will be thoroughly dried. After leaving the cans the strands are generally coiled on the floor above. Dry cans are kept threaded with a leader when there is no warp on them.

Coiler.—A coiler is an arrangement through which the warp is run in order to coil it in a mass that can be handled and still not be tangled. It consists mainly of a number (usually 4) of 3-inch pipes with a ball on the top end of each, and hung from the ceiling in sockets so they will turn freely. All are connected and are geared so that the lower end of the pipe describes several small circles, while the whole frame describes a larger circle.

The warp from the dry cans is drawn up in a ribbon through the ceiling of the drying-can room to the ceiling of the beaming room

by a pair of rollers. One strand of warp is directed through each of the pipes of the coiler, which by its circulating movement causes the yarn to fall in a coil about 4 feet wide as it falls to the floor.

Box tender.—The box tenders are unskilled men, but must be fairly strong. They watch the warp as it runs through the boxes, and throw a lever to stop the machine if an end breaks or a tangle occurs. They do not repair breaks, but call a boss. While they are watching they sit around and take an occasional look to see that the work is running all right. About the only active labor they perform is when the warps have run through. Then they assist in tying on the leader, running it through the box, taking down the warps, and starting new ones. There is one man to each box. It usually takes from two to two and one-half hours to run a warp of 4,000 yards through the box, during which time the runner sits and watches. About four or five runs are made each day. Hence, the runner sits around most of the day. The work is not very clean work and has to be done in a hot, humid room. When not engaged in running a box these men assist in any work that is to be done, i. e., become spare men. This is especially true when the machines or the room are to be cleaned, which work is usually done on Saturday forenoon. Box runners are time workers. The work required in running a boiling box is practically the same as running a wash box.

Vat tender.—The vat tender is a low-grade worker, but must be strong. His principal duty is to watch the warps running through the vats. If anything happens, such as an end breaking or the warp tangling, he must see it at once, throw a lever to shut off the machine, and get a section hand or one of the bosses to fix it. What active labor he performs is when the warp has run through and a new one is started. He assists in tying the leaders to the ends of the old warp. When the warps have completely run through and the rollers have stopped, he takes the dyed warps off the warp racks on to trucks, shifts the empty warp rollers to the balling apparatus, and sets the warps to be dyed on the proper racks. When ready to run he ties the new warp to the leaders and starts the rollers by throwing a lever.

Each vat tender runs four or five pairs of vats. In the morning he ties the warp ends to the leaders and starts his rollers. Each set is started about five minutes after the one next to it so they will run out in order. A warp of 4,000 yards will take about three and one-half hours to run through. During this time the vat tender sits around watching the warps run through. When a set of warps is dyed, he assists in running the leaders through, changes over his warps, and gets everything ready to start up again. He then assists on the other vats till all are made ready. When a warp is started it must be run until finished, but the work is usually so

arranged that one run is made in the forenoon and one in the afternoon. The vat tender is on his feet while actually working, but sits more than one-half the time. The air in the room is very humid, and the worker is liable to get somewhat stained with the dye. When not engaged in running a vat this worker becomes a general spare hand. This is particularly true when cleaning. Vat tenders are paid on a time basis.

Drying-can tender.—The drying can tender is an unskilled worker, but must be strong. He is required to watch the yarn running over the cans and, if any tangling occurs or ends break, to stop the machine and call the second hand to fix it. When a ball of warp runs out he sets a new one on the rack and ties the end of the new one to the old one, so there is a continuous strand running over the cans all the time the machine is running. It takes about one and one-half hours to run a warp of 4,000 yards over the cans, and the tender can change a set of four in about five minutes. Each tender runs about five sets of cans, so that he is engaged in active labor about one-third of the time, and the rest he sits down, watching the cans from time to time. This worker usually keeps his section clean. This room is particularly hot and humid. He is paid on a time basis.

Coiler man.—The coiler man is in the beaming room where the warp from the dry cans coils. It is his duty when one full warp is coiled to see that it is removed and another started. The drying can tender usually puts a piece of white yarn at the knot joining two warps so it can be readily seen by the coiler man. Just as soon as the knot comes the coiler man pulls the full warp out of the way, lays a piece of burlap where the coil is to be made, unties the knot, and the new warp begins to coil. The warp does not stop coming. He ties the corners of the burlap over the coil so it can be moved without getting soiled. Four warps are usually run together and all run out about the same time, so he has to work fairly fast while changing. It takes about one and one-half hours for a warp of 4,000 yards to run through the dry cans, and about 10 minutes to change a set of warps and tie up the coils; so one coiler man can easily look after all the coilers in any ordinary mill. In most mills he would have considerable free time, as the coiler does not need watching until just about time for the warp to run out. It requires some strength to move the warps, which weigh from 150 to 250 pounds, and this worker has to work in a fairly hot room. He is paid on a time basis.

Spare hands or helpers.—Spare hands in the dyehouse are strong unskilled laborers that work under the direction of the second hand or the section hands. They are required to do whatever is to be done around the dyehouse, principally trucking warps, which

weigh from 250 to 400 pounds, and assisting in "changing over." The work is usually heavy and dirty, and they have to work in a warm, humid atmosphere. They are time workers.

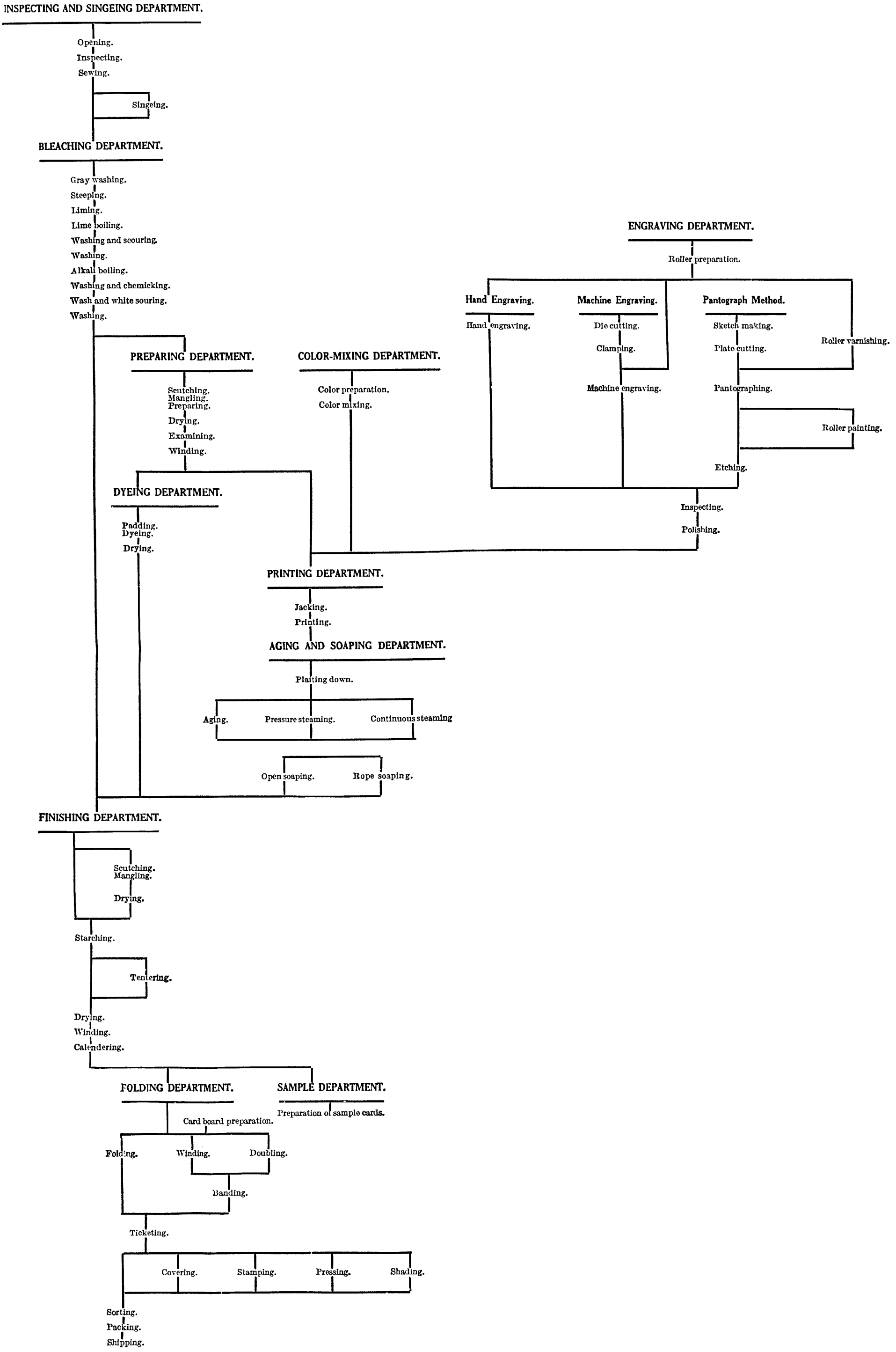
Changing over.—"Changing over" is the term applied to the work of running leaders through the boxes and vats when the warps have run out, and also to starting new warps. The warps are timed so that there will be time to get one leader in before the next warp runs out. The spare hands, working in a group, go from the first vat or box to the last, changing over at each one as they go. Just before the warp runs out one of the spare hands pulls it off the beam so another can tie a leader to the end. Since all the warps running through the machine together run out about the same time, there must be a spare hand to hold each end while the leader is tied on. When the end of the warp has come through the section hand or the vat runner stops the machine. The warps are then cut from the leaders and the spare hands move on to the next set. The vat or box runner then takes down the finished warps and sets up new ones to be run through. When starting up again the runner starts the machine, after tying the new warps to the leaders. Then the spare hands assist again, one at each ball winder, cutting off the leaders when the end of the warp comes through and starting the end winding on the pin.

COTTON-CLOTH FINISHING OR CONVERTING.

The "finishing" of cotton cloth, unlike the finishing of woolen or worsted cloth, is generally carried on in a plant separate and distinct from that in which the cloth is manufactured. The reason for this lies, perhaps, in the fact that so much of the cotton cloth woven is printed, as well as that the ordinary mill does not weave enough cloth to make a finishing plant pay. Such a plant for finishing cotton cloth is sometimes termed a "converting plant." Some converting plants are equipped to impart any finish to the cloth, i. e., to bleach, to dye, to print, and to finish. Others do only bleaching; some, printing only; and still others, dyeing only. Practically all cloth that is to be printed or dyed has to be bleached first, and all cloth has to be finished, i. e., pressed, etc. A plant equipped to do all kinds of finishing would have about 10 departments: A singeing department, where the cloth is inspected, singed and made ready for bleaching; a bleaching department, where the cloth is decolorized and rendered free of foreign matter; a preparing department, where the cloth is prepared for dyeing and printing; a dyeing department, where color is imparted to the entire body of the cloth; a printing department, where colors are imparted in a design or pattern to the face of the cloth; an engraving department, where the rollers are prepared for printing; a color department, where the colors are mixed; an aging and soaping department, where the cloth is treated after printing; a finishing department, where the cloth is starched, pressed, etc.; and a folding department, where the cloth is folded and wrapped, and made ready for the trade.

The many different "finishes" required for different styles of cotton cloth require just as many different modes of treatment. It is obviously impracticable, therefore, to trace, step by step, all the processes through which the cloth is put after it comes from the weaving mill. All that can be done is to mention the important processes, and, in a general way, state the order in which the bulk of the cloth receives the various important treatments in a finishing plant. Large plants will have practically the same operations carried on in two separate departments, as, for example, mangling and tentering in the department preparing cloth for printing, as well as in the finishing department. This is also true of starching and calendering white goods as distinct from colored goods. So far as this description is concerned, a calenderer or a mangle tender is a calenderer or a mangle tender whether he is in the preparing depart-

SEQUENCE OF PROCESSES IN THE FINISHING OF COTTON CLOTH.



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ment, white finishing department, or colored finishing department. However, a particular organization may have good reasons for making separate departments for different classes of work. Certain occupations, particularly those concerned with changing the form rather than the condition of the goods—sewers, for example—are found in many different departments. Such occupations will be described only once, though there may be slight variations in the requirements, due to the particular needs of a given department, or to the number and arrangement of machines.

GENERAL OCCUPATIONS.

In a converting plant, the same as in a mill, there are certain general occupations that are common to all departments, such as second hands, truckers, sweepers, etc. The work of these employees is sufficiently described in the description of cotton cloth manufacture, pages 141 to 205.

INSPECTING AND SINGEING.

When the cloth comes to the converter from the mill it is the natural color of the cotton and is said to be "in the gray," or is called "gray cloth." It comes either in cuts of from 40 to 100 yards, folded, or in a roll of about 1,000 yards, made up of several cuts sewed together. Each cut is examined by an inspector to determine the structure and quality of the fabric. Each is also measured, either by counting the folds or by running it through some machine, like the hooker machine (*see* Folding), which has a measuring device on it. The leading and tail ends of consecutive pieces are sewed together with a stitch that will easily pull out, and so that their face sides will be matched. As many as 800 to 1,000 fifty-yard cuts are sewed together, making a continuous sheet of 40 or 50 thousand yards, or nearly 25 miles long. This great length of cloth, called a run or lot, remains in one piece throughout the bleaching process. When all the cuts are sewed together, the cloth is given its first treatment—singeing. Not all cloth is singed, but it is necessary in the finishing of the greatest proportion to remove the nap from the face. This is done by passing it very rapidly over a superheated copper plate, followed immediately by an immersion in water. When the desired finish requires bringing out the weave, the singeing is done by Bunsen flames, i. e., gas singeing as distinct from plate singeing. After leaving the singeing machine, the cloth, which is in the open width, is drawn through a round, porcelain guide, 5 or 6 inches in diameter, called a pot-eye, which gathers it into a strand. It is in this "rope" form that the cloth passes through all the subsequent bleaching processes. It obviates the necessity of folding or rolling it, and it can be much more easily and quickly

transmitted from one place to another. This transmission is accomplished by means of the rollers of the machine through which the cloth runs, together with conveniently located winces (drums with six or eight wooden lags suspended horizontally from the ceiling and which draw the cloth by friction), the cloth being guided by pot-eyes hung from the ceiling. The rope of cloth from the singeing machine is transmitted in this way to the bleaching department, and each subsequent transmission of the cloth in the bleaching department is accomplished the same way. Some cloth that is to receive a treatment prior to bleaching, e. g., cloth that is to be napped, is not singed, but is wound into rolls of about 1,000 yards for convenience in handling.

Singeing machine.—The singeing machines used in this department are of two types—plate and gas. The plate type consists essentially of two curved copper plates, slightly barrel-shaped, set in fire clay, one in front of the other. Beneath each of these plates is a fire box in which coke or oil is burned to heat the plate. There are the necessary guide rollers and a water mangle in front. The cloth in the open width is led in from the back, passes under a guide rail, over the first plate, then over the second, or hotter, plate, and through the water mangle and out. While passing over the plates, particularly the second one, the nap is burned off, the barrel shape of the plates insuring an even contact for the entire surface of the cloth. Sparks that may remain after singeing are put out at the mangle. Great lengths of cloth are run through this machine at such a rapid rate that only the nap is burned off, leaving the body of the cloth unharmed.

The gas singeing machine is somewhat different from the plate type. It consists essentially of an iron frame supporting numerous guide rollers and two long rows of Bunsen burners slightly longer than the width of the cloth. The cloth in the width is led first through one flame, then around three or four guide rollers, and finally through the other flame, through the water mangle and out. The advantage of gas singeing lies in the fact that the Bunsen flame forces the fire around the threads instead of just on the surface of the cloth as in plate singeing. It thus displays the weave clearly, and leaves a more desirable finish on certain classes of goods, particularly the finer grades.

The occupations of the inspecting and singeing departments are as follows:

Second hand.
Section hand.
Opener.
Inspector.
Inspector's helper.
Measurer.
Sewer.
Singer.
Winder. (*See* Preparing.)
Trucker or floor man.
Sweeper.

Opener.—An opener is usually an unskilled male employee. Boys under 18 are sometimes used for this work in connection with older men. Their work is to open up the bales or rolls of cloth as they are received at the works, or are brought in from the storeroom. They use a knife and wire cutter when necessary. They remove the bands and burlap from the bales, cut the stitches binding the pieces, and place them in position for the inspector. Their work requires considerable physical strength to handle the large bales. This occupation might be classed with helpers or floor men, openers being unskilled workers assigned to a definite task.

Inspector.—Inspectors are, as a rule, men. Their work is to examine the cloth after it is opened and before it is put through any process. They measure the cloth and count the warp and filling threads to determine the weave. They examine the yarn for size and test the strength of the cloth, and in general determine if the cloth is of the type and standard represented. They work at a bench at which they may either stand or sit, and use a small microscope and measures. Their work is light, but somewhat exacting. Inspectors must be dependable. They only determine the condition of the cloth, and the results of their inspections are checked with the office records of the cloth obtained from the weaving mill. Inspectors have considerable freedom as to hours and speed of working, but must accomplish all the overseer expects in a day. They are paid on a time basis. The work can be done by women without detriment to their health, should it become necessary to substitute women for men.

Inspector's helper.—The inspector's helper is generally a man, though women are sometimes employed. He might be considered as a sort of apprentice inspector. There may be only one helper to several inspectors. His work is simply to assist the inspector in handling the cloth, helping to spread it out and removing it when inspected. He is supposed to make himself generally useful, and is permitted to assist in the simpler operations of inspecting. This is not a necessary position, the work being such that a general floor man might just as well do it, except that it is a means of training a man in the rudiments of inspecting. When women are employed the heavy work is done by the floor men. Helpers are paid on a time basis.

Measurer.—The measurer may be either a man or a woman. His work is to determine the length of the cloth to be run. After the inspector determines the quality the measurer takes the cut and measures it, either by counting the folds or running it through a hooker folding machine. When measured by hand the employee stands at a bench and counts the folds by running his hand through

each in the familiar way. For a description of the requirements of machine measuring see "hooker tender" in the folding department. Measurers in the inspecting department are paid on a time basis.

Sewer.—Sewers may be either men, women, or children. Their work is to sew the pieces together so as to make a continuous run of cloth of the desired length. They use an ordinary sewing machine head on a small iron frame about 3 feet high. They operate the machine with a pedal, though if large quantities are to be sewed in one place a motor is attached to it. The leading end of one piece of cloth is lapped a little over the tail end of another, and the two are sewed together as the operator runs the machine. The stitches vary according to the requirements, but are usually large and loose, and can be easily ripped out. It is essential that the sewer get the faces of the pieces matched. Sewers work at a moderate speed, but must always keep sufficiently ahead of the machine taking the cloth to take care of any delays. They look after their machines, oil and clean, as well as thread them. Where the work requires them to move about, sewers work standing; where they work in one place, they usually sit, if convenient. There is little or no occupational hazard. Sewers are paid on a time basis.

Sewers found in other departments do essentially the same work as is here described.

Singer or singeing-machine tender.—The singers in the plants that have come under the observation of the bureau have been men. Usually a singer runs but one singeing machine. A particularly skilled and rapid workman may run two machines. Most of the time the singer is engaged in watching the running of his machine. The cloth runs through at a very rapid rate, and he must see that it goes in smoothly and flat, and that it comes off properly singed and not scorched. He controls the starting and stopping of his machine. He must keep the plates at the proper temperature and feed the fuel, or, if a gas machine, must regulate the flame. It is essential in this operation that the run be constant, for the slightest stop is sure to result in burning the cloth. Plate singeing can not conveniently be stopped without necessitating a reheating of the plates, so this type usually is run continuously during working hours. With the gas type the flame can be turned off at any time. When not running, the machine is left threaded with a leader. While this operation requires the constant attention of the singer, little active physical effort is required of him, except when starting and stopping the machine. The work requires a careful man, for a little carelessness can easily result in the damaging or total loss of a considerable quantity of cloth. There is little danger of personal accident, except through negligence. The smoke caused by the burning lint is carried off through a hood and ventilator. The singer is paid on a time basis.

BLEACHING.

The bleaching department is the department where all foreign substances and colors are removed, leaving the pure cotton fiber perfectly white. This is done by immersing the cloth in water and solutions of various chemicals in the proper sequence, and allowing the proper time for the chemicals to act. The immersions are made either in bulk or "in the run." When immersed in bulk the whole body of the cloth is packed in a large tank, called a kier, completely covered with the liquor and left for some time. When immersed "in the run" the rope of cloth is drawn through a washing machine. One type of washing machine is narrow and provides for one dip. The other type is wider and provides for six or eight dips for every particle of the cloth as it passes through. All cloth is treated in either one of these ways, except that "souring" and "chemicking" is often done in tanks. When the cloth is to be stored or exposed to the air, as in steeping or in oxidizing after bleaching, it is plaited down in large bins or pits with large river stones in the bottom to allow for drainage.

The cloth comes to this department in rope form from the singeing machine and is immediately immersed in water in a washing machine. This is called the gray wash. In the damp state the cloth is plaited down in a pit, called a steeping pit, and allowed to remain several hours. This treatment is called steeping, a slight fermentation taking place which loosens the size and other impurities in the cloth. When the cloth is taken from the steeping pits it is run through a saturating or liming machine, and is impregnated with a heavy milk of lime solution. From here it is run into a kier, the whole "run" being carefully plaited down by kier plaiters. The kier is filled up with the lime solution and the whole is boiled for from 6 to 12 hours. This is called lime boiling, or bowken, and is designed to decompose or saponify the fatty and oily matter. It also loosens the cotton wax and starchy substances of the size. When the cloth is taken out of the kier it is washed in a washing machine filled with plain water to remove the excess of lime as well as any soluble substances formed during the boiling. It is next run through a saturating or souring machine in which it is impregnated with a dilute acid solution, hydrochloric acid or sulphuric acid, or both. This is called the brown sour, gray sour, or lime sour, and is designed to remove all calcium (lime) or any other substances that may have been precipitated on the cloth during the lime boil. The damp cloth from the brown sour is piled in a bin and allowed to remain several hours or over night. After this it is washed in water with a little soda ash, the soluble chlorides formed in the brown sour being thus removed. Next it goes into a kier, where it is boiled in an alkali solution with resin soap for from six to twelve hours. This is called

the lye boil, or alkali boil, and is designed to convert the fatty acids into soluble sodium salts or soaps and to remove the remaining fatty, waxy, and resinous matter. It is then given a wash in plain water to remove the soluble salts. The cloth now should be thoroughly cleansed, free from all but coloring matter, and ready for bleaching proper. This bleaching treatment is called chemicking and is accomplished by running the cloth through a saturating or chemicking machine filled with a dilute bleaching solution or is heated in a chemicking tank. After chemicking the cloth goes to a bin where it is allowed to stay from two to six hours, during which time the chemic oxidizes and the cloth becomes much whiter. The bleached cloth is then given a hasty wash to remove the excess bleaching powder. It is again treated with an acid solution, in a process known as white souring, for the purpose of decomposing any bleaching powder that remains and to remove any calcium compounds. During this souring a rapid bleaching occurs. The cloth now is given a thorough wash in water to remove all foreign substances and any chemicals that remain. It is exceptionally important to remove the chemicals and chemical compounds formed, and to remove them at the proper time. Otherwise a reaction will take place which will change the chemical composition of the fiber and render it tender and even unfit for use. All through the bleaching process great precaution must be taken against making the cloth tender by overstrong solutions, insufficient washings, exposure to the air during the lime boil, etc.

The description of the steps in the bleaching process given above is not meant to be exhaustive, nor is it given as a common or even satisfactory method. It is merely a suggestion of the various treatments necessary and what they are designed to accomplish. So very many things enter in to vary the process—the goods, the finish, the kind of machinery, the water, and, principally, the fancy of the bleacher—that perhaps the treatments are not the same in any two bleacheries.

In this department the cloth is handled in runs several thousand yards in length. It is conveyed about by drawing through pot-eyes by the rollers of the various machines. Much of the work is in the nature of guiding the cloth and is done by unskilled floor men. The chemicals used for the various baths are such as would cause injury to those handling them and to the cloth unless great care is exercised. Modern plants use pipes entirely for conveying the acids and chlorine gas, thus doing away with all handling. Caustic soda is handled in drums, from which it dissolves into the liquor without any preliminary breaking up. The solution is then drawn as needed through pipes. There is some little danger connected with opening drums of caustic soda, but the men protect themselves by wrapping pieces of cloth about their faces.

Kiers.—Kiers are the machines in which the cloth is treated in bulk when it is desired to have every particle of the cloth subjected to the bath for a considerable period of time. Kiers are of several kinds, each with its peculiar advantage. Essentially they are all large iron tanks, about 7 to 10 feet in diameter and 12 feet high, built mostly below the floor. The top is completely covered, but has a manhole to allow the worker to get into the kier. There is a false bottom several inches above the real bottom to keep the cloth off the steam pipes and away from the exit pipe. Projecting up through the middle of the tank is a pipe, just above which, at the top, is a curved umbrella-shaped plate.

The whole run of the cloth is put into the kier, being carefully plaited down to insure proper circulation of the liquor. After the cloth is in, the tank is filled to about a foot from the top with the liquor. The steam is turned on and is allowed to escape into the liquor from an injector near the bottom of the central pipe. A thorough circulation is kept up by the force of the escaping steam, which makes the liquor rush up the central pipe and, striking against the umbrella-shaped plate, spread out and sprinkle over the top of the cloth. The thorough circulation of the liquor is the most important requirement in the treatment in the kiers, and it is this feature that varies in the different styles of kiers.

Washing or saturating machine.—The washing machine consists, essentially, of a vat or tub to hold the liquor and rollers to draw the cloth through and squeeze out the excess liquor. In the wider type of washing machine the tub is usually about 6 feet long, 2 feet wide, and from 4 to 10 feet deep and set below the floor. Near the bottom is a roller to guide the cloth and above the tub is a pair of wooden squeeze rollers, called bowls. The narrower type is the same, except that it is not as long. The cloth is drawn in by the bowls, passes down into the liquor, around the immersing roller, and then between the squeeze bowls. In the wider type the cloth is led into the liquor and between the rollers several times, the cloth passing in and out in a spiral till it reaches the other end of the bowls, where it leaves the machine. The cloth is guided by wooden pegs just below the bowls. It receives six or eight successive dips, and the excess liquor is squeezed out between each. The cloth in both types is in continuous motion, at speeds varying from 4 to 10 miles an hour, depending on the treatment desired. There is great variation in the size and style of washing machines even in the same plant, depending on the use to which they are put. There may be some entirely set off by themselves, and others combined with a pair of heavy-pressure squeeze rollers and a saturating tank, the tank being rather deep and set below the floor, with a pair of squeeze rollers at the top.

The bleaching occupations are as follows:

Second hand.	Scutcher tender. (*See* Preparing.)
Section hand.	Sewer. (*See* Inspecting and singeing.)
Plaiter.	Trucker.
Kier boiler.	Floor man.
Washer tender.	Helper.
Bath mixer.	Sweeper.

All of the above occupations except second hand, section hand, and kier boiler are grouped as "Laborer, bleach house," in the wage tabulation of this report.

Plaiter.—Plaiters are either men or boys. Their work is to plait down the rope of cloth either in a pit or bin or in a kier. A wince overhead draws the cloth and it falls down into the pit or kier. Plaiters use a wooden stick with which they direct the fall of the cloth, causing it to lie in laps, forming uniform layers, so the cloth will not tangle when coming out, and, if in a kier, so the liquor can readily circulate through it. Two men work in a kier or pit at one time, each plaiting down a separate run of cloth in one half of it. These employees wear rubbers or wooden shoes and stand on the cloth as it piles up. When it gets near the top of a kier, they work in a stooping position. They work constantly, but not hard. Plaiting seems like a simple operation, but it is important that it be done right. It is usually the first step in the training of an all-around bleacher. Plaiters are paid on a time basis.

Kier boiler.—Kier boilers are men. Their work is to prepare the kiers for boiling and look after the boiling. They direct the filling of the kier with cloth and open and close the valves admitting the liquor and those admitting the steam whenever necessary. These men watch from time to time to see that the liquor is circulating as it should, and they keep track of the length of time each batch is in. Three kier men can look after more than 50 kiers with about two-thirds of them boiling at a time. Kier boiling is continuous throughout the 24 hours of each day, so it is necessary to employ night men. One man can look after more kiers at night than during the day, since there is no changing. This work requires little physical effort, but is so distributed that each man keeps fairly constantly at work. Kier boilers are paid on a time basis.

Washer tender.—Washer tenders are men or older boys. Their work is to run the washers. As a rule, one man is assigned to each washer, though he usually has a saturating tank and a pair of squeeze rolls to look after as well. He keeps his machine threaded with a leader and just has to tie the cloth on when he is ready to start. He turns on the liquor in the machine and draws it off when through. He has control over the starting and stopping, and looks after the oiling and cleaning of his machine. The bulk of the washer tender's work

is to see that the cloth is running through smoothly, and to be ready to stop the machine or otherwise take care of the situation if anything goes wrong. The work requires rather constant attention, but is not hard. Washer tenders are paid on a time basis.

Bath mixer.—Bath mixers are male employees. One man can look after the mixing in any plant, with the assistance of helpers, if the work requires it. This man looks after the mixing and storing and transporting of all chemicals used in bleaching. He sees that they are properly prepared and are of the right strength for the work to be done. Different plants handle their chemicals in different ways, but in any case this employee's work is about the same. The work is not heavy, large drums of caustic being handled with a block and fall, but there is more or less danger from burns or fumes. Chlorine fumes are especially dangerous, but the worker is protected by a ventilating system. When opening drums of caustic soda he covers his head with a piece of cloth. Mixers are paid on a time basis.

MERCERIZING.

Mercerizing is the name of the process by which cotton is given a luster similar to that of silk. This is accomplished by giving the cloth a bath in a strong caustic solution (sometimes other chemicals) under tension, and following it with a bath in sulphuric acid, then one in water. This treatment changes the chemical structure of the fiber, and, besides giving it luster, gives it strength, and has a tendency to shrink it both ways. The machine used for mercerizing is called a mercerizing range. It is a combination of other machines described under finishing. The cloth is led through a water mangle, the trough of which contains the solution of strong caustic soda. From here it goes to a tentering frame which holds it out to width. In its passage it is sprayed with water, and, on emerging at the other end, is run through two water mangles, the trough of the first containing dilute sulphuric acid, and that of the second containing water. It is then plaited down on trucks and conveyed to a set of dry cans to be dried. This process may precede bleaching or may follow it, and may even follow dyeing. Wherever it is done, the process is the same, though there might be some variation in the method of handling. The work of handling the cloth and guiding it through the mercerizing range is the same as that required at similar machines in the finishing department, and the occupations are described in that section.

The occupations of this process are as follows:

Mangle tender. (*See* Preparing.)
Tenter frame tender. (*See* Finishing.)
Dry-can tender. (*See* Preparing.)
Swing tender. (*See* Preparing.)
Mercerizer (designation of foreman in charge).

PREPARING.

Roughly speaking, cloth is printed or dyed directly after bleaching. But it can not be printed or dyed in the form in which it comes from the bleachery, hence this intermediate process of preparing. Here the cloth is opened out, pressed (i. e., mangled), dried, and wound into rolls for the printing and dyeing machines. Here also, certain "prepares" (chemicals to make the dyes "take" in printing) are put on the cloth when necessary. These are applied at the mangle. The long length of the cloth is drawn in rope form from the white pits, where it is put after bleaching, to the preparing department. It is first run through a scutcher, which opens it out and restores it to sheet form. The sheet is directed to a mangle, where it is wet (or "prepared"), pressed, and then run over a set of dry cans and plaited down onto trucks. These trucks are taken to an employee known as a dumper, who examines the cloth to see that the pieces are sewed so that the faces match, i. e., either all face up or all face down. When it is passed by him it goes to a winding or rolling machine, where it is wound into rolls of the desired length, ready to be taken to the printing machine or to the dyeing machine. Other operations may be carried on in this department, such as tentering or shearing, but they are inserted here only for certain classes of goods, and will be found under "finishing."

Following are the occupations of this process:

Second hand.	Plaiter down (same as swing tender).
Section hand.	Dumper.
Scutcher tender.	Winder.
Mangle tender.	Trucker.
Dry-can man.	Floor man.
Swing tender.	Sweeper.

Scutcher.—The scutcher is a simple machine that consists of a beater, a scrimp rail, and a pair of drag rollers arranged so the cloth will pass from one to the other in the order mentioned. This machine is supported near the ceiling with a considerable stretch between it and the last pot-eye that the cloth passes through. This arrangement is designed to permit the cloth to open as much as possible before reaching the scutcher and to prevent twisting and tangling. The cloth is drawn by the drag rollers of the scutcher, first coming in contact with the beater, which revolves against the direction of the cloth, and thus opens it to width. As the cloth passes over the scrimp rail, whose surface speed is faster than that of the cloth, it is stretched out and freed of creases by the diverging serrations with which its surface is cut. The sheet of cloth can be swung onto a truck or led to another machine.

Mangle.—A mangle is a series of two or more cylinders placed one on top of the other so their centers will be in the same vertical plane

and so the "nip" between any two can be regulated as to pressure. These cylinders are called bowls. They vary in size (usually 15 or 18 inches in diameter) and in composition, some being made of iron, and others of brass, wood, or composition. Mangles usually have some sort of an expander attached at the going-in end and very close to the nip, which is designed to stretch the cloth to a desired width. There are many types of expanders, a more or less common one being cylindrical with its surface made of slats which are given a lateral or spreading motion while revolving. The surface of the slats has sharp serrations which engage the cloth, and, by exerting an even tension in both directions from the center, stretch it in width. Most mangles have a box or trough beneath the bowls to contain some liquor in which the cloth is immersed before mangling. The kind of mangle is usually designated by the liquor in the box—as water mangle, padding mangle (when "prepare" is used), scratch mangle, etc. The primary purpose of the mangle is to wet the cloth and press it smooth, but by manipulating it differently between the bowls it is possible to assist in getting different "finishes." The mangle is practically always connected up with other devices or machines, e. g., a tenter frame or set of dry cans. In such cases the cloth is led directly onto the dry cans or tenter frame from the mangle.

Dry cans.—Dry cans, or drying cans, are large hollow copper cylinders 2 or 3 feet in diameter and wide enough to carry one or two widths of cloth, as desired. A number of these cans (from 6 to 30, according to particular needs) are arranged in a long series of two tiers (sometimes higher if space is cramped) and geared to run together, and are called a set or range. The cloth is directed around the cans so that it will touch as much of the surface of each as possible. Dry cans are found in all departments and are usually connected to run with other machines. In such cases the operator of the other machines looks after the operation of the dry cans.

Swing plaiter.—The swing plaiter is a device for delivering the cloth in loose folds piled usually on a truck. It is supported some distance above the floor and consists essentially of a pair of drag rollers to draw the cloth along, and a small pair of guide rollers suspended below them on arms that are caused to swing back and forth as the cloth is delivered. This attachment is used in connection with any machine when it is desired to fold the cloth onto trucks. This method of handling the cloth has many advantages over rolls, especially when consecutive pieces are to be sewed together, because the tail end can be reached without waiting for the roll to unwind.

Winding or rolling machine.—A winding or rolling machine is a machine for winding any length of cloth around a roller. It consists essentially of two large cloth-covered rollers set in the same horizontal plane and geared to run together. There is a guide arm at

each end and usually 4 or 5 wooden slats over which the cloth is drawn when going in to give it a little tension. The cloth is started around a wooden roller which is placed on the rollers of the machine, and is turned by friction, winding on the cloth as it turns. As the roller increases in size the pin which is inserted through the roller rises in the grooves of the vertical arms, thus holding the roll in position. Sometimes a sprinkling device is attached to a rolling machine. This consists merely of a water box with perforated pipes across the top. The cloth just before being wound is drawn over the top of the box and the water sprinkled on it from underneath. Some winding machines have an automatic device for cutting the cloth. Winding machines are found in different departments.

Scutcher tender.—In some plants there is the designation "scutcher tender" for certain employees, but the work required of them is not so much tending the scutcher as it is tending something else. Scutchers need practically no attention. Sometimes a man will look after a scutcher and a mangle, or a scutcher and a swing folder. The occupation in such cases is really "mangle tender" or "swing tender."

Mangle tender.—A mangle tender is usually a man. His duty is to run one, two, or three mangles, according to his ability, or the arrangement, or the goods run. He controls the starting and stopping not only of the mangle proper, but of the dry cans or other machine that is connected with it. He regulates the supply of the water, starch, or other material in the box connected with the mangle, and regulates the nip, i. e., the pressure on the bowls. While the mangle is running, he watches the cloth as it enters, keeping it straight and smooth. He also looks for imperfections, stains, etc., in the cloth. When the machine is to be stopped he ties on the listing (a band of strong cloth) with which the machine is kept threaded, and when it is started attaches the cloth to the tail of the listing. If there is a starch box he must wash that out when the machine is stopped for any length of time, as at night. Mangle tenders are usually responsible for keeping their machines cleaned and oiled. The work at no time requires much physical effort, but it requires the almost constant attention of the tender. There is always a certain amount of danger connected with heavy rollers working together, but there is little chance of a worker getting caught here, except through carelessness. Mangle tenders are paid on a time basis.

Dry-can man.—Some mills have the designation "dry-can man" for the man who tends the swing folders in connection with the dry cans. The occupation is the same as "swing tender."

Swing tender or plaiter down.—A swing tender may be a man or a boy. His work is to change the trucks or boxes into which the swing folder delivers the cloth. One man can tend from one to

four, depending on the speed with which the cloth is delivered. If delivered direct from a scutcher it usually comes pretty fast (about 150 yards a minute), and one man has all he can do to run one. The work simply requires moving a full truck away and putting an empty one in position, and tearing the cloth to start a new batch. He has no control over the starting or stopping of the machine, and usually no further responsibility than that just mentioned, unless perhaps he is required to watch for imperfect cloth. He works standing, but the work is not hard. It requires some little knack and strength in the fingers to tear a piece of heavy cloth quickly and neatly. Swing tenders are found in different departments and may be called by other names, usually by the name of the machine to which the swing is attached. Wherever they are found the work is essentially the same. They are paid on a time basis.

Dumper.—The dumper is usually a man. His work is to examine the cloth after it comes off the dryer and before it is sent to the printing department. He looks for "reverses," i. e., cuts of cloth that were sewed in with the face the reverse of all the other cuts. It is essential that the face of every piece be matched, either up or down, otherwise the pattern would be printed on the face of one piece and on the back of another. He stands at a bench and examines every seam, and when he finds a piece reversed, cuts it out and sews it in properly. The work is light and does not require his constant attention. He is paid on a time basis.

Winder.—Winding or rolling requires a strong man. His work is to wind the cloth into rolls on a winding machine. Winders are found in different sections of the works wherever there is need to wind the cloth for transportation or to set up to a machine. At the beginning of each batch the winder threads the cloth through the tension slats and starts the end around the wooden roller. He then puts the pin through the roller, places it in position, and starts the machine. While the machine is running he watches to see that there are no creases and that the selvages are straight. It usually takes only a few minutes to make a roll, depending on the size. When the roll is made he cuts the cloth and starts another. His work is a constant repetition of this, and usually keeps him pretty busy. If there is a sprinkler attachment it usually works with the running of the machine, but the winder must regulate the pressure, etc. He is paid on a time basis.

DYEING.

The dyeing department is that department where color is applied to the whole body of the cloth. Most cotton cloth is bleached more or less before dyeing, but some, the coarser grades, are dyed without any bleaching. Cloth that is to be dyed may go to the dyeing depart-

ment in the rope form direct from the bleaching department, but as a rule it is opened out, mangled, dried, and wound into a roll before it is taken in to be dyed. In the former case the cloth would be dyed in the rope in a machine called a dye beck. In the latter the cloth is run through the dyeing liquor in the open width. The machine used for certain dyes is called a jig-dyeing machine, or jigger, while a vat is used for indigoes. Before the application of some dyes it is necessary to "prepare" the cloth by giving it a bath in some other liquor, and after dyeing it is necessary to wash it. The machine used for this preparing and finishing is called a padding machine. The cloth, after being dyed and washed, is usually dried in this department before it is returned to the finishing department. The drying is accomplished in the same way as in the preparing department. The dyeing of different colors requires variations of process and often added developing or fixing processes, details which it is unnecessary to enter into here.

The occupations of the dyeing department are as follows:

Second hand.	Floor man.
Section hand.	Trucker.
Dyeing-machine tender.	Sweeper.

The last four occupations are grouped as "Laborer, dyehouse," in the wage tabulation of this report.

Jig-dyeing machine.—The jig-dyeing machine consists essentially of a vat to hold the liquor, with guide rollers near the top and near the bottom. Projecting above the vat are two pairs of arms or supports and the necessary gears for driving. The roll of cloth to be dyed is placed on one pair of arms and the end directed around the guide rollers in the vat so it will be conveyed down and up through the liquor at least twice. After it passes out of the liquor it is wound on a roller on the other pair of arms, the gear for winding being connected with this roller. After running the cloth through once, the gear can be shifted so as to wind the cloth back on the first roller. In this way the cloth can be run through the liquor as many times as is necessary to get the shade.

Padding machine.—The padding machine used for impregnating the cloth with mordants, etc., is essentially the same as the jig-dyeing machine, except that the cloth passes through a pair of squeeze rollers to press out the excess liquor before winding. (*See* Jig-dyeing machine.)

Indigo vat.—An indigo vat is a large vat or tank about 4 feet deep, 10 feet long, and a little wider than the width of the cloth. Rollers to guide the cloth are placed wherever needed to give the proper immersion. The cloth is led in over a rack, and, after being immersed in the dye is run between a pair of squeeze rollers and over

a number of guide rollers to fully expose it to the air so as to allow the indigo to oxidize.

Spiral dye beck.—A spiral dye beck is a curved bottom trough or beck with a wince across the top to propel the cloth. Becks are usually 5 or 6 feet long. The cloth in rope form is led in at one end and passes in a spiral to the other end, receiving as many dips as are necessary. There is a surplus of cloth left in the bottom to allow for a longer immersion. After leaving the dye beck the cloth is run through a pair of squeeze rollers to remove the excess dye.

Dyeing-machine tender.—Dyeing-machine tenders are male machine operatives. This designation is here used for any employee who runs any type of dyeing machine, as a vat, a jigger, a beck, a padder, etc. As a rule one man tends one machine. The work does not require any particular skill or judgment. These men thread up their machines, turn on the valve admitting the dye, and watch the passage of the cloth for tangling or overlapping. They start and stop their machines and regulate the speed. They have to appeal to a foreman for approval of the color and the number of dips a particular piece is to get. These men oil and clean their machines and wash out the vats after the batch is dyed. The work is not hard, but requires rather constant attention. There is no particular danger, but in working with dyes one is likely to get pretty well stained. These men are paid on a time basis.

ENGRAVING.

The engraving department is the department where the rollers used in the printing machine to impart the various colors in the pattern to the cloth are prepared. More depends on the accuracy of the workmanship in this department than in any other branch of textile printing. The little furrows or grooves made in the rollers in this department determine absolutely the design and the depth of color that will be imparted to the cloth. If there are any imperfections in the rollers, and if they do not fit absolutely accurately, imperfect printing will result.

The rollers are about 52 inches long and vary in circumference from 10 to 40 inches, most of them being from 15 to 20 inches. They are made wholly of copper (except the very large ones) with borings through the center, and are slightly tapered so they will fit tightly on the mandrils for the printing machine. They are turned down to size and are polished and burnished in order to be absolutely smooth. Old rollers whose designs are discarded are also turned down smooth. It is very important that the circumference of the

roller be an exact multiple of the length of the design, so the design will repeat an absolutely even number of times around the roller.

A separate roller is engraved for each different color to be printed, but it is possible to get different shades of the same color on one roller by varying the depth of the engraving. Deep engraving picks up more color and imparts a deeper shade. Lines in the design are obtained by cutting a groove in the roller. Solid spaces are obtained by first outlining the design and then filling in the space with a number of parallel lines, cut but slightly into the surface. These latter lines are merely to carry the color and leave no trace of lines on the cloth.

There are three ways of engraving the design into the rollers: (1) Hand engraving, (2) Machine engraving, and (3) the Pantograph method.

(1) *Hand engraving method.*—The method of engraving the copper rollers by hand is the simplest method of all. But it is the slowest and most expensive, so is not much used. It is most economically used when the design is large and has one "repeat," i. e., when the length of the pattern is the same as the circumference of the roller so that each time the roller turns it prints one "repeat" of the design. When the design is small and repeats a number of times in the circumference of the roller it is much more economical to engrave it by one of the machine methods. When a roller is hand engraved the design in surface tracings is imparted to its surface and the engraver cuts along the lines of the design with a sharp steel instrument, called a graver. When he has finished the roller is polished to remove burrs raised by engraving. Then it is ready for the printing machine.

(2) *Machine engraving method.*—Machine engraving differs from the hand method in that the depressions are not cut out of the surface of the roller but are pressed or stamped out with a mill on which the design is raised in bas-relief. This method is most economically employed when there are few colors and the design is small and repeats several times in the circumference of the copper roller. It involves several preparatory operations. In the first place a die has to be made. This is a small solid roller of softened steel on which one repeat of the design is cut or engraved, much after the fashion of hand engraving, with gravers, punches, etc. When the die is hardened it is put in a clamping, or clamming, machine which reproduces the design in bas-relief on another soft steel roller called a mill. The mill when hardened is put into the engraving machine and in turn presses out the design in the copper roller, it being the exact size to repeat an absolutely even number

of times in the circumference of the roller. Wherever the mill makes depressions the copper pressed out rises above the surface, making burrs. These have to be removed by polishing, and, after an inspection, the roller is ready for the printing machine.

(3) *The pantograph method of engraving.*—The pantograph method, or etching method as it is sometimes called, differs from both the hand and machine methods in that the engraving is made, not by cutting or pressing the copper out but by etching, or chemically eating out, the design. As in machine engraving several preparatory operations are necessary. The sketch maker makes a copy on paper of the design as it comes from the designer, making such slight rearrangements as are deemed necessary. He not only outlines the design, but outlines every color and every shade. When his sketch is approved, he puts it into the sketch camera and makes an enlarged copy on a zinc plate. After perfecting this it is given to the plate cutter who cuts the outlines into the zinc. A plate painter then fills in the colors to guide the pantographer. This latter operator by means of her machine transfers the design, reduced to its original size, on to the copper roller, by cutting with a diamond point through the "varnish" with which the roller has previously been coated. The outlines for each different color in the design are put on separate rollers, as many rollers being made as there are colors in the design. These rollers are taken to the etcher who subjects them to a treatment in nitric acid. Since the "varnish" put on the roller is not affected by the acid, only such lines as have been cut through the varnish by the pantographer are etched. When the varnish is washed off, the roller is left with the design engraved on it. It is inspected and polished and is then ready for the printing machine. Sometimes the roller has to be subjected to a second bath in the etching acid, certain lines needing to be more deeply etched than others. In such cases the parts not desired to be affected are painted with "varnish" by girls called roller painters. This is very often done when making the ground or "blotch" roller, the roller that carries the color to print the ground of the pattern. The ground surface has to be slightly etched in order that the roller will carry the color. But the parts of the roller where the figures come must not be etched. Grinding can be done by machine over the whole surface of the roller and the figures painted out. This work is done by the roller painters. The pantograph method has two features that commend it—speed and the fact that the outlines of all the colors are taken from the same plate, thus insuring a more perfect fit when the colors are combined on the cloth.

The occupations of the engraving department follow:

Second hand.
Hand engraver.
Die maker.
Clammer.
Steel turner.
Machine engraver.
Bumper.
Sketch maker.
Plate cutter.
Plate painter.
Pantograph setter.
Pantographer.
Etcher.
Etcher's helper.
Roller painter.
Roller turner.
Roller varnisher.
Polisher.
Roller inspector.
Trucker.
Floor man.
Helper.
Sweeper.

Clamming or clamping machine.—The clamping machine is the name of the machine used for transferring the design on the die to a like impression in relief on the mill. It is a specially constructed rotary press. The die is set in the machine and the mill is set in above it and in contact with it. The periphery of the mill must be the same as that of the die or a multiple of it. When the die is turned, it causes the mill to turn, and by properly applying pressure the impression is made. The pressure is obtained by a large screw about an inch and a half in diameter.

Engraving machine.—The engraving machine is the machine used for transferring the design from a small mill to the large copper roller. It consists of an iron frame capable of supporting the copy roller which is carried on a shaft that rests in bearings so as to turn freely. Just back of the roller and shaft is a grooved horizontal rail which carries a heavy upright arm or pillar so it can be moved from side to side on the machine. Hinged to this pillar is a lever which projects out over the front and carries a weight at or near its other end. A block made to carry the mill is fixed to the lever so that, when the mill is in it, it rests directly on the copper roller. This being a lever of the second class, as the weight (power) is moved out toward the end of the arm, the pressure of the mill on the roller is increased. The machine has many regulatory attachments and is equipped to be run by power or hand according as the running is to be constant or intermittent. When a very small figure is to be engraved it is done by turning the roller back and forth by hand, a process known as bumping. When the design is on the whole circumference of the mill, it is transferred by running the mill and roller in frictional contact continuously in the same direction until the impression is sufficiently deep. The mill is first placed at one end of the roller and the machine run until the design is engraved, moving the weight out as the intaglio becomes more pronounced. Since the circumference of the roller is an exact multiple of that of the mill, the design will be engraved around the roller, covering as

much of the width of it as the width of the design on the mill. As soon as one section of the roller is engraved, the mill is moved along and the next section done, then the next, and so on till the whole width of the roller is engraved.

Pantograph machine.—The pantograph machine is a machine designed to transfer the design from the flat zinc plate to the curved surface of the copper roller. It makes use of the principal of the pantograph by which a design may be copied on the same scale as the original, or on an enlarged or a reduced scale. Instead of reproducing the design in a plane parallel to that in which it is traced, as would be the case with the simple pantograph, it is reproduced on the curved surface of the roller, which is supported somewhat above the table on which the design is traced. In order to transfer the motion two systems of levers are used, one for the horizontal and one for the vertical lines, the oblique lines being produced by compounding the motion of the two.

The various parts are supported in an iron frame about 4 feet wide and 4 feet long. At the front of the frame, low enough for the operator to sit with her feet on the floor, is a table to which the zinc plate is attached. The tracing point is a stylus at the end of one of the sides of the pantograph. It has a free motion, permitting it to be moved at will in any direction over the surface of the table. The reproducing points are very small diamonds supported by arms on a rigid bar which is given a horizontal motion. As many "repeats" of the design as are necessary to cover the width of the roller can be made at the same time by attaching the requisite number of diamond points or "tools" to this bar. The vertical lines are produced by turning the roller. These two motions and their compounds are transferred from the movement of the stylus by a rather complicated system of levers which make up the back part of the machine.

Hand engraver.—The hand engraver is a highly skilled man. His work is to prepare the different rollers for printing by cutting the design directly into the roller. A sketch or a photograph of the design is made, and the outlines of each color are drawn with some substance like lamp black and oil, which when held against the surface of the roller and slightly dampened will leave an imprint of the design on the roller. Guided by this imprint the hand engraver cuts the lines out of the copper. Most of the cutting is done with a small instrument called a graver. This is a small piece of steel, rhomboidal or square in section so when ground off at an angle it has a very sharp cutting edge. It is mounted in a short rounded wooden handle which fits into the palm of the hand while the steel is held between the forefinger and the thumb. The engraver becomes very adept in the use of this tool, and is able to follow very accurately the

lines of the design, cutting a groove of the proper depth and uniform throughout. Punches of various sizes and designs and light hammers complete the tools used by the hand engraver. He works at a bench with the roller supported in bearings. He keeps the design in color before him and must be very careful to engrave the lines of one, and only one, color on a roller. This is fine and exacting work, and a man must serve an apprenticeship of seven years before he becomes a journeyman. It requires little physical effort as the handling of the rollers is done by floor men. The engraver can stand or sit as he sees fit. He is paid on a time basis. Not all plants have hand engravers. When they have fine work that should be done by hand it is sent out to a firm that specializes in that work. Large plants usually keep one or two hand engravers.

Die maker.—Die making is a highly skilled occupation in which men only are employed. Their work is to cut small designs into small cylindrical pieces of steel about 3 or 4 inches long and 1½ to 2 inches in circumference (some times larger) These pieces of steel, when the designs are cut in, are called dies. The die maker cuts the designs from an original. He sometimes makes an imprint on the die as the hand engraver does on the roller and cuts the design with his tools. Sometimes he marks the die with very fine impressions equal distances apart in order to guide him in putting on the design. He cuts in the design either with a graver (*see* hand engraver) or some sort of a punch, of which he has a great variety of sizes and shapes. A part of his work is to make all his tools, some of which are very fine and need to be very accurate. Die makers sit at a bench to work and use a magnifying glass almost all the time, their work being so fine that it can not be seen without the glass. This work is not physically hard, but is very exacting. It must be so accurate that it will fit perfectly when several repeats are made on the roller. Die makers bring out shaded effects by a scheme of dotting known as stippling. While this merely requires the punching of small dots it is in practice an extremely delicate and difficult operation. Not only must the dots be properly spaced, but they must be of the proper depth, the slightest irregularity producing faulty work at the printing machine. Die makers serve an apprenticeship of seven years. They are paid on a time basis.

Clammer or clamper.—The clammer, or clamper as he is sometimes called, is a fairly skilled man. His work is to make the mill to be used in machine engraving from the die prepared by the die maker, and to do this he uses a clamming machine. He puts the die into the machine and the mill in contact with it, turns the pressure screw, which he regulates with a large wheel, and starts the machine by throwing a lever. He runs it about a minute and takes the mill out, dips it into nitric acid an instant to bring out the impression,

and then dips it into water to wash off the acid. This operation is repeated several times before the impression begins to show up and a number of times before it is finished. While the machine is running the clammer keeps the mill and die well supplied with lubricating oil. The first impression made is that of the burrs raised on the outside edges of the die which make corresponding indentations on the outside edges of the mill so the two will fit and not slip while the impression of the design is being transferred. The skill in this work comes in knowing how to apply the pressure. Too much pressure will spoil the mill and even break it or the die. Knowledge of the proper amount comes only with experience. It is very essential when placing the mill back to place it in exactly the position it was in before being taken out. It is also important not to give it too long a dip in the acid. When the design is raised completely it is approved by the foreman and then hardened by the clammer. The clammer has the necessary furnaces, bone dust, etc., for hardening. He hardens the dies as well as the mills. He heats the furnace, puts in the steel properly covered, and when it attains a white heat, he takes it out with tongs and dips it into water. Hardening does not require especial skill, but if carelessly done will spoil the steel and result in considerable expense. Clammers' work is not hard or constant, but it requires care and good judgment. Clammers are paid on a time basis.

Steel turner.—The steel turner is a semiskilled man. He runs a lathe to turn down the dies and mills to size and also to turn off the steel on the mill outside the design so the design will stand out. His work is about the same as any lathe hand. He places the steel in the lathe, adjusts his tool, and turns the power on and off. He has to turn the piece down to a given size and smooth it up. He works standing, but is not required to be actively engaged constantly or to work hard. He is paid on a time basis. This work would be done by a clamper or roller turner in a small plant.

Machine engraver.—Machine engraving is a skilled occupation for men. In this operation the design is transferred from the small steel mill to the large copper roller in intaglio. Each engraver runs one machine and has a helper, who is called a "bumper" after the work he is especially employed to do. The engraver must see that the roller is properly put in, and that the mill is, as well. The two must be exactly parallel, and their respective axes must be in perfect vertical alignment with each other. If they are not the repeats of the design will not "fit" around the roller. The engraver must also exercise especial care in moving the mill to engrave a new section since the side repeats of the pattern as well as the vertical repeats must fit exactly. There are, however, mechanical devices on the machine designed to be of considerable assistance to

the engraver in fitting up the repeats. Besides setting the machine so the repeats will fit exactly, the skill in this operation comes in knowing the proper weight to put on the lever to get the proper pressure on the mill, and knowing when to apply the pressure. This comes only through experience. Engravers look after their machines, clean, oil, etc. They work leisurely and have the constant assistance of a helper for any work that requires any particular physical effort. A stool is provided to sit on when the work permits. The trade is considered a skilled one, and it is necessary to serve an apprenticeship of seven years before one becomes a journeyman engraver. Engravers are paid on a time basis.

Bumper.—"Bumper" is the name given to the machine engraver's helper. There is one helper for each engraver. His principal work is to run the machine by turning a large handwheel that can be attached to one side when it is desired to engrave a number of repeats of a small figure. In that case just one repeat of the design is raised on the mill, instead of several around the circumference of it. The engraver adjusts the mill so the figure will fit, and the bumper impresses it by turning the wheel back and forth slightly till the figure is engraved. This short, jerky, back and forth motion is called bumping, hence the designation "bumper." Bumpers assist in moving the rollers and in doing any other manual work. Their work is unskilled and not especially hard. They sit while bumping. They work leisurely, and a large part of the time have nothing to do. They are paid on a time basis.

Sketch maker.—The sketch maker is a highly skilled man. His work is solely handwork, and combines mechanical skill with a certain amount of artistic ability. He sits at a drawing table where he has brushes, pencils, paints, and other drawing utensils. His principal work is to make an enlarged sketch of the design. To do this he uses an instrument called a sketch camera. This consists of lenses, a reflector, and a strong electric light. The design is put into the camera, and when the light is turned on a reflection of the design is thrown on a flat surface or table. The instrument can be adjusted so as to throw an image any number of times the size of the original (five times being usual). The sketch maker places on the table a flat sheet of zinc, usually about a foot square, whose upper surface is painted white. When the room is darkened the enlargement of the design is reflected very clearly on the white surface of the zinc. The sketch maker traces the design in pencil on the zinc. He then takes the zinc plate back to his drawing table, where he smooths up the lines and corrects any imperfections that are brought out in the enlargement. He not only draws the outlines of the design, but outlines every different color and every different shade. When every line is clearly drawn the plate is ready for the

plate cutter, though sometimes it is necessary to put a little color on the plate to guide the plate cutter. Another important part of the sketch maker's work is to rearrange the design sent by the designer. Often the designer's original would not look well on a piece of cloth. When it is repeated over and over again on the cloth it might show streaks of light or other faults. The sketch maker is supposed to catch such things. He makes a small sketch on oiled paper, and makes such changes on that as seem to him to improve the design. When it is approved by the head of the department, he goes ahead and makes a zinc plate for it.

Sketch making is an organized trade that requires an apprenticeship of seven years. The work is very exacting. It is fine work, in which the perfection of details is important. Sometimes a man will work several days on one piece of work. He sits at his desk all day except while he is making the sketch at the sketch camera, when he stands. The physical effort is light and there is no hazard. Sketch makers are paid on a time basis.

Plate cutter.—Plate cutting is skilled work in which men only are employed. It is handwork and requires a steady nerve. A plate cutter takes the plate with the design drawn on it, and with a graver, just like the one described under "hand engraver," he cuts a slight depression in the zinc along the pencil lines. In addition to cutting the lines the plate cutter must keep his tools sharp. This is exacting work; the lines must be cut to a uniform depth, and the joints made clean and accurate. The cutter works at a swivel table and can either stand or sit as he pleases. The work is light, but painstaking. This is an organized trade requiring seven years' apprenticeship. Cutters are paid on a time basis.

Plate painter.—The plate painter is usually a young woman. Her work is to paint in the different colors on the plate. She works at a desk where she has a number of different colors and paint brushes. The original design is given to her and she paints in the colors on the plate so the pantographer will be guided in her work. It is not necessary to have the colors the same as the original, but all of any one color in the original must be one color on the plate. The work is light and is done while sitting. This is really a part of the sketch maker's work and would be done by him in a small plant. In a large plant one or two girls can do all the work.

Pantograph setter.—A pantograph setter is a rather skilled mechanic. One setter is employed for about every 15 machines. His work is to set up the machine so it will reproduce the design reduced to the proper size. He adjusts the levers to reduce to the proper scale. He sets in the roller, with the aid of a helper, and adjusts the diamond points or tools so they will cut the roller in the proper places. He also places the zinc plate in the proper position and tacks it to the

table so it can not be moved. In addition to adjusting the machine for the pantographer, he looks after it in general, keeping it oiled and in repair. The work is not physically hard, nor is it constant work, but a complete knowledge of the machine is essential, and considerable skill and accuracy in adjusting the parts is imperative. Pantograph setters serve an apprenticeship of seven years. They are paid on a time basis.

Pantographer.—Pantographers are usually women over 18. They run the pantograph machines, one girl to each machine. Their work consists only in operating the machine. They have nothing to do with setting them, this being done by men called pantograph setters. When the "tools" are in position, the zinc plate firmly tacked to the table, and the machine otherwise completely adjusted, the pantographer traces all the lines of one color on the zinc plate. The stylus has a sharp point which fits into the grooves cut in the plate by the plate cutter. The operator sits at the table and manipulates the stylus with both her hands; two small handles projecting, one on each side of the stylus, aid her in guiding it. In addition she operates a lever with her foot, which brings the tools into contact with the roller or releases them. When the tools are not in contact with the roller, it makes no difference how she moves the stylus about, but while she holds her foot on the lever every movement of the stylus causes the diamond tools to cut a corresponding line in the varnish on the roller. Therefore, she must work her hands and foot in conjunction, and this is not easy, particularly when the work is so fine. An extra line cut in the varnish results in that line being etched (unless discovered and painted over) and the roller being spoiled. She traces only the details of one color on a roller, as there is a separate roller for each different color, and she must be careful to confine her tracing to the color she is working on. While it is possible to set tools so that the repeats around the roller, as well as those on the length of it, can be made in one operation, it is not always done, but rather the roller is reset by the setter for each vertical repeat. It is obvious that this work, while it may not be highly skilled, requires very close attention and a very careful person. The pantographer herself determines the continuity of her work, but she is expected to work fairly constantly while her machine is set, getting a period of rest while the pantograph setter is setting up her machine. This is clean, neat work for girls. The average girl can learn to do it in about a month. Pantographers are paid on a time basis.

Etcher.—The etcher in the engraving department is a skilled employee. His work is to subject the roller, after the design has been cut by the pantographer, to the acid bath, and thus etch the design into the copper. He has a wash box or basin about as wide as the roller is long and divided into a front and a back section. In one

section is a solution of nitric acid, and in the other, water. The roller to be etched is supported in bearings on arms so that it can be swung easily from the front to the back compartment. A helper sets the roller in the bearings and turns it around first one way, then the other, with a handwheel under the direction of the etcher. It must be so adjusted that only the surface of the roller touches the acid, else the copper on the ends would be eaten away. The roller is turned a few seconds in the acid, and is then swung to the water and turned a little in that to wash off the acid. It is changed from one to the other several times before it is sufficiently etched. The etcher must regulate the strength of the acid, and must be able to tell when the roller is sufficiently etched. He works on his feet, but does not have heavy or constant work. However, his work is exacting and very responsible. There are fumes from the etching, but these are carried off by a hood arranged over the tanks. The etcher is paid on a time basis and only one is employed. He is responsible for the etching, varnishing, and washing. He is assisted by as many helpers as the work requires, and in a large plant the varnishing and washing are done by a special employee.

Etcher's helper.—Etchers' helpers are strong men, able to lift the heavy copper rollers. They move them about, place them in supports to be varnished, etched, or washed, and do any other helping necessary. A helper may wash the varnish off the rollers after etching, and one may be assigned to turn the roller in the etching bath and do nothing else. The work does not require constant attention, nor is there any particular hazard.

Roller painter.—Roller painters may be either girls or women, and little or no skill is required of them. They paint out with varnish certain parts of the roller that it is not desired to have etched. For example, when making the ground roller, the roller that conveys the ground color to the cloth, a number of parallel lines are cut very close together all over the surface. In order not to have the entire surface etched, the pattern or figures are covered with varnish. These employees do that work with a small brush. The parts to be painted out are outlined so all the painter has to do is to varnish where she is told. She must be careful to put the varnish only where she is told, and to make the edges clear cut. Painters sit at a bench while at work, the roller being placed in bearings by a floorman. The work requires no skill and only ordinary care. Painters are paid on a time basis.

Roller turner.—The roller turner is a semiskilled man. His work is to turn down the copper rollers to size, and to turn the design off discarded rollers. He runs two lathes. The rollers are set up in the lathes and taken out by the helpers or floormen, but the turner must true them up and adjust his tools. After the roller is turned down to the proper size the turner burnishes it by holding against it a

smooth piece of steel. This latter part of his work requires some extra physical effort. On the whole his work is not very hard nor does it require his constant attention. There is no danger from the turnings, which are broken up by a device on the lathe. There may be some danger from copper dust in the air. This employee is a time worker. His work may be, in a small plant, combined with that of steel turner or clamper or some other occupation. In a large plant only one is employed.

Roller varnisher.—The roller varnisher is a semiskilled man. His work is to coat the copper rollers for pantographing with an acid-resisting substance called in the trade "varnish." This is done after the roller has been polished. The roller is placed in a turning machine, and a sufficient quantity of varnish dabbed on with a brush. The roller is then turned by power while the roller varnisher presses a strip of smooth wood against it to spread the varnish smoothly and evenly all over the roller. This takes but a minute or two. Then the roller is taken out, stood on end, and boiling water poured into it. The water heats the roller through and melts the varnish just enough to make it absolutely smooth. The roller is then allowed to cool and is ready for pantographing. This employee also mixes and boils the varnish, and after the roller is etched washes off the varnish in a sink with a caustic solution. He works entirely on his feet, and is required to be strong. He is paid on a time basis. Helpers assist him in moving the rollers and sometimes do the washing. In a small plant all of this work would probably be done by the etcher, with the assistance of a helper or two. In a large plant only one varnisher is employed.

Polisher.—The polisher is a man who smooths up and polishes the copper rollers. After the roller has been turned down by the roller turner the polisher takes it and polishes it until it is absolutely smooth. He also gives the engraved rollers a light polish before sending them to the printing room. Polishing is accomplished by holding a polishing stone against the roller while the roller turns in water. The machine is simply a trough to hold the water and bearings to support the steel shaft on which the roller is fitted to turn. Some little skill is necessary in the manipulation of the stone and some judgment in determining when the roller is sufficiently polished. Strength is absolutely essential for a polisher. He handles the rollers himself, puts them on a steel shaft, and lifts the two up into the bearings of the machine. It also requires strength in applying the stone. The polisher works standing and hard while he works The continuity of active employment depends on the regularity with which rollers come to him to be polished. He is paid on a time basis.

Roller inspector.—The roller inspector is a skilled man. His work is to look over the rollers after they have been engraved to see that they are done properly. He works at a bench like the hand engraver.

He examines the roller very carefully. If there are lines missing, he cuts them in with a graver. If there are lines engraved where they should not be, he fills them up with copper. To do this latter, he lays a piece of copper wire in the furrow or groove to be taken out, cutting off about the proper length to fill the groove. He then hammers this in with a light hammer and rubs it over with a burnishing steel to smooth it. This is fine and exacting work and requires a careful and dependable man, since failure to find mistakes will cause no end of trouble later on. The work is not dissimilar to hand engraving, and in some plants one man might do both. The inspector is paid on a time basis.

COLOR MIXING.

The color-mixing department is the department where the "color" to be used in printing is prepared. "Color" is the trade term for the pasty dye liquor which is applied to the cloth. Three things are done in this department: The standard colors are prepared; the thickening paste, or starch solution, called "reducing," is prepared; and the colors are mixed to get the proper shade, and the paste added, making a suitable substance for applying to the cloth.

Dry dyestuffs and chemicals, called "drugs," are kept in a "dry drug room." The kettleman sends for certain drugs as needed and boils them in a kettle with water until sufficiently prepared, usually about two hours. These colors are called standard colors, and after they cool are conveyed to hogsheads, in which they are stored. The reducing is prepared in about the same way and is also stored in hogsheads. When color is desired for use in printing, the color mixers mix the required amount of each standard color with the required amount of reducing. The colors are mixed in tubs and stirred with a wooden paddle. The quantity of each color and of reducing to be used in a mix is learned from a formula prepared by a colorist. Before putting the color or reducing into the tubs it is strained through a cloth, to be certain there is no hard substance of any kind in it. The straining is usually done by hand, but there is a very simple device used which strains large amounts very quickly. When the color is properly strained and mixed, it is trucked to the printing machine. All the color is returned to the color room at night. Quantities of color can not be kept more than a day or two after being prepared.

The occupations of the color-mixing department are as follows:

Colorist.
Kettleman.
Kettleman's helper.
Color mixer.
Strainer.
Truck driver.
Truck driver's helper.
Tub washer.
Dry drug man.
Floor man.
Trucker.

All of these occupations, except colorist, kettleman, and color mixer, are grouped as "Laborers, color mixing," in the wage tabulation of this report.

Kettles.—The kettles used to boil the color and reducing paste are large copper kettles capable of holding 50 to 60 gallons. They are supported between two uprights which allow them to be tipped to pour out the liquid. The covers are of copper, and there is a steam jacket between the inner and the outer surface of the kettle. This allows the mixture to be boiled without diluting it. The dry drugs and liquids are put in at the top, the cover shut down, the steam turned on, and the whole allowed to boil the proper length of time. Usually about four batches can be made in each kettle each day. When boiled, the mixture is dumped out into tubs.

Tubs.—The tubs used to contain the color during transportation are strong wooden tubs capable of holding about 20 gallons. They are provided with iron handles so they can be lifted. They also have strong bottoms to withstand frequent dragging.

Colorist.—The colorist is usually the head of this department. A large plant will have one or two colorists in addition to the head. The occupation is a skilled office position. The colorists determine how to get the color desired by the designing department, giving the formula for the different mixes to the color mixers. They also decide when the correct shade is reached. After the color has been put into the printing machine the printer prints a small piece of cloth, called a patch or swatch. This piece is steamed and soaped and examined by the colorist, who gives the final word to the printer that the color is all right and to go ahead with the printing.

Kettleman.—The kettleman is a rather skilled worker. His work is principally that of a foreman. Only two kettlemen are employed in a very large plant. They have charge of the preparation of the standard colors and of the reducing paste. Each kettleman has about 25 kettles in his section and is assisted by 15 or 16 helpers. The kettleman directs the work of the helpers. He gets his orders and formulas from the chief colorist. He sends helpers for dry drugs; sees that they are put into the proper kettle; that the proper amount of water is added; that the steam is kept up; tells the helpers when to turn off the steam and when to remove the color; sees that the kettles and floors are kept clean; and in general is responsible for the proper preparation of the standard colors and reducing paste. There is considerable responsibility to this position. The work is not hard, though the kettleman keeps pretty constantly at work. There is little or no danger, but the work is dirty and disagreeable, and one's clothes and person get very much stained. The caustic used to remove the stains from the hands causes abnormal perspiration. These men are time workers.

Kettleman's helper.—Each kettleman has about 16 unskilled workers who work entirely under his direction. They are called helpers and may be called upon to do any of the work incident to the preparation of the standard colors and the reducing paste. The dry drugs and chemicals have to be trucked from the drug room to the kettles; they have to be put into the kettles; the steam has to be turned on and off; when boiled, the color or the paste has to be poured out into tubs; the tubs have to be trucked, two at a time, on a hand truck and the color or the paste dumped into the proper hogshead; the kettles must be boiled and brushed out and made thoroughly clean between each batch; and the floor around the kettles has to be washed with a hose at least once a day. The entire floor is concrete. These helpers are used interchangeably on any of the above jobs. They keep pretty constantly at work and their work is usually heavy. They work an hour overtime, for which they are paid at the regular rate. During this hour a certain number of them are used to help wash out the tubs. There is no particular danger of accident, but the men and their clothing get pretty well stained. The caustic used in removing the color causes abnormal perspiration of the parts to which it is applied. The men are paid on a time basis.

Color mixer.—The color mixer is a male worker somewhat more skilled than the helpers. There are several color mixers. They are required to mix the proper quantities of standard colors and paste to obtain the shade and consistency required for the printing room. The number of parts of each is furnished the mixer by the colorist. The mixer dips the colors and reducing from the hogsheads into large tubs with a small hand dipper. He spreads a piece of cloth over the top of the tub and puts the liquids on this. Then the strainer squeezes the liquor through the cloth and the mixer stirs it up with a wooden paddle. His work is not hard, but necessitates care to put in the proper proportions of each substance. While he exercises no discretion he must be reliable. He reports one-half hour early in the morning to prepare the color and works one hour overtime each night to put away the color and clean up the room. There is no particular danger, but the color gets on the person and clothes of the worker, and the caustic used in removing it from the body causes abnormal perspiration of those parts to which it is applied. These workers are paid on a time basis.

Strainer.—The strainer is an unskilled worker of about the same grade as the helpers in this department. There is one strainer for every color mixer. His work is to squeeze the color or the reducing through the cloth, on which the color mixer puts it, into the tub. This he does by twisting the end of the cloth, forcing the liquor through. He strains only a few dipperfuls at a time. It is rather a

slow process at which the worker has to bend constantly and his hands are constantly in the color or reducing paste. Sometimes a tubful is strained at once by means of a device which consists of a screw that draws the cloth full of liquor through a small eye, thus forcing out the liquor. When this is used the employee just has to fasten the ends of the straining cloth to the end of the screw and turn the handle till all the liquor is forced out. The hand method is constant, hard work, while the machine method is much lighter. In both cases the worker gets pretty well stained up and suffers from excessive perspiration of the hands as a result of the caustic used to remove the color from them. He reports one-half hour early in the morning and works an hour over time each night to clean up the room and help wash out the tubs. He is paid on a time basis, with overtime at the regular rate.

Truck driver.—The truck driver runs a large motor truck on which the tubs of color are carried from the color-mixing department to the printing machines. He stands on the front end of the truck, steers with one hand, and regulates the power with the other. He rings a warning bell with his foot. A helper rides with him and they both lift the tubs on and off. Running the truck requires a grade of employee but slightly higher than the helpers. Care must be exercised not to collide with things or persons about the room. The driver comes in about 15 minutes before starting time in order to distribute the color to the printers. He also works about one hour overtime at night to get all the color from the printing room to the color room and to help straighten up the latter. This employee keeps pretty busy, though there are times during the day when for a few minutes he has nothing to do. He gets stained with color, with the same result experienced by all the other employees of this department. He is paid on a time basis, with overtime at the regular rate.

Truck driver's helper.—The truck driver's helpers are unskilled strong men. They ride on the trucks and help to lift the tubs on and off them. They report a few minutes before opening time and work one hour overtime to get all the tubs from the printing room and to help wash them out. They have about the same free time as the drivers. They get stained with color the same as other employees in this department. They are paid on a time basis, with the regular rate for overtime.

Tub washer.—The tub washers are unskilled workers. Their work is to wash the color and other substances out of the tubs. They wash them in a large sink with warm water and a brush. Only a few washers are regularly employed, and they work an hour overtime each night. Each night before closing all the tubs brought down from the printing room are washed out, and, in order to get

this done, a number of helpers about this department are assigned to washing out tubs. The work during the day is not hard and can be done leisurely. The last hour or two they must work fast. There is no danger, and only the inconvenience of having the hands in water most of the time. These workers are paid on a time basis, with the regular rate for overtime.

Dry drug man.—The dry drug man stays in the room where the dry drugs, starches, gums, etc., are stored. He opens the sacks as needed and weighs out the various substances as called for by the kettleman. Some of the substances used are in fine powder form and fill the air with a fine dust when being handled. To protect the dry drug man from any injuries that might arise from this condition a hood and ventilator are provided in the room, and under these the powders are handled. The work is not constant, but at times is rather strenuous. He is paid on a time basis.

PRINTING.

The printing department is where the cloth is printed. It is the department where the cloth, color, and rollers, prepared in other departments, are brought together. The bleached cloth is brought here wound in rolls about as large as can be conveniently handled. This roll is set up on a spindle behind the printing machine so it will unwind freely, and when one runs out the end of a new roll is sewed to it till the batch is printed. The printed cloth is then run over a set of dry cans and delivered to the aging department, where it is swung off onto trucks. Copper rollers with the engravings on them are brought in sets from the engraving department and are kept until ready to be put into the machine. They are then put on the steel shafts or mandrils, under 10 or 12 tons pressure, by a machine called a "jack," and are trucked to the printing machine. The different colors are trucked as needed direct from the color department to the printing machine.

The printing machines are arranged side by side so all the rollers and colors can be delivered in the front alley and all the cloth handled in a middle alley. The machines are of different sizes, designed to print from one to sixteen colors. The cloth is run through rapidly, sometimes as much as 16,000 yards being printed at one machine in a day. The speed varies, however, according to the weight and strength of the cloth.

This department runs continuously from the starting time in the morning till closing time at night, not stopping for the noon hour.

The occupations of this department are as follows:

Second hand.	Helper.
Section hand.	Color boy.
Jack man.	Brush washer.
Truck driver.	Color-box washer.
Printer.	Floor man.
Back tender.	Trucker.
Spare hand.	Messenger.

Printing machine.—The machine which each printer has to run, with its drying apparatus and other appurtenances, is a rather large affair. A section of floor space nearly 9 feet wide and about 40 feet deep is allotted to each machine, and the conveyors over which the cloth passes are 12 or 15 feet above the floor. The printing machine proper consists of an iron frame supporting the different parts, and varies in size according to the number of colors to be printed. The most essential part is the copper roller with the design engraved on it, there being as many rollers as there are colors in the pattern. These are arranged around the lower half of a large central cylinder, called the pressure bowl, so that each comes in contact with it. When fewer rollers than the machine is capable of carrying are used, they are placed at the lower front part for the convenience of the printer. Below each copper roller, and in contact with it, is another roller of wood or a stiff brush, called the "furnisher," which revolves so that the lower part of it is submerged in the color liquor contained in a pan beneath it and the upper part comes in contact with the copper roller, thus furnishing the color to it. About half way between the nip of the roller and the furnisher and the nip of the roller and the pressure bowl is a very sharp, smooth, steel blade, called the "doctor," which rests against the roller, and is designed to scrape all the color off the surface, leaving it only in the engraved parts. On the opposite side is another doctor blade of brass, designed to remove any lint or other colors from the roller before it receives a fresh supply of color from the furnisher. The rollers are carried on steel shafts or mandrils, which work in bearings on the side of the frame. The whole is driven by a large cog wheel on one side of the machine, which gears into smaller pinions, one connected with each roller. On the other side of each mandril is another pinion which gears with a similar one on the furnisher, thus turning the furnisher. The pressure bowl is not positively driven, but turns from the action of the rollers.

About 15 feet behind the printing machine proper is a set of drying cans similar to those previously described. In the space between the machine and dry cans are the supports for holding the roll of white cloth to be printed as well as the supports for the rolls of back grays, and the winders for the rolling up of these latter. Space is also left for an alley to convey materials.

The cloth is drawn from a roll set up behind the printing machine and is guided into the back of the machine. When the pattern requires it, there is a device called a Foxhall guide attached to the back of the machine which automatically guides the cloth absolutely straight onto the large cylinder. It passes around this cylinder or pressure bowl, and between it and the several engraved rollers. Each roller, being properly adjusted, and carrying its color in the engraved parts, prints its design on the cloth, so, when it emerges in front all the colors are printed, each fitting in its proper place to make the pattern as designed. The cloth is then led back to the dry cans, and when it comes off is swung into folds on a truck. All parts of the machine are run at the same speed so that the strain on the cloth will be uniform.

The cloth does not pass directly between the copper roller and the pressure bowl nor directly over the drying cans. Several other cloths are used to protect the cloths being printed and to give the necessary elasticity between the rollers and cylinder to make the print "take." Elasticity is obtained by winding several laps of especially prepared cloth around the large pressure bowl, and in addition by causing to circulate around the pressure cylinder between the lapping and the cloth to be printed a heavy piece of closely felted woolen cloth, called the "blanket," sewn end to end to form an endless band.

Besides these one or two pieces of heavy cotton cloth, wider than the white cloth to be printed and called "back grays," are run under the cloth to be printed, both on the printing machine and on the dry cans. On the printing machine the back gray serves to take up the color on the roller outside the width of the print cloth; while on the dry cans the back gray serves to protect the printed cloth from direct contact with the cans. These back grays are drawn off rolls and wound up each time, the one receiving the color being washed before being used again.

Forcing jack.—The forcing jack consists of two horizontal iron rods about 8 feet long, supported about 1½ feet from the floor. At one end is the pressure head and at the other a resistance head. The copper roller is rested on a saddle beside the machine and the mandril put through it. The two are then lifted onto the jack into position and the power turned on. The middle part of the mandrill is made to fit into the roller, both being tapered. As the roller is forced up on the mandril with 12 to 15 tons pressure on the ram, they become so firmly attached that the two will turn together in the machine as one. The roller is forced off the mandril with the same machine. This device is simple and easily operated, except that care must be exercised to apply the pressure gradually, lest one or both become strained or even break.

Jack man.—"Jack men" is the designation given the men who put the copper rollers on the mandrils and otherwise handle the rollers and mandrils. These men work in groups of three. They lift rollers and mandrils onto trucks to move them about, and they put them together with the forcing jack. When they are together they truck them to the printing machine and set them into the bearings on the machine. They do no more than set them in place, without adjusting them. The bulk of the work is merely heavy manual labor required to lift the rollers and mandrils, but at least one of the group must understand how to apply the pressure on the jack so as not to strain or break the mandril. Jack men must exercise care in handling the rollers, so as not to scratch or otherwise injure the engraving. While the work is very heavy, there is no particular strain on strong men. They do not work continuously, having frequent periods when their work is caught up and they are free to sit around and do as they like. Jack men are paid on a time basis.

Truck driver.—Driving a motor truck in this department is practically the same as driving one in the color-mixing department. The work requires a man of about the same grade, and he must be sufficiently strong to assist the jack men in handling the mandrils, if necessary.

Printer.—The printer is a highly skilled male machine operator. Each printer runs one printing machine, with its dry cans and other appurtenances. He has a back tender, a spare hand, and sometimes a color boy to help him. He is responsible for the proper printing of the cloth, adjusting of the machine, and keeping it in repair. He controls the starting and stopping and regulates the speed. When the machine is running, the printer stands at the front of it, where he can see the cloth after it is printed. He watches for all sorts of imperfections, and immediately upon discovering them takes the necessary steps to correct them.

The most important part of the printer's work is to properly adjust the machine when a new batch is about to be run. In this work he has the assistance of both his back tender and spare hand. They relieve the printer of all the heavy work. Fitting the rollers to print in the proper place on the cloth is delicate work and must be exact. Among printers this work is termed "pitching the pattern," from the fact that each roller has an almost invisible point, called the "pitch point," which is in exactly the same relative position on each roller. The printer marks a piece of tape with chalk so that the spaces between the marks will be equal to the circumference of the rollers. When the tape is run through, it ought to leave a mark directly over the pitch point on each roller. If it does not, the roller has to be adjusted so it will. The machine is equipped with many devices so that it can be adjusted quickly and accurately.

Another important part of the printer's work is to keep a razorlike edge on the doctor blades. He always files these up before starting new work, and sometimes he has to take them out in the middle of a batch to resharpen them. In adjusting the doctor blades against the rollers as well as in adjusting other parts of the machine, the printer is guided largely by his own individual experience. Printers serve an apprenticeship of seven years. They start with simple patterns in one color and gradually are allowed to take on more and more rollers or colors. Printers are pretty constantly engaged while the machines are running, but their work is light so far as physical effort is concerned.

The skill of a printer comes in knowing what to do to make a pattern print right and in being able to do it. Printing is by no means clean work, though there is no necessity for the printer to get as stained with color as his spare hand does. The uncovered and intricate gearing on the side of the machine would seem to be a constant source of danger, particularly since the machines are so close, but it is said that very few accidents occur on account of it. Printers are paid on a time basis.

Back tender.—The back tender is one of the assistants of the printer. There is one for each printer. As his designation would indicate, he tends the back part of the printing machine. He looks after the supply of cloth, sewing on a new piece of white when one batch is about to run out, so as to keep a continuous run. He has a small portable sewing machine with which to do this. He also looks after the gray cloths, sewing on a new roll as each one runs out and starting new rolls winding on the winding attachment. He looks after the color in the back boxes, if there is no color boy, and he keeps the steam up in the dry cans. While the machine is running he watches the white and gray cloths to see that there are no scrimps and that the cloths are coming off the cans dry. When preparing the machine for a new pattern, he assists the printer to pitch the pattern, usually making the adjustments under the direction of the printer. When stopping the machine, either at night or to change the pattern, the back tender takes down the doctors and color boxes and washes off the copper rollers. He uses a hose and brush for washing. He is careful to remove all the color from the rollers, lest it harden and cause defective work. Washing off the rollers at night necessitates remaining about 15 minutes after the printer goes.

Back tenders are sometimes called assistant printers, but they do not assist, except when the printer is pitching the pattern. Their duties are distinct from those of the printer. The work does not require any skill and back tenders do not become printers, except in rare instances when one might be taken as an apprenticed printer.

They must be strong men, able to move the large rolls of cloth about, though much of their work is not at all heavy. They run the same risk from the uncovered gears as the printers do. Back tenders are paid on a time basis.

Spare hand or helper.—Spare hands in the printing department are as a rule strong, unskilled workers. There is one spare hand, along with a back tender, assigned to each printer. The spare hand acts as a general all-round assistant for the printer. Most of the heavy and dirty work connected with the running of the printing machine is done by the spare hand. He assists the back tender to set up the rolls of cloth and assists him to take down the color boxes and brushes at night. The spare hand rubs the excess color off the brushes into the proper pans, empties the color into the tubs, and trucks the pans and brushes out to be washed. Spare hands wash the floor around the machine each night. Their work is heavy and dirty and they run the risk of accident incident to work around the printing machinery, along with the discomfiture of excessive perspiration of the hands due to removing the color with a caustic solution. They are paid on a time basis. Spare hands work about one-half hour after the printer goes, to clean up around the machine. They get an opportunity to get about an hour overtime most any time they desire to stay, since several men are needed to wash out the brushes and color boxes after they are taken out of the machines. They are paid on a time basis.

Color boy.—The color boy is usually an unskilled boy, though sometimes men are used. He is required to do nothing but dip the color from tubs on the floor to the pans on the machines with a small dipper. A color boy is used only when there are several colors and the printer can not take care of them. It is only necessary for him not to get the colors mixed and not to let any color run too low in the pan. He works slowly and the physical effort required is light. He is paid on a time basis.

Brush washer.—The brush washer is an unskilled man. He washes the color from the brushes or "furnishers" that furnish the color to the copper rollers in the printing machine. He works at a trough or sink at which are supplied both hot and cold water. The brush is set in bearings and made to turn rapidly while the water is forced on it through jets. Running it a minute or two in water usually removes the color. The washer holds a comb on the brush while turning, to remove lint, etc., from the bristles. Both the person of the worker and the floor about him are constantly wet. The washer wears heavy shoes and a rubber apron. During the day the work is intermittent and the washer has considerable time to sit around, because he only has to wash those brushes that are taken off machines that have finished with a given pattern. But, around closing time,

he has to work continuously and fast, as all the brushes from all the machines have to be washed before he goes. His job requires him to work about an hour and a half after the printer goes. He is paid on a time basis.

Color-box washer.—The color-box washer is an unskilled man. His work is to wash out the color boxes when they are removed from the printing machine. Color boxes are long copper pans. This employee works at a large tank into which he puts the boxes to soak off the color. He uses a brush to assist in removing it. He has his hands in the water while working and the floor about him is wet. He wears a rubber apron and heavy shoes to protect himself. His work is intermittent during the day, as he has only those boxes to wash that are taken from the machines that are changing over to another pattern. Toward closing time his work is constant and fast, as all the boxes from all the machines have to be washed before he goes home. This necessitates the washer remaining for about an hour and a half after the printer goes. He is paid on a time basis.

AGING, STEAMING, SOAPING, FIXING, ETC.

After the cloth is printed it is put through a series of treatments designed to remove the thickening agent, to bring out or develop the color, to cause it to penetrate into the fiber and become permanent, etc. There are several such treatments, viz: Aging, dunging, dyeing, steaming, fixing, raising, cutting, washing, soaping, and clearing. No printed goods are subjected to all these treatments, but, as a rule, all goods are given three or four. The treatments and the order of applying them vary with the different colors and the different kinds of dyes. In a general way these treatments may be divided into two classes: Those in which the cloth is subjected to a steam or vapor bath (aging and steaming), and those in which it is subjected to a liquid bath (dyeing, fixing, soaping).

Following is a list of occupations:

Second hand.
Section hand.
Swing tender. (*See* Preparing.)
Ager tender.
Ammonia box tender. (*See* Ager tender.)
Pressure steamer tender.
Rodman.
Watcher.
Tube handler.
Sewer. (*See* Inspecting and singeing.)
Stripper tender (same as swing tender).
Open soaper tender.
Dryer tender. (*See* Preparing.
Rope soaper tender. (*See* Bleaching.)

Scutcher tender. (*See* Preparing.)
Soap mixer.
Trucker.
Sweeper.

Aging and steaming.—The cloth after coming off the printing machine and dry cans is plaited down on trucks, and in due time is put through one of the aging or steaming processes. This treatment in steam accomplishes different results with different kinds of dyes, but in general it sets up an action which fixes the dye or mordant, i. e., causes it to adhere to the fibers and prevents bleeding or spreading in later processes. It is unnecessary to discuss here the various treatments to which the different dyes are subjected, except to state that some colors require a short steaming of only a few minutes, while others require steaming for several hours. The shorter process is known as aging and the longer as steaming. Certain colors have to be brought out by passing through ammonia fumes. This fixing process is carried on with the same apparatus as aging.

Fixing, soaping, etc.—Following the steaming of the printed cloth are several treatments in which the cloth is subjected to immersion in different liquors to accomplish the results required for each particular piece. Some are dunged to clear up the colors; some are dyed, when a mordant only was printed on the cloth; some are "chemicked," or bleached, to clear up the whites; some are treated with fixing agents of various kinds; but all are soaped and washed. When dye has to be applied the cloth is sent out to the dyehouse, but all the other treatments are as a rule accomplished in a series of processes known loosely as soaping. The cloth is soaped in two ways, viz: In the open width and in rope form, and the machines used for soaping are called, after the manner in which the cloth is handled, open soaper and rope soaper. When the cloth is soaped in the open width a continuous run of cloth is immersed in a series of five or six becks (tubs or vats) in one continuous run. The first beck may contain some fixing agent, the next soap, then water to wash, and, finally, the cloth is led over dry cans. When soaped in rope form (this treatment is confined to cloths and colors that can stand rough treatment) the manner of soaping and washing is so nearly like washing in the bleaching department as to require no further explanation here. Cloth so treated is scutched and plaited down on trucks to go to the finishing department.

Ager.—The ager is the machine used for steaming cloth when only a short period is necessary for developing. It consists essentially of an iron box about 6 feet long and 4 feet high with a series of guide rollers near the top and others near the bottom. At the bottom is a valve for introducing the steam, and at the top is an exhaust pipe. The cloth is led in in open width through a slit near the top at one end. It passes across the top to the back end and then up and down

around the guide rollers till it reaches the front again where it emerges through the same slit but underneath the going-in end. The cloth is drawn off trucks, one piece being sewed to the next to keep up a continuous run, and it is plaited down again as it emerges. The cloth usually runs at about 60 yards a minute, which speed allows about three minutes for each particle to remain in. This chamber is used for fixing with ammonia fumes, there being no change, except that the ammonia instead of steam is let into the chamber.

Pressure steamer.—The pressure steamer, or steaming "cottage," as it is sometimes called, is the machine used for steaming cloth when a longer period of treatment is required than is possible with the ager, and when superheated steam or steam under pressure is required for accomplishing the results desired. It is essentially a large cylindrical iron chamber about 15 feet long and 8 or 9 feet in diameter, built with its axis horizontal. In the bottom are steam pipes, and at one end is a large door which closes hermetically. On a false bottom are two rails which can be extended outside the chamber when the door is opened so that the carriage or rack which supports the cloth can be moved in or out to load and unload. Three or four different pieces of cloth can be steamed at the same time if "back grays" (plain unbleached cloth) are put between them so the colors will not run from one onto the other. The cloth is drawn off trucks, and all the pieces are hung as one over wooden pins at the top and bottom so as to get as many up and down stretches as possible. When loaded the carriage is pushed into the chamber, the door closed, and the steam turned on. The steam is kept up to a certain pressure and every 15 minutes or so during the hour or two that it is steamed the cloth is turned over the rods to avoid getting rod marked. The device for turning over the rods is operated by a wheel on the outside of the chamber. When sufficiently treated the steam is turned off and the carriage taken out and unloaded. The several pieces of cloth are simply piled on a truck and have to be stripped and plaited down in a later process. Stripping is merely drawing the cloth over slats to separate the pieces, and plaiting down is the familiar process of swing plaiting. The stripping and plaiting are taken care of by a swing tender.

Continuous steamer.—The continuous steamer is the type used for steaming cloth for a considerable period when it is not necessary to use pressure. It is more satisfactory than the inclosed pressure type of steamer on account of the increased production due to its continuous operation. It consists of a large brick chamber about 45 feet long, 45 feet deep, and wide enough to accommodate two widths of cloth. The chamber is heated by steam pipes in the bottom and on one side. Perforated steam pipes deliver a constant supply of live steam into the chamber, shooting it down so water spots will

not be made on the cloth. Four or five pieces of cloth can be steamed in one sheet, back grays being used if there is any danger of the color running. The pieces are led in at one end and are hung in folds that reach almost to the bottom of the chamber. The brass rods on which the folds are suspended move from the going-in end to the coming-out end at a speed regulated to take up the cloth as it runs through. The rollers are fed in at one end and released at the other. While a new fold is forming at one end, the one at the other end is being drawn out. The mechanism is so timed that when the new fold reaches the proper depth in the chamber a new brass roller slides in and the cloth begins to fall over that, forming another fold. As each new brass roller slides in, all the rollers move along and one is released at the other end. The cloth moves about 75 yards a minute and each particle remains in the chamber from one to two hours, there being about 10,000 yards suspended in the chamber at a time. The cloth on leaving the chamber is stripped and plaited down on trucks for transportation.

Open soaper.—The open soaper is the machine in which the cloth is soaped, washed, and treated with a fixing agent. It consists essentially of a series of five or six vats, called "becks," just large enough to give one width of cloth a thorough immersion. On the back edge of each beck is a pair of bowls, one brass and the other rubber, to squeeze out the liquor, and inside each beck are guide rollers and a beater to agitate the liquor and throw it against the cloth. The becks are set fairly close together, except the first and second, there being a few feet between these to air or "sky" the cloth. The different becks are filled with the proper liquor for the treatment to be given the cloth. The liquor and the order varies, but usually the fixing agent is in the first, water in the second, soap in the third and fourth, and water in the fifth and sixth. Steam can be injected to heat the liquor if necessary. The cloth is led in a continuous sheet to the first beck passing, just before it dips into the liquor, over a conical spiral to keep the piece flat and straight. It passes from one beck to the next, being squeezed between each one, and finally passes to a set of dry cans where it is dried and then plaited down on trucks for transportation.

Rope soaper.—The rope soaper is the machine used for soaping, washing, etc., the cloth in rope form. It is essentially the same as the washer described under the bleaching department. Some soapers are called "loose lap," when there is only one wince or roller at the top and the cloth hangs loose on the bottom of the beck. Another type is the "tight lap," where there is a roller at the bottom as well as the top and the cloth is directed around each. The cloth gets about 18 dips in each soaper, and is run through four or six machines. After being squeezed, it is scutched and plaited down on trucks to go to the finishing department.

Ager tender.—The ager tender is a semiskilled man. When aging with steam one man is assigned to each machine. When using ammonia one man can run two machines. While the machine is running he watches to see that the cloth is feeding in evenly. He sews new pieces on as the trucks empty, and rips them apart when a truck load is plaited down. He starts and stops, oils and cleans the machine, and regulates the steam or ammonia fumes. When stopping the machine, he runs in a leader, and once a week he washes out the chamber, usually after hours, receiving overtime for it. The work requires no skill, is fairly light, but requires rather constant attention. He is paid on a time basis.

Pressure steamer tender.—The pressure steamer tender (sometimes called "turner") is a male operative. He has charge of the pressure steamers, one man being able to look after all (3) in a large plant. He is required to keep track of the time that each batch of cloth is in the steamer, and to keep up the steam pressure. Both of these matters are important in this type of steamer. Every 15 minutes he must turn the wheel on the outside of each steamer that turns over the rods. This must be done at regular intervals, and must be just the proper amount of turn, else the folds will become disarranged. This employee exercises no judgment, but must be sufficiently reliable to do his part at the proper time. The work is light and there is no danger of accident. He is paid on a time basis.

Rodman.—"Rodmen" is the designation given to a group of men who load and unload the pressure steamer. Three men work together and are able to look after three steamers. Prior to loading, three or four pieces of cloth are drawn together and swung off onto a truck as one sheet and conveyed to the steamer. One of the rodmen folds a lap of cloth over a rod and hands the rod to a second man. This man in turn passes the rod to the third man, who stands on a stool and hangs the rod on the frame. When the 56 rods are up with a fold suspended from each, all three men push the carriage into the chamber and close the door. When unloading, they pull out the carriage, and two men stand on stools to take the rods off the frame. They let them fall, cloth and all, onto a truck and the third man removes the rods and leaves the cloth on the truck. It takes about 15 minutes to load and 10 minutes to unload the carriage. The work is such that rodmen usually get a little free time, the amount varying as the steaming period for each batch varies. This work is moderately heavy. There is no particular danger, the steam which fills the chamber being carried off by fans when the door is opened. Rodmen are paid on a time basis.

Watcher.—The watcher is an unskilled male worker. All he has to do is to look through a glass window in the side of the large continuous steamer to see that the cloth folds over the rods all right.

One watcher is stationed at one end to see that the rods go in and the folds start all right. Another is stationed at the other end to see that they come out. Each man watches at one end of two steamers, and has nothing else to do. If anything goes wrong he calls the second hand's attention to it. There is no physical effort, but he works in a very hot and humid place, and it is hard to get men to do the work. He is paid on a time basis.

Tube handler.—Tube handlers are unskilled men workers. There is one on each end of a continuous steamer. One puts the brass tubes from which the cloth is suspended in the steamer in place so they will drop into position automatically; and the other picks them up as they are discharged at the other end and puts them on a conveyer, which carries them back to the going-in end. This work is not hard but is constant, slow work, about three tubes being handled a minute. The atmosphere is hot and humid and the tubes are hot. The men wear asbestos packs to protect their hands. It is hard to get men to stay at this work on account of the heat. They are paid on a time basis.

Open soaper tender.—The soaper tender is a machine operative. Men exclusively are used for this work in the plants that have come under the observation of the bureau. One man is assigned to each machine. He has charge of the running, starts and stops, oils, cleans, etc. He puts the water and soap into the proper becks by a pipe feed. The fixing agent, or "fix" as it is called, he puts in with a measure. While the machine is running he stands at the going-in end and watches to see that the cloth is running smoothly and evenly. When the batch is finished he runs in a leader to keep the machine threaded. The liquor is usually changed after each batch. This work is not hard but it requires rather constant attention while the machine is running. Very little skill is needed and opportunities for advancement are slight. He is paid on a time basis.

Soap mixer.—The soap mixer is almost necessarily a man worker. He is required to fill large mixing tanks with water and measure in certain quantities of powdered soap, soda ash, etc., as directed by the foreman. The tanks are mechanically agitated and this part is under the control of the mixer. The solution is drawn off by gravity. The work is unskilled, is moderately heavy, and does not require constant attention. The soap mixer is paid on a time basis.

FINISHING.

The finishing department is where the cloth receives its final treatment. Here it is smoothed out and pressed, starched or softened as desired, and given the final appearance and "feel" required by the trade. All the processes in this department are purely mechanical in character, as distinct from bleaching, printing, etc. No definite

sequence of processes can be laid down as the rule here, because the finishes desired necessitate variations in treatment. In general, however, it can be said that most cloth is mangled and calendered.

Cloth is either finished "white," or "colored," i. e., dyed or printed. When finished white it comes to the finishing department direct from the bleaching department and is here scutched and run through a water mangle just as the cloth to be printed or to be dyed was scutched and mangled in the preparing department. It is then at the same stage as the colored cloth that comes here after soaping. In general the cloth is now run through a mangle with some stiffening agent (starch) or some softening agent in the box under the bowls. Sometimes when it is desired to starch it on only one side, the cloth is not immersed in the starch, but is run over the surface of a roller that revolves partly immersed in the starch. This is called "back filling." The starch mangle is never entirely by itself, but is connected either with a set of dry cans or with a tenter frame. Cloth that has not been tentered is led directly from trucks, through the mangle, over the dry cans, and is plaited down again on trucks, a process exactly like mangling described in the preparing department. A large part of the cloth, however, has to be tentered, i. e., stretched to width and the weave rectified. In the bleaching, printing, and the other processes, in order to handle large quantities of cloth rapidly, it is subjected to rather rough treatment, resulting, as a rule, in considerable skewness of the weave. The tentering frame is designed to restore the warp and filling threads to their original position at right angles to each other, while at the same time stretching the cloth in width. The tenter frame is always connected with a mangle, either along with a few dry cans or alone without them, depending on the treatment. Sometimes the width is restored without the use of the tenter by a machine called a belt stretcher, but this machine is used only when it is desired to "break down" a hard finish on the cloth, a process accomplished by the same machine. This department is equipped also with other machines to put certain special finishes on the cloth, such as a linen finish, done with a beetler, or a nap finish, with a napper (the latter, however, is usually done earlier in the process). Whatever the treatment, the cloth is finally wound into a roll on a winder equipped with a dewing or sprinkling device. Sprinkling is an important step, since it is essential that the cloth have the proper amount of moisture to receive the finish desired at the calender. The rolls wound up after sprinkling are allowed to stand some time and are then set up to the calender and the cloth run through as many nips and in such different ways as are found practicable to get the finish wanted. After calendering the cloth is ready for folding.

The different effects that can be produced by variations in the manipulation of the machine in the finishing department are worth noting. Cloth is either finished "pure" or "assisted." Pure finishes are those in which mechanical processes only are employed, while assisted finishes are those in which a stiffening or softening agent is used to assist in bringing out the finish. Following are some of the qualities both of appearance and feel that can be given to the cloth in the finishing: Smoothness, luster, glaze, brightness, flatness, closeness (of weave), threadiness, clothiness, roughness, hardness, firmness, mellowness or softness, and elasticity.

The occupations of the finishing department are as follows:

Sewers. (*See* Inspecting and singeing.)
Scutcher tender. (*See* Preparing.)
Mangle tender. (*See* Preparing.)
Dryer tender. (*See* Preparing.)
Tenter feeder.
Calender tender.
Winder. (*See* Preparing.)
Sprinkler. (*See* Preparing.)
Swing tender. (*See* Preparing.)
Batcher (same as "winder").
Starch mixer. (*See* Slashing warp preparation department.)
Floor man.
Trucker.
Sweeper.

Tenter frame.—The tenter is a long iron frame varying from 20 to over 100 feet in length, according to the use to which it is to be put. Running the whole length, one on each side, are two endless chains that travel in the same horizontal plane but in opposite directions. Each link of the chain is a clip which grips the selvage of the cloth and holds it tightly. The cloth is fed in at one end in a flat sheet, and is automatically gripped on each side by the clips. At this end of the frame the clips are not as far apart as the width of the cloth, but they diverge as they move along on the frame, gradually stretching the cloth as they go until it is stretched to the desired width. At the other end the clips automatically release the cloth and it is plaited down with a swing. Tenters that are designed to straighten the weave are equipped with a device that imparts a reciprocal forward and back motion to the clips as they move along, thus working the weave back into shape. Tenters are frequently boxed in and hot air blown down on the cloth to dry it as it passes along. Liquids may also be sprayed on the cloth in the tenter frame, as is the case when mercerizing. The tenter is usually connected with a mangle and may or may not be connected also with a set of dry cans. Its connection with other machines and the way in which it is used depends on the needs of the particular style of cloth being treated.

Calender.—The calender is the machine used to give the cloth its final and lasting pressing. It consists, essentially, of a series of large, heavy cylinders or bowls supported in an iron frame in contact one with the other and arranged so their axes will be horizontal and all in the same vertical plane. The number and composition of the bowls varies according to the finish desired. However, five bowls is a usual number, with the alternate ones of hollow steel, heated with steam or a gas flame. The other bowls may be wood, rubber, husk, composition or embossed, as required. The cloth is merely threaded between the nips of the rollers and receives its "finish" according to its "condition," or state of dampness, the composition of the bowls, the degree of heat, and the relative speeds of the adjoining bowls. On leaving the calender the cloth is "batched," i. e., wound into rolls.

Tenter feeder.—The tenter feeder may be either a man or a young woman. There is one feeder for each tenter frame. He sits at the going-in end and watches the cloth feed in, observing carefully to see that the selvage is properly gripped by the clips. He also gives the cloth a casual inspection as it comes along, a light being placed under it to make it possible for him to see. Some feeders have to guide the cloth straight with a device they operate with a lever, but modern machines are equipped with an automatic guide. The work is constant, but light, and it is usually very hot where the feeders have to work. On the older type of tenters the cloth has to be hooked over pins by hand instead of being gripped by clips. With this type two feeders are employed for each machine and they alternate in one or two hour periods throughout the day. There is no particular danger of accident. Tenter feeders are paid on a time basis.

Calender tender.—Calender tenders are usually men. There is one man to each calender. He threads the cloth between the nips each time a batch is run. He regulates the speed of the bowls, both relative and absolute, and regulates the steam in the cylinder. He has absolute control of the machine, starts and stops it, and looks after the oiling and cleaning. While the cloth is running through, he watches from time to time to see that it is running in properly, but he does not have to watch it constantly. The work is not hard. There is more or less danger around calenders, both from the rollers and from gears, but with reasonable care one should not get hurt. Calender tenders are sometimes called calenderers. They are paid on a time basis.

FOLDING.

When the cloth comes from the finishing department it is ready for use by the consumer. Everything that can be done to produce goods of the quality and appearance demanded by the consumer—the texture, the color, the finish—is done. But there remains the very important necessity of putting the goods into a form convenient

for handling and attractive to the trade. This is the work of the folding department. In every other department the machine has been of prime importance, large quantities of goods being handled by relatively few operatives. Here, on the other hand, the goods are handled largely by hand and there is a corresponding relative increase in the number of workers.

The cloth comes here in large rolls from the finishing department. The first step is to measure it into suitable lengths and to fold it into convenient form. The measuring is usually done automatically on the machine that does the folding. The next step is inspecting. Then comes the wrapping, ticketing, etc. Different qualities and styles of goods are handled differently. In general, there are three kinds of folding—folding proper, or plaiting the cloth out in plies a yard or a yard and one-half long, which are subsequently folded over two or three times; winding or folding around a flat board; and doubling, winding after doubling the cloth lengthwise. When goods are handled in the manner first mentioned, the roll from the finishing department is set up at a hooker machine by a "jacker," and as the cloth is drawn off, it is plaited down in lengths usually a yard or a yard and a quarter long. When the desired length is laid out, a selector inspects it, cuts out the bad cloth, counts the folds, and pastes a tag showing the yardage on the top fold. It now goes to a "folder," who counts the folds again to check up the selector, and then turns over the large folds by hand two or three times to make a fold suitable for handling. A string is drawn through the selvages of the top and bottom plies and knotted by girls called "knotters." Two such "knots" are put at each end of the fold, so as to hold it firmly in shape. Cloth that is wound single ply is usually measured into cuts on the hooker machine and after an inspection is wound by machine around a board 6 or 8 inches wide and the length of the width of the cloth. Such a fold then goes to a "back lapper," who turns in the end of the cloth, so as to make a neat-appearing package. Two strips or bands of paper are then put around the package and pasted so as to hold it in shape. Cloth that is wound double ply, or "doubled," is handled just like the single ply, except that it is usually not folded by the hooker machine, but is drawn directly off the roll, and that the machine that winds it doubles it or folds it once, lengthwise, before winding. The doubled folds are "back lapped" and then banded like the single-ply folds. All the goods are tagged or ticketed, and some of the finer grades are "covered" or wrapped in paper to protect them. Racks are provided in a store room on which the goods are sorted according to styles, etc., and from here they are taken to be baled or cased for shipment.

Numerous special and subsidiary operations are carried on in this department, some of which are of more or less importance and employ

a considerable number of hands. Among these are the preparation of the boards on which the cloth is wound by punching holes and pasting labels on the ends; "stamping" a distinguishing mark or emblem on the outer fold of pieces of white goods; "folding" by hand some of the finer goods in certain special ways, as book folding; "inspecting" for seconds, and laying out remnants and short cuts; "shading," i. e., arranging cuts of goods dyed in solid colors so no bale will contain cuts noticeably "off shade"; "patch cutting," i. e., cutting out small samples to paste on the outside of wrapped packages; and certain semiclerical jobs like calling out the yards in the pieces and running an adding machine. A further subsidiary operation, which in some plants employs large numbers, is the preparation of the sample cards, i. e., cutting out the samples, pasting them on cards, and binding or otherwise grouping the cards for the selling department.

The occupations of the folding department are as follows:

Second hand.
Section hand.
Jacker. (*See* Trucker.)
Hooker machine tender. (*See* Cloth room.)
Selector (inspector).
Folder.
Knotter. (*See* Cloth room.)
Piler. (*See* Trucker.)
Inspector. (*See* Cloth room.)
Winder.
Doubler.
Cardboard stringer.
Paster.
Back lapper (or back folder).
Bander.
Pressman. (*See* Cloth room.)
Ticketer.
Coverer (or paperer).
Stamper.
Sorter.
Shader.
Caller.
Adding-machine operator.
Baler. (*See* Cloth room.)
Packer.
Swatch folder.
Sample cutter.
Distributor.
Card and book maker.
Checker.
Trucker.
Sweeper.

Winding machine.—The winding machine is used for winding the cloth around a flat board. It consists essentially of two adjustable steel blades which hold a board in position, or which can be used without the board. This blade is made to turn with the axis horizontal, and, after the end of the cloth is fastened, it winds the cloth around it. The blade collapses so the cloth can be slipped off, and it can be adjusted to wind different sizes of folds. The frame supporting the winding blade also supports two or three tension slats through which the cloth is threaded each time a cut is wound.

Doubling and winding machine.—The operation accomplished by the doubling and winding machine is indicated exactly by its name. The machine has a winding apparatus similar to that on the winding machine. The distinguishing feature is the guide, called "knife," which is so placed as to divide the cloth in the middle and at the same time hold it taut while one edge is drawn over to meet the other. The cloth is drawn off a roll, is doubled, and the double fold is wound on a flat board. These machines have a measuring device and indicator which the operator reads in order to get the length of each cut.

Selector (inspector).—"Selector" is the term here used to distinguish those who inspect the cloth as it comes off the hooker from those who reinspect such pieces as the selector finds imperfect. Young women are, as a rule, employed for this work, and there is usually one for each hooker machine. The hooker tender places the cut on a bench and the selector examines it by opening out the folds as was described under "Hand inspector," cotton manufacturing. If she finds imperfections, stains, etc., she lays aside the cut and it goes to the final inspector. If, however, the imperfection is at the end she cuts it off instead of sending it to the final inspector. If the piece is all right she counts the folds and sticks a paster on the top fold showing the yardage and places the cut on a truck to go to the folder. Selectors work standing at a bench and usually pretty constantly, depending on how the work is running. The work is light, but it requires a reliable girl, as there is a constant tendency to become careless. Selectors are paid on a time basis.

Folder.—Folders may be either men or women. Men are usually employed to fold the heavy goods and women the light goods. Folders take the cloth after it has been folded by the hooker machine and after it has been inspected, and double it over two or three times, and in different ways as the trade desires, to make a neat package easy to handle and attractive in appearance. This work requires considerable knack to get the folds to come even and lie flat and smooth. Some folders doing the finer grades of goods would be classed as skilled employees. Folders work at a bench and either

stand or sit according as the work is heavy or light, or depending on which way is the more convenient. Perhaps the bulk of the cloth is heavy enough and is in cuts large enough to require men folders to manipulate it. Most organizations provide enough work to keep the folders constantly busy, but there is nothing to prevent their resting or slowing up. They are usually paid on a time basis.

Winder.—Winders may be, and usually are, boys. Each one runs a winding machine. He draws the end of the cloth over the blades, and turns it under one to hold it while starting. He throws a lever to start and stop the machine, and slides the cloth off the collapsible blades when folded. Usually a cut will wind in about a minute, so the winder keeps pretty busy. The work is light, and there is no particular danger unless the boy gets his fingers near the turning blades. He is usually paid on a time basis.

Doubler.—Doublers may be men or women or girls or boys. Each one runs a winding and doubling machine. She places the board in position and starts the end of the cloth around it to hold it when starting to wind. She starts and stops the machine with a lever and cuts the cloth with a knife when a cut is wound. She puts a paster showing the yardage on the outside of each fold when she takes it off the machine. Doublers have to thread up the machine when a new roll is started but several cuts are made from each roll. These girls work on their feet and keep pretty constantly at work, since a cut will wind in a little more than a minute. There is little danger of accident. Doublers are usually paid on a time basis.

Cardboard stringer.—Cardboard stringers may be either men or women or children. They have a small power punch which they operate with a foot lever to punch holes in the end of the cardboards around which the cuts of cloth are wound. They hold several cardboards in their hands while they punch through them all. After a number are punched they tie a string through each hole, to which string tags may later be attached. The work is relatively light so far as physical effort is concerned; they sit, but work rapidly because they are paid by the thousand.

Paster.—Pasters may be either men, women, or children, usually women. They sit all the time and paste a strip of glazed paper over each end of the boards on which the cloth is wound. The work is light and only requires that the edge be straight and turned in evenly. Pasters work fast and usually keep at it all day, as they are paid on a piece basis.

Back lapper.—The back lapper, or back folder, as she is sometimes called, is usually a girl. There is one for about every three winders or doublers. She takes the fold after it has been doubled or wound,

unwinds a little, turns the end in, and winds it up so it will make a neat fold. She leaves either the face or the back of the cloth exposed, as desired. She works at a bench, usually standing, and when the fold is made, transfers the yardage sticker to the outside and piles the folds onto trucks. The work is rather light, but the organization is usually such that she keeps pretty busy. These girls are paid on a time basis.

Bander.—Banders are usually girls of any age, though boys, and even men are sometimes used. All they have to do is to paste two strips of paper around each cut of cloth after it is wound. The strips come cut, but the banders put the paste on. They spread out a number of them and put the paste on all at once. When they have pasted the bands on, they pile the cuts on trucks. Banders may stand or sit, at their pleasure. The work is light, but there is usually enough to keep them fairly constantly at work. They are generally paid on a time basis.

Ticketers.—Ticketers are usually girls. They are furnished with samples and order numbers from the office. They stamp tags and pasters showing style number, yardage, etc., and paste them on the cloth or sew a tag into the selvage. They work at a table and sit or stand, at their pleasure. The work is light, but requires a responsible girl to insure the proper marking of each cut. Ticketers are usually paid on a time basis.

Coverer or paperer.—Coverers, or paperers as they are called in some places, are usually girls. They wrap certain kinds of goods in paper after they have been folded and banded. They tie up the package and paste a sticker on the outside showing style, etc. They usually paste a sample of the cloth on the outside also. These girls work standing at a bench, but have a stool to sit on when their work permits. The continuity of work and speed required of these girls depends largely on the attitude of the overseer. They are usually paid on a time basis.

Stamper.—Stampers are men employed to stamp certain trademarks or emblems on the top fold of a cut of cloth. Sometimes they use a wood cut and sometimes a stencil. They have to place it in the proper position and keep it properly inked. They work on their feet, but the work is light and not necessarily constant. They are paid on a time basis.

Sorter.—Sorters are usually young men. They take the cuts after they have been properly ticketed and sort them by styles on platforms or racks. When a sufficient number of pieces of a given style have been accumulated the sorter puts them on trucks and takes them to the shipping room. This work is moderately heavy, and requires fairly constant, slow effort. Sorters are paid on a time basis.

Shader.—Shaders are men employed to group cuts of solid colored goods according to shade. They pile them on trucks matched according to variation in shade, however slight. The work requires little effort, but a good eye for color. They work standing, and, if there is not sufficient work for them, they are used to call off yardage, etc. They are paid on a time basis.

Caller.—Callers are usually men. They pile the cuts that are to be baled or packed onto scales, calling off the number of yards in each to the adding-machine operator. They also call off the total weight. In a large plant this is all the caller does. In a smaller plant his work is linked up with something else, as packing, trucking, shading, etc. The work requires a little physical effort but is not hard. Callers are paid on a time basis.

Adding-machine operator.—The adding-machine operator is usually a young woman who adds the yardage of the several pieces that are put into a case or bale. The caller calls off the items, and when she gets the total she puts it on an invoice together with the weight and a serial number which is later put on the case or bale. She sits while at work and works leisurely. This is light and agreeable work for a young woman. She is paid on a time basis.

Packer.—The packer is a man who puts the cuts into packing cases and nails on the covers. He also trucks the cases to be shipped or stored. This is heavy work and requires a strong man. Sometimes the packers do the baling also (*see* Cloth room).

Swatch folder.—The swatch folder is usually a young woman who marks and folds a piece of cloth so that the sample cutter can get the greatest number of samples out of it with the least possible waste. She either sits or stands at a bench and works leisurely. The work is light but requires care. She is usually paid on a time basis. This work would be done by a sample cutter in a small plant.

Sample cutter.—The sample cutter is usually a man. His work is to cut the samples out of the cloth along the lines indicated by the swatch folder. He sometimes uses a die or punch which he hits on the head with a mallet, or he uses an automatic knife similar to those used in clothing factories. When the latter is used the cloth is held firm by the operative by a foot lever and the knife is guided by hand. This is a rather dangerous operation. Sample cutters are usually time workers.

Distributor.—The distributor is usually a young lady who gives out the work to the card makers. She has the orders for samples from the office and she counts out the required number of pieces of card board and of samples and, after indicating the proper position of the samples on the cards, hands them to a card maker to be pasted.

This girl works at a table and may either stand or sit. The work is easy and agreeable. She is usually paid on a time basis.

Card and book maker.—Card and book makers are usually girls or women. They sit at benches and paste onto card boards samples of cloth that are furnished them cut to size. Care must be exercised to paste the samples neatly and in the proper position on the card. Sometimes they bind a number of cards to make a book of samples. These girls work fairly leisurely and their work is very light. They are usually paid on a time basis. This is the only occupation in sample-card making that employs any considerable number of people.

Checker or inspector.—The checker is a young woman who looks over the work of the card and book makers, passes upon it, and keeps track of the work they do as to neatness, efficiency, and accuracy. She also assembles the cards for shipment to the selling department. She sits or stands at her pleasure. This is easy, attractive work for a young woman. She is paid on a time basis.