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Puddling mills.....	98
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Plate mills.....	134
Standard rail mills.....	144
Bar mills.....	168
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Tin-plate mills.....	201

# BULLETIN

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### WAGES AND HOURS OF LABOR IN THE IRON AND STEEL INDUSTRY: 1929

#### INTRODUCTION AND SUMMARY

This bulletin presents the results of a study made in 1929<sup>1</sup> of wages and hours of labor of wage earners in 10 departments of the iron and steel industry in the United States. Summary figures for preceding years, taken from previous bulletins of the Bureau of Labor Statistics, are shown for each department. As in other wage studies of the bureau, it was not practicable to make a complete census of all plants in the country. However, these statistics may be taken as representative of the industry, since they are based on a sufficient number of representative plants in each district to show conditions in the various parts of the country.

The data presented in this report for employees in each department are as follows:

- Blast furnaces, 1907-1929.<sup>2</sup>
- Bessemer converters, 1907-1929.<sup>2</sup>
- Open-hearth furnaces, 1910-1929.<sup>3</sup>
- Puddling mills, 1914-1929.<sup>3</sup>
- Blooming mills, 1910-1929.<sup>2</sup>
- Plate mills, 1910-1929.<sup>2</sup>
- Standard rail mills, 1926 and 1929.<sup>4</sup>
- Bar mills, 1907-1929.<sup>3</sup>
- Sheet mills, 1910-1929.<sup>2</sup>
- Tin-plate mills, 1910-1929.<sup>3</sup>

There are three major steps or processes in the iron and steel industry. The first is the manufacture of pig iron through the reduction of iron ore, the smelting process taking place in the blast furnace. The second step is the conversion of pig iron into steel or wrought iron. The process of changing pig iron into steel takes place in the Bessemer converter or the open-hearth furnace. Wrought iron is made by the puddling process, which may be either hand or mechanical. Only plants doing hand puddling, however, have been

<sup>1</sup> Summary figures for 1929 appeared in the Labor Review for September, October, and November, 1929. For data for years up to 1915, see Bulletin No. 218; for 1917, the March, 1918, Labor Review; for 1919, Bulletin No. 265; for 1920, Bulletin No. 305; for 1922, Bulletin No. 353; for 1924, Bulletin No. 391; and for 1926, Bulletin No. 442.

<sup>2</sup> No data available for 1916, 1918, 1921, 1923, 1925, 1927, or 1928.

<sup>3</sup> No data available for 1916, 1917, 1918, 1921, 1923, 1925, 1927, or 1928.

<sup>4</sup> The plants covered in the 1924, 1926, and 1929 studies were in many cases different from those covered in previous surveys and no comparison is made for the principal occupations between the 1929 figures and those for the years prior to 1926. However, the averages for all employees in the country as a whole were not affected by the change of plants to the extent that were the averages for employees in the specified occupations only, and in all comparative tables covering all employees data have been included for all years available. No data available for 1916, 1917, 1918, 1921, 1923, 1925, 1927, or 1928.

included in this study. The third step is the process of rolling. Several kinds of rolling mills are included in the data. While all departments of the industry as a whole have not been covered, a sufficient representation of the principal departments has been included to show prevailing conditions.

The greater part of the data was obtained through personal visits of agents of this bureau to the several plants, the remainder being obtained from the plants through correspondence. Whenever possible, the 1929 data were obtained from the same establishments that were covered in 1926, except when it was deemed advisable to include some new plants in a department. This was especially true of bar mills, which now include for the first time employees working in continuous and semicontinuous mills. In a few instances the plants covered in 1926 were not in operation or had ceased to be representative of the industry. In such cases it was necessary to substitute plants which were in regular operation and were representative of conditions in the industry.

The 1929 data were obtained from 208 plants or departments of plants and covered 71,009 employees in all occupations. These wage earners were distributed between the various departments as follows:

Department	Number of—	
	Plants	Wage earners
Blast furnaces.....	37	12,222
Bessemer converters.....	11	2,251
Open-hearth furnaces.....	33	13,171
Puddling mills.....	11	1,800
Blooming mills.....	30	6,266
Plate mills.....	17	4,024
Standard rail mills.....	7	2,316
Bar mills.....	39	7,475
Sheet mills.....	15	12,598
Tin-plate mills.....	8	8,386
Total.....	208	71,009

According to the Census of Manufactures for 1927, the latest figures available, there was an average of 389,270 wage earners employed in all departments of the iron and steel industry that year. They were divided as follows: 27,958 in blast furnaces and 361,312 in steel works and rolling mills. The 71,009 employees covered by this study constitute a little over 18 per cent of all employees in all departments (including those not canvassed by the bureau). The present study covers 12,222 wage earners in blast furnaces alone, which is practically 44 per cent of the 27,958 wage earners employed in blast furnaces in 1927. Since the census figures do not show the number of wage earners in steel works and rolling mills by separate departments, no data are available to determine the per cent of employees covered by the bureau in these departments. Figures taken from the reports of the Census of Manufactures, showing the importance of the iron and steel industry, are given on page 18.

The figures for 1929 and previous years are based on actual payroll data for one sample pay period, with the exception of companies having weekly pay periods, in which case the actual data for two 1-week pay periods have been combined. The data, therefore, do



not show the month to month changes or yearly averages. Data for practically all establishments covered in the 1929 survey are for the first half of March and cover a 15-day period, while those for 1926 are for a period in January which in most cases was the last half of that month and cover a 16-day period.

A summary of the changes in hours and earnings in the industry as a whole and for each of the 10 departments is shown in Table 1. In addition to the actual averages shown, index numbers based thereon are also given in order that the changes which have taken place over the period 1913 to 1929 may be set forth more clearly.

For all departments, except puddling mills, the year 1913 has been taken as the base, or 100 per cent. The index number for each year is simply the per cent that the average for that year is of the average for 1913. For puddling mills the year 1914 is taken as the base, because data for this department were first obtained for that year.

TABLE 1.—Average full-time hours per week, earnings per hour, and full-time earnings per week, together with index numbers computed therefrom, for all employees in all occupations in each department separately and all departments combined, 1913 to 1929, by department and year

Department and year	Averages			Index numbers (1913=100) <sup>1</sup>		
	Full-time hours per week	Earnings per hour	Full-time weekly earnings	Full-time hours per week	Earnings per hour	Full-time earnings per week
<b>All departments:</b>						
1913.....	66.1	\$0.301	\$18.89	100	100	100
1914.....	64.9	.301	18.60	98	100	98
1915.....	65.5	.297	18.65	99	99	99
1920.....	63.1	.745	45.65	95	248	242
1922.....	63.2	.513	31.67	96	170	168
1924.....	55.2	.644	35.22	84	214	186
1926.....	54.4	.637	34.41	82	212	182
1929.....	54.6	.674	36.48	83	224	193
<b>Blast furnaces:</b>						
1913.....	76.9	.205	15.76	100	100	100
1914.....	74.8	.206	15.41	97	100	98
1915.....	74.9	.207	15.50	97	101	98
1920.....	72.1	.571	41.17	94	279	261
1922.....	72.3	.398	28.78	94	194	183
1924.....	59.7	.520	31.04	78	254	197
1926.....	59.8	.517	30.92	78	252	196
1929.....	60.7	.528	32.05	79	258	203
<b>Bessemer converters:</b>						
1913.....	70.0	.284	19.88	100	100	100
1914.....	68.4	.255	17.44	98	90	88
1915.....	68.7	.264	18.14	98	93	91
1920.....	70.3	.677	47.59	100	238	239
1922.....	68.7	.470	32.29	98	165	162
1924.....	52.3	.624	32.64	75	220	164
1926.....	52.6	.641	33.72	75	226	170
1929.....	53.7	.643	34.53	77	226	174
<b>Open-hearth furnaces:</b>						
1913.....	76.7	.237	18.18	100	100	100
1914.....	74.5	.237	17.66	97	100	97
1915.....	74.4	.246	18.30	97	104	101
1920.....	68.7	.671	46.10	90	283	254
1922.....	70.8	.480	33.98	92	203	187
1924.....	58.0	.635	36.83	76	268	203
1926.....	57.1	.677	38.66	74	286	213
1929.....	57.7	.714	41.20	75	301	227
<b>Puddling mills:</b>						
1914.....	53.2	.328	17.45	100	100	100
1915.....	52.2	.315	16.44	98	96	94
1920.....	53.9	.885	47.70	101	270	273
1922.....	52.1	.496	25.94	98	151	148
1924.....	55.7	.721	40.16	105	220	230
1926.....	52.1	.657	34.23	98	200	196
1929.....	50.3	.686	34.51	95	209	198

<sup>1</sup> Except for puddling mills, for which 1914=100.

TABLE 1.—Average full-time hours per week, earnings per hour, and full-time earnings per week, together with index numbers computed therefrom, for all employees in all occupations in each department separately and all departments combined, 1913 to 1929, by department and year—Continued

Department and year	Averages			Index numbers (1913=100)		
	Full-time hours per week	Earnings per hour	Full-time weekly earnings	Full-time hours per week	Earnings per hour	Full-time earnings per week
<b>Blooming mills:</b>						
1913.....	73.0	\$0.265	\$19.35	100	100	100
1914.....	70.5	.269	18.96	97	102	98
1915.....	71.0	.268	19.03	97	101	98
1920.....	67.5	.659	44.48	92	249	230
1922.....	68.0	.472	32.10	93	178	166
1924.....	54.6	.613	33.47	75	231	173
1926.....	54.2	.627	33.98	74	237	176
1929.....	55.0	.666	36.63	75	251	189
<b>Plate mills:</b>						
1913.....	69.9	.255	17.82	100	100	100
1914.....	69.0	.258	17.80	99	101	100
1915.....	69.8	.270	18.58	98	106	104
1920.....	68.8	.671	46.16	98	263	259
1922.....	66.2	.476	31.51	95	187	177
1924.....	57.2	.562	32.15	82	220	180
1926.....	55.8	.606	33.81	80	238	190
1929.....	58.0	.639	37.06	83	251	208
<b>Bar mills:</b>						
1913.....	61.5	.288	17.71	100	100	100
1914.....	61.7	.278	17.15	100	97	97
1915.....	61.4	.286	16.33	100	92	92
1920.....	61.8	.713	44.06	100	248	249
1922.....	61.2	.486	29.74	100	169	168
1924.....	55.6	.585	32.53	90	203	184
1926.....	54.7	.591	32.33	89	205	183
1929.....	55.6	.625	34.75	90	217	196
<b>Standard rail mills:</b>						
1913.....	70.9	.254	18.01	100	100	100
1914.....	70.1	.252	17.67	99	99	98
1915.....	70.9	.246	17.44	100	97	97
1920.....	61.2	.632	38.68	86	240	215
1922.....	61.5	.470	28.91	87	185	161
1924.....	57.4	.573	32.89	81	226	183
1926.....	55.5	.595	33.02	78	234	183
1929.....	56.0	.628	35.17	79	247	195
<b>Sheet mills:</b>						
1913.....	52.3	.483	25.26	100	100	100
1914.....	52.3	.488	25.52	100	101	101
1915.....	52.5	.450	23.63	100	93	93
1920.....	50.3	1.039	52.26	96	215	207
1922.....	51.1	.694	35.46	96	144	140
1924.....	50.2	.809	40.61	96	167	161
1926.....	48.9	.759	37.12	93	167	147
1929.....	48.9	.793	38.78	93	164	154
<b>Tin-plate mills:</b>						
1913.....	46.1	.417	19.22	100	100	100
1914.....	46.0	.425	19.55	100	102	102
1915.....	50.4	.428	21.57	109	103	112
1920.....	50.6	.949	48.02	110	228	250
1922.....	49.9	.650	32.44	108	156	169
1924.....	48.8	.795	38.80	106	191	202
1926.....	48.1	.704	33.86	104	169	176
1929.....	47.4	.732	34.70	103	176	181

When average full-time hours per week for the year 1929 are compared with those for the years prior to 1924, the working time of employees in the industry shows considerable change. In the latter part of 1923 the 8-hour day was generally adopted in the industry, the effect of this change in customary working time for employees being clearly defined in the 1924 average. In 1913 the average full-time hours per week for all employees in all occupations in the industry as a whole were 66.1, in 1922 they were 63.2, which is a decrease of 4 per cent as shown by the index numbers for those years. In 1924 they were 55.2, as compared with 54.6 in 1929. While 1929 shows a slight increase over 1926, the customary working time of employees is 16 per cent less than in 1914.

There was an increase in average earnings per hour from 1914 to 1929, of over 120 per cent, the average for 1914 being 30.1 cents as compared with 67.4 cents for 1929. The high point of earnings was reached in 1920 when the average was 74.5 cents. Reductions in rates paid employees during the period covered in 1922 are reflected in the average of 51.3 cents for that year. However, late in 1922 a general increase was made which approximated 10 per cent, and subsequent changes in rates of pay raised the average to 64.4 cents in 1924. In 1926, the average was 63.7 cents and in 1929, 67.4 cents, an increase of approximately 6 per cent. The 1929 average is higher than that of any other year since 1920, and, as shown by the index numbers, 124 per cent greater than that of 1914.

Average full-time weekly earnings, like average earnings per hour, reached their peak in 1920, when they were \$45.65, or 145 per cent greater than in 1914. In 1924 earnings decreased to \$35.22, which is 23 per cent less than in 1920, but 89 per cent greater than in 1914. The decrease in earnings was caused in considerable part by the reduction in full-time hours per week as between the two years, 1920 and 1924. Earnings per week were \$36.48 in 1929, which is an increase of 6 per cent over 1926, and 96 per cent over 1914.

When the 10 departments are considered separately, changes in hours in 1929 as compared with 1914 range from a 3 per cent increase for tin-plate mills to a 23 per cent decrease for open-hearth furnaces. Comparing 1929 with 1926, increases are found in seven departments and decreases in two, while sheet mills show no change. The largest increase is found in the plate-mill department, where full-time hours in 1929 were 58, compared with 55.8 in 1926; there is, however, a 16 per cent decrease in hours compared with 1914. The increased hours were in a large measure due to a regular increased operating time of mills in the eastern part of the country. The largest decrease is found in the puddling-mill department, where full-time hours dropped from 52.1 in 1926 to 50.3 in 1929.

When average earnings per hour for 1929 are considered each of the 10 departments shows increases over 1926, 2 departments—open-hearth furnaces and blooming mills—have the highest average hourly earnings of any year shown for these departments. The 1929 average for open-hearth furnaces was 71.4 cents as compared with the previous high rate of 67.1 cents for 1920. The 1929 average for blooming mills was 66.6 cents, which compares with 65.9 cents for 1920. The greatest increase in earnings per hour between 1926 and 1929 is found in blooming mills and the lowest in Bessemer converters.

The tonnage rates in puddle, sheet, and tin-plate mills are based on the selling price of the product. Thus, it is possible for the rates paid in these departments to fluctuate widely in a two or three year interval, such as occurs between the bureau's studies.

Since changes in full-time hours per week were comparatively small up to 1922, the movement of full-time weekly earnings followed closely the changes in average earnings per hour. In 1924 and 1926 the reduction in customary working time partially offset the increase in average earnings per hour, and full-time earnings per week increased less than average hourly earnings in those years.

In 1929 average weekly earnings increased in all 10 departments over similar figures for 1926, ranging from \$32.05 in blast furnaces to \$41.20 in open-hearth furnaces. The smallest increase was in puddling mills, where earnings in 1929 were \$34.51 as compared with

\$34.23 in 1926, and was due to a reduction in full-time hours per week as average earnings per hour show a material increase. Open-hearth furnaces show the greatest increase in full-time weekly earnings over 1914. The index number for 1929 being over two and one-fourth times as high as in 1914, while sheet mills show the smallest increase, the index for 1929 being one and one-half times as high as in 1914.

The monthly trend of employment and earnings in the iron and steel industry as published monthly in the Labor Review are repeated in this report on page 19.

#### CLASSIFIED FULL-TIME HOURS PER WEEK

In earlier years most of the departments of the iron and steel industry were operated on a 2-shift basis. During the war period there was some tendency toward the 3-shift system, but soon thereafter some of the plants returned to the two shifts of 10 and 12 hours. In the later part of 1923 there was a movement started which resulted in many companies adopting the 8-hour day. In only one department in 1929, that of plate mills, do as many as 50 per cent of the employees have a customary working time of as much as 60 hours per week.

Table 2 contains for 1929 and preceding years a percentage distribution of all employees in all occupations combined, in each department, according to their customary full-time hours per week. The classified hours of this table are "average" hours and as such do not show the long hours of one week that may alternate with shorter hours the next. Thus, employees listed as working 72 hours per week may work 60 hours one week and 84 the next, averaging 72. For a more detailed outline of customary hours from one week to another for each department attention is directed to Table D.

TABLE 2.—Per cent of employees in all occupations working each specified number of average full-time hours per week, 1914 to 1929, by department and year

Department and year	Number of plants	Per cent of employees whose average full-time hours per week were—							
		48 and under	Over 48, under 60	60	Over 60, under 72	72	Over 72, under 84	84	Over 84
<b>Blast furnaces:</b>									
1914.....	38	( <sup>1</sup> )	5	13	12	22	7	41	( <sup>1</sup> )
1915.....	38	( <sup>1</sup> )	6	12	12	23	7	41	( <sup>1</sup> )
1920.....	28	1	18	7	11	16	17	29	( <sup>1</sup> )
1922.....	32	1	7	13	10	39	13	17	( <sup>1</sup> )
1924.....	36	2	59	15	15	3	1	5	( <sup>1</sup> )
1926.....	37	1	59	16	15	2	( <sup>1</sup> )	6	( <sup>1</sup> )
1929.....	37	1	60	12	15	3	( <sup>1</sup> )	8	( <sup>1</sup> )
<b>Bessemer converters:</b>									
1914.....	12	12	9	4	11	40	13	12	-----
1915.....	12	12	7	5	8	44	11	13	-----
1920.....	11	14	7	2	14	25	17	21	-----
1922.....	11	11	6	6	10	53	5	9	-----
1924.....	11	50	28	17	5	( <sup>1</sup> )	-----	-----	-----
1926.....	11	52	24	15	9	-----	-----	-----	-----
1929.....	11	43	28	20	10	-----	-----	-----	-----
<b>Open-hearth furnaces:</b>									
1914.....	22	( <sup>1</sup> )	7	6	9	23	32	24	( <sup>1</sup> )
1915.....	22	( <sup>1</sup> )	7	5	11	24	30	23	( <sup>1</sup> )
1920.....	19	1	32	2	9	14	33	6	( <sup>1</sup> )
1922.....	22	3	15	4	15	26	20	16	( <sup>1</sup> )
1924.....	26	6	69	5	12	2	3	2	-----
1926.....	31	14	64	5	11	2	2	2	-----
1929.....	33	7	72	6	11	1	1	2	( <sup>1</sup> )

<sup>1</sup> Less than 1 per cent.

TABLE 2.—Per cent of employees in all occupations working each specified number of average full-time hours per week, 1914 to 1929, by department and year—Contd.

Department and year	Number of plants	Per cent of employees whose average full-time hours per week were—							
		48 and under	Over 48, under 60	60	Over 60, under 72	72	Over 72, under 84	84	Over 84
<b>Puddling mills:</b>									
1914.....	29	27	55	6	9	1	1	( <sup>1</sup> )	( <sup>1</sup> )
1915.....	29	31	53	6	9	1	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1920.....	15	24	41	12	15	7	( <sup>1</sup> )	1	( <sup>1</sup> )
1922.....	13	41	33	10	15	( <sup>1</sup> )	1	( <sup>1</sup> )	( <sup>1</sup> )
1924.....	17	27	53	9	9	1	1	1	( <sup>1</sup> )
1926.....	13	29	56	9	2	2	( <sup>1</sup> )	1	( <sup>1</sup> )
1929.....	11	30	61	6	( <sup>1</sup> )	1	1	( <sup>1</sup> )	( <sup>1</sup> )
<b>Blooming mills:</b>									
1914.....	23	3	8	5	8	59	9	9	( <sup>1</sup> )
1915.....	23	2	7	4	7	58	12	9	( <sup>1</sup> )
1920.....	20	12	12	2	12	35	18	8	( <sup>1</sup> )
1922.....	24	4	21	7	12	27	18	12	( <sup>1</sup> )
1924.....	25	27	48	12	10	1	1	1	( <sup>1</sup> )
1926.....	27	38	36	12	12	1	1	1	( <sup>1</sup> )
1929.....	30	30	47	11	9	1	( <sup>1</sup> )	2	( <sup>1</sup> )
<b>Plate mills:</b>									
1914.....	13		3	4	44	39	6	4	( <sup>1</sup> )
1915.....	13		5	5	41	38	7	4	( <sup>1</sup> )
1920.....	11	( <sup>1</sup> )	5	4	41	42	4	3	( <sup>1</sup> )
1922.....	12	( <sup>1</sup> )	22	16	22	28	4	7	( <sup>1</sup> )
1924.....	13	30	23	24	20	( <sup>1</sup> )	1	2	( <sup>1</sup> )
1926.....	17	32	21	20	15	( <sup>1</sup> )	1	2	( <sup>1</sup> )
1929.....	17	24	26	22	14	7	4	3	( <sup>1</sup> )
<b>Standard rail mills:</b>									
1914.....	7	5	( <sup>1</sup> )	3	13	74	1	4	( <sup>1</sup> )
1915.....	7	4	1	2	9	77	2	5	( <sup>1</sup> )
1920.....	4	33	4	2	20	37	2	2	( <sup>1</sup> )
1922.....	4	32	12	3	19	26	2	6	( <sup>1</sup> )
1924.....	7	21	37	20	13	( <sup>1</sup> )	7	( <sup>1</sup> )	( <sup>1</sup> )
1926.....	7	25	35	26	13				( <sup>1</sup> )
1929.....	7	25	38	16	21		( <sup>1</sup> )		( <sup>1</sup> )
<b>Bar mills:</b>									
1914.....	57	4	31	12	44	7	2	1	( <sup>1</sup> )
1915.....	57	8	30	10	42	8	1	( <sup>1</sup> )	( <sup>1</sup> )
1920.....	25	9	28	8	40	12	3	1	( <sup>1</sup> )
1922.....	26	6	39	4	35	14	1	1	( <sup>1</sup> )
1924.....	31	25	36	26	10	2	( <sup>1</sup> )	1	( <sup>1</sup> )
1926.....	35	32	35	26	5	1	( <sup>1</sup> )	1	( <sup>1</sup> )
1929.....	39	21	46	19	11	2	( <sup>1</sup> )	1	( <sup>1</sup> )
<b>Sheet mills:</b>									
1914.....	15	62	2	8	10	13	2	2	( <sup>1</sup> )
1915.....	15	61	2	10	12	11	2	2	( <sup>1</sup> )
1920.....	13	64	6	8	9	9	2	1	( <sup>1</sup> )
1922.....	14	60	8	10	10	7	2	3	( <sup>1</sup> )
1924.....	14	66	12	11	4	5	1	1	( <sup>1</sup> )
1926.....	14	67	16	12	3	2	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1929.....	15	68	13	13	3	2	( <sup>1</sup> )	1	( <sup>1</sup> )
<b>Tin-plate mills:</b>									
1914.....	11	59	17	9	12	2	( <sup>1</sup> )	1	( <sup>1</sup> )
1915.....	11	60	18	9	11	1	1	1	( <sup>1</sup> )
1920.....	9	58	18	6	10	7	1	( <sup>1</sup> )	( <sup>1</sup> )
1922.....	9	61	18	5	9	5	1	( <sup>1</sup> )	( <sup>1</sup> )
1924.....	9	66	19	13	2	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1926.....	8	68	20	9	3	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )
1929.....	8	71	20		1	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )

<sup>1</sup> Less than 1 per cent.

The changes that have taken place in the working time of employees in the various departments are clearly reflected in the preceding table. In 1914, 41 per cent of the employees in blast furnaces had an average working week of 84 hours—12 hours per day, 7 days a week. In 1922, only 17 per cent of the employees worked 84 hours per week, while in 1924, the effect of the 8-hour day is shown in that only 5 per cent had an 84-hour week. In 1929, however, 73 per cent of the employees had a week of 60 hours or less.

There were no employees in Bessemer converters working so many as 72 hours per week in 1929, as against 65 per cent working a week of 72 hours or over in 1914. In open-hearth furnaces in 1914 only 7 per cent of the employees had a week of less than 60 hours; in 1920 this percentage had increased to 33, and in 1929 to 79.

In 1929 there were 91 per cent of the employees in puddling mills whose full-time hours were less than 60 per week, as compared with 82 per cent in 1914; and in blooming mills the percentage was 77 in 1929 as against 11 in 1914.

As previously stated, customary working time per week for employees in plate mills increased in 1929 as compared with 1926, but when compared with any year prior to 1924 the percentage distribution of employees shows material reductions. In 1914 only 3 per cent of all employees were working less than 60 hours per week, but in 1922 this percentage had increased to 22, and in 1929 to 50.

The working time of employees in sheet and tin-plate mills shows but little change over the period of years 1914 to 1929. These departments have long been on the 8-hour day except for a small per cent of employees such as laborers and some occupations in the finishing department.

When the 10 departments are combined it is found that in 1929, 14 per cent of all employees had a customary working time of over 60 hours per week as compared with 15 per cent in 1924, and 13 per cent in 1926. In 1929, 22,252 employees, or 31 per cent of the 71,009 employees, had a week of 48 hours or less and only 5 per cent a week of 72 hours or over.

In Table 3 employees in all occupations in each department are classified by percentages, according to their customary number of turns per week. To give a complete picture of the changes, figures for preceding years are presented in addition to those for 1929.

TABLE 3.—Per cent of employees in all occupations working each specified number of days per week, 1914 to 1929, by department and year

Department and year	Number of plants	Per cent of employees whose customary working turns per week were—										
		5	5 and 6 alternately	5, 5, and 6 in rotation	5, 6, and 6 in rotation	5, 6, and 7 in rotation	6	5 and 7 alternately	6 and 7 alternately	6, 6, and 7 in rotation	6, 7, and 7 in rotation	7
<b>Blast furnaces:</b>												
1914.....	38						42		5	( <sup>1</sup> )		53
1915.....	38						42		4	( <sup>1</sup> )		54
1920.....	28						29		17			54
1922.....	32						57		14			29
1924.....	36						20		5		30	45
1926.....	37						22		6		22	49
1929.....	37						22		5	1	18	54
<b>Bessemer converters:</b>												
1914.....	12						80		3	3	( <sup>1</sup> )	13
1915.....	12						80		3	3	( <sup>1</sup> )	14
1920.....	11						59		10	3	2	26
1922.....	11						81		2	4	3	10
1924.....	11						71		4	7	10	8
1926.....	11				8		61		7	7	5	12
1929.....	11	1	( <sup>1</sup> )			( <sup>1</sup> )	64		7	8	10	9
<b>Open-hearth furnaces:</b>												
1914.....	22						39		26	( <sup>1</sup> )	( <sup>1</sup> )	34
1915.....	22	( <sup>1</sup> )	( <sup>1</sup> )				39		27	( <sup>1</sup> )	( <sup>1</sup> )	34
1920.....	19		( <sup>1</sup> )				27	( <sup>1</sup> )	37		3	33
1922.....	22	( <sup>1</sup> )					50		16	4	2	27
1924.....	26						16		6	12	14	52
1926.....	31				1		26		6	2	13	52
1929.....	33		( <sup>1</sup> )				15		5	5	8	66

<sup>1</sup> Less than 1 per cent.

TABLE 3.—Per cent of employees in all occupations working each specified number of days per week, 1914 to 1929, by department and year—Continued

Department and year	Number of plants	Per cent of employees whose customary working turns per week were—											
		5	5 and 6 alternately	5, 5, and 6 in rotation	5, 6, and 6 in rotation	5, 6, and 7 in rotation	6	5 and 6 alternately	6 and 7 alternately	6, 6, and 7 in rotation	6, 7, and 7 in rotation	7	
<b>Puddling mills:</b>													
1914	29	13	63	8			15			1		1	
1915	29	24	50	11			13			1		1	
1920	15	(1)	60	13			26		(1)			1	
1922	13	17	47	15			19		(1)			2	
1924	17	8	62	2			25		(1)			2	
1926	13	5	67				24		(1)			2	
1929	11	37	39				23		(1)			1	
<b>Blooming mills:</b>													
1914	23	2	2				74			7	3	(1)	11
1915	23	2	1				73			9	3	1	15
1920	20	1	(1)				67			14	2	1	11
1922	24	(1)	5				56			17	3	1	18
1924	25	(1)	6				28			4	10	12	21
1926	27	(1)	1			11	46			7	8	8	20
1929	30		1			(1)	46			3	8	12	31
<b>Plate mills:</b>													
1914	13		34				57			3		(1)	6
1915	13	(1)	35				55			3		(1)	6
1920	11		18				78			1			3
1922	12	(1)	28				60			3			9
1924	13	(1)	12				66			8		3	11
1926	17		9			21	49			6	3	6	6
1929	17	(1)	3			15	51	(1)		6	7	8	10
<b>Standard rail mills:</b>													
1914	7		7			1	88			1			4
1915	7		5			1	88			1			5
1920	4						92			3	1		4
1922	4						86			2	1		11
1924	7						44			17	(1)	29	10
1926	7						51			12		31	6
1929	7						42			15	6	18	20
<b>Bar mills:</b>													
1914	57	6	47	2		1	38			(1)	4	(1)	1
1915	57	6	48	1		1	43			(1)	(1)		1
1920	25	3	33	4		3	46			3	7	1	1
1922	25	1	35	2		3	47			2	2	(1)	1
1924	31	6	25	5		9	48			(1)	(1)	(1)	2
1926	35	13	8	6		13	54			(1)	(1)	2	2
1929	39	10	11	5		5	50			(1)	8	2	8
<b>Sheet mills:</b>													
1914	15	(1)	2	58	3		22			1			4
1915	15	1	3	55	4		32			1			4
1920	13	1	3	53	6		33			1			3
1922	14	2	2	45	15		31			1			4
1924	14	1	4	47	15		30			(1)			4
1926	14	1	3	46	16		28			1			5
1929	15	(1)	3	47	15		29			(1)	1	(1)	5
<b>Tin-plate mills:</b>													
1914	11	(1)	4	58			37			(1)			1
1915	11	(1)	3	57			37			(1)			2
1920	9	1	5	55			38			(1)			1
1922	9	1	5	54			38			2			1
1924	9	(1)	2	51			44			1			2
1926	8	1	2	55			36			2		1	2
1929	8	(1)	4	59		1	34			(1)	2	(1)	1

<sup>1</sup> Less than 1 per cent.

## SEVEN-DAY WEEK

Of the 10 departments included in the study, it is necessary for only one to be in continuous operation; i. e., the blast furnace, which due to the nature of the process, must be operated 7 days per week and 24 hours per day. It might be expected that most of the 7-day workers would be found in this department. There is, however, another department—the open hearth—which in recent years has been changing from a 6-day to a 7-day operation, because of an increased demand for steel. This demand, which was especially

strong during 1928, continued into 1929, and has resulted in more open-hearth furnaces normally operating seven days per week in 1929 than during any previous study, as well as in the increase in the number of 7-day workers from 52 per cent in 1926 to 66 per cent in 1929. In this large increase were included chiefly employees who formerly worked a week of 6 days and those who had a week of 6 days, 7 days, and 7 days in rotation.

In 1929, 54 per cent of all blast-furnace employees covered regularly worked a week of seven days, which percentage is the same as that shown for 1915 and 1920, but is an increase over 1926. The number of employees who regularly worked a week of 6 days, 7 days, and 7 days in rotation decreased from 22 per cent in 1926 to 18 per cent in 1929.

While the Bessemer-converter department is not essentially a 7-day operation, certain repairs must be made which require a considerable number of employees to be on duty when the converters are not operating. This "fix-up" turn provides most of the 7-day work in this department.

When 1929 is compared with 1926, blooming and rail mills show a decided increase in 7-day workers. In 1929, 31 per cent of the employees in blooming mills regularly worked a week of seven days, while in 1926 only 20 per cent had a 7-day week. This change resulted largely from the necessity for extending operations of blooming mills in order to care for the increased output of the open-hearth furnaces. It might also be noted that some new mills were added in 1929, which were regularly operated on a 7-day week schedule.

In the rail-mill department one large plant had changed from a customary week of 6 days, 7 days, and 7 days in rotation in 1926 to a straight 7-day week in 1929. This change is reflected in the increase in the percentage (20) in 1929, and in the per cent of employees working 6 days, 7 days, and 7 days per week in 1929. There was a decrease of 9 per cent in the number of employees working 6 days per week in 1929 when compared with 1926.

Plate and bar mills show small increases in the per cent of employees who regularly work seven days. Seven-day work in these departments for the most part consists of "light up" and repair turns which take place on Saturday night or Sunday when mills are not on producing time.

#### RELIEF SYSTEMS

Many plants have a system of relief whereby an employee in a 7-day occupation may have one calendar day off once each week, once every two or three weeks, or at some other stated interval, thus making a 6-day working week each week, or a 6-day week at each two or three week interval. "Relief" as used in this report is meant a regular turn (calendar day) off during which another man is put in the place of the worker relieved. Rest after a change in turns is not considered relief, when the employee has to work a double turn or extra shift in order to obtain the rest. Employees in plants which simply permit men to take a calendar day off once each week or at some other specified interval, provided they apply for it (but seldom do apply for it), have been considered as 7-day men without relief.

This provision for relief of employees in 7-day occupations started in 1910 and had so far obtained in 1920 that only 54 per cent of all



employees in blast furnaces regularly worked a week of seven days. In 1922 relief systems became more general and only 29 per cent of the employees in blast furnaces and 27 per cent in open hearths regularly worked a week of seven days.

In 1923 when the 8-hour day was generally adopted the tendency was to return to the 7-day working week for employees in 7-day occupations. In some plants this change was made at the request of the wage earners while in others the demand for tonnage was so great that some 6-day plants were changed to regular 7-day operation with no relief system having been put into effect.

In order to give some idea of the various methods used to give employees in 7-day occupations relief the following diagrams are presented. The first illustration shows a system used when employees who are relieved one calendar day each week; the second relates to employees who are relieved one calendar day every two weeks; and the third a system used by many plants when employees are relieved 1 calendar day out of each 19.

Illustration No. 1

Turns per week	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
6	A	A	A	A	A	A	B

This is for employees who are relieved one calendar day in seven. The illustration shows that employee A worked only six days out of the possible seven days, a relief employee (B) working the seventh turn. B can relieve six different men one day each week, and thus get a full week's work. In some plants employees are relieved on a certain day each week while in others there is no set day upon which the relief is granted, the only stipulation being that each employee shall be off duty one calendar day out of each week.

Illustration No. 2

[A and B represent the regular workers and X the relief man]

Turn	Days worked by regulars and those worked by relief man																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
First....	A	A	A	A	A	A	A	A	A	A	A	A	A	B	B	B	B	B	B	B	B	B	B	B	B	B	B	X	X
Second..	B	B	B	B	B	B	B	B	B	B	B	B	X	X	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B

The relief system as shown by illustration No. 2 is used in some plants where employees are relieved one day in 14 and work 13 days on either the first or second turn before alternating to the opposite turn. The diagram covers a period of 28 days, but it will be observed that the regular employees A and B work only on 26 of these days, while the relief man X works one shift on the 13th, 14th, 27th, and 28th. Presuming the first turn begins at 12 o'clock midnight and runs to 12 o'clock noon and the second turn begins at 12 o'clock noon and ends at 12 o'clock midnight, regular worker B by having relief on the 13th would be off duty from 12 o'clock midnight of the 12th until 12 o'clock midnight of the 13th, which is 24 hours. A, by having

relief on the 14th, would be off duty from 12 o'clock noon on the 13th to 12 o'clock noon on the 15th, which would be 48 hours. It will be noticed that A was off duty twice as long as B and yet each has only had one relief turn. This is brought about by B alternating to the first turn and A dropping down to the second turn; however, when the shift is again made and B is relieved by X on the 27th it is B who will be off duty 48 hours and A will be off only 24.

It might be of interest to see what would happen had no relief man been provided and employees alternated under the same conditions. If this were the case it would be necessary for A to work the full 24 hours on the 13th, while B would be off duty all day; but when the shift in turns would again be made on the 26th it would be necessary for B to work the full 24 hours on that day, while A would be off duty.

Illustration No. 3

[A, B, and C represent the regular workers and X the relief man]

Turn	Hours of turn	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
First.....	12 midnight to 8 a. m.	A	A	A	A	A	A	X	C	C	C	C	C	B	B	B	B	B	B	B
Second.....	8 a. m. to 4 p. m.	B	B	B	B	B	B	A	A	A	A	A	A	X	C	C	C	C	C	C
Third.....	4 p. m. to midnight.	C	C	C	C	C	C	B	B	B	B	B	B	A	A	A	A	A	A	X

The above diagram shows the relief system in use in many plants for employees working in a 7-day occupation on a 3-shift basis. This method gives each employee a calendar day off once in 19. It may also be noticed that no employee works more than 6 consecutive turns without having 24 hours of continuous rest. For example, A would go to work at midnight of the first day and work until 8 a. m., B then takes up the work at 8 a. m. and works until 4 p. m., when C takes up the work and continues until midnight, when A comes on duty for his second day. This system would be followed until each employee—A, B, and C—had worked 6 consecutive turns when each would change turns, A dropping from the first to the second, B from the second to the third, and C would move up to the first. This method of rotation would put A on duty again at 8 a. m. on the 7th, and as he had finished his turn at 8 a. m. on the 6th he would have had 24 hours rest; B, who had finished his turn at 4 p. m. on the 6th, would again resume work at 4 p. m. on the 7th, which would have given him 24 hours rest. However, had C started work on the 7th at midnight he would have had no rest as his turn on the 6th had just ended. In order that C may have 24 hours rest, a relief man, X, works this turn and C is not obliged to return to work until midnight of the 7th, which gives him 24 hours off duty.

The relief turn for A and B can be analyzed in the same manner as described for C. In this relief system it is possible for 3 men to have 24 hours continuous rest after 6 consecutive turns by giving each man a relief turn off once in 19 days.

In order to give some light on modes of changing shifts in 7-day occupations, working on a 3-shift basis of 8 hours each, where no relief is given, the following outline is presented. This method of changing shifts is found in many plants and on each change day two workers are off 8 hours each while the third is off 32 hours.

Illustration No. 4

[No relief man]

Turn	Hours of turn	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
First.....	11 p. m. to 7 a. m.	C	C	C	A	A	A	A	A	A	A	B	B	B	B	B	B	C	C	C	C	C
Second.....	7 a. m. to 3 p. m.	A	A	B	B	B	B	B	B	C	C	C	C	C	C	C	A	A	A	A	A	A
Third.....	3 p. m. to 11 p. m.	B	B	C	C	C	C	C	C	A	A	A	A	A	A	A	B	B	B	B	B	B

As shown by the diagram, A, B, and C work each eight hours on the first and second turns, but when the change-day of the 3d comes and C drops from the first turn to the third turn it is necessary for him to work the turn 11 p. m. to 7 a. m. and the turn 3 p. m. to 11 p. m. This gives him two 8-hour shifts out of 24 hours, his rest period coming between the first and third shifts. B works one shift 7 a. m. to 3 p. m. on the 3d, while A, who went off duty at 3 p. m. on the 2d, does not return to work until 32 hours later, or at 11 p. m. on the 4th. On the second change-day, which is the 10th, A works 16 hours, C 8 hours, and B is off 32 hours. On the third change-day, which completes the cycle, B works 16 hours, A 8 hours, and C is off 32 hours. Thus, in 3 weeks each employee has been off duty 32 hours in a continuous period, but in order to do this it was necessary to work 16 hours on one day, which would not have been necessary had a *relief* man been used. It will be noticed that each man worked 21 turns, or 168 hours, which is full time for the period.

#### COMMON LABORERS

There are in every department of the iron and steel industry various occupations which require little skill, but for which the basic rate is largely determined by the rate of wages paid common laborers. Thus, the rate paid the latter is of considerable importance not alone to the great number of wage earners receiving it, but for the relation it bears to other occupations.

The rate per hour is practically the same in all departments within the same district, but may vary one district from another. In the 10 departments covered there was a total of 71,009 employees in all occupations, of which 5,205 were common laborers. Of these, 1,548 were in open-hearth furnaces and 1,184 in blast furnaces, or 11.8 per cent of all employees in open-hearth furnaces and practically 10 per cent of all blast-furnace employees.

In this study "common labor" has been confined to the wholly unskilled and more or less floating gang, who worked in and about the mill proper, but upon whose work the mill was not primarily dependent for operation. While the various methods of classifying common labor used in the several plants have led to difficulties in tabulation, no employee has been placed under that heading who was not paid the common-labor rate in the plant in which he worked.

Average earnings per hour of common laborers in the departments from 1907 to 1929, are presented in Table 4. Figures for standard rail mills are not shown by districts, but are shown for the years 1924 to 1929 for all districts combined.<sup>5</sup> The 1926 and 1929 figures

<sup>5</sup> See footnote 4, p. 1.

for puddling mills are not identified by districts. In all earlier years figures for tin-plate mills were shown by districts, but in the present study data are shown only for all districts combined. While no data are shown for standard rail mills prior to 1924 the averages for all departments combined contain the averages for that department in many instances, all of which are noted in Table 4.

It will be observed that average hourly earnings of laborers for all departments combined show little change when 1929 is compared with 1926. In the Eastern and Pittsburgh districts there was a slight increase, while in the Great Lakes and Middle West and Southern districts there was a small decline. The average for all districts combined decreased from 41.9 cents in 1926 to 41.4 cents in 1929. However, the average in 1929 was 129 per cent greater than in 1914.

TABLE 4.—Average earnings per hour of common laborers in specified departments of the iron and steel industry, 1907 to 1929, by district and year

[For number of plants reporting see sections relating to the specified departments, published elsewhere in this report]

District and year	Average earnings per hour in—										
	All departments	Blast furnaces	Bessemer converters	Open-hearth furnaces	Puddling mills	Bloom-ing mills	Plate mills	Stand-ard rail mills	Bar mills	Sheet mills	Tin-plate mills
<b>Eastern:</b>											
1907	\$0.134	\$0.135								\$0.132	
1908	.120	.115								.131	
1909	.123	.119								.131	
1910	.142	.142		\$0.145		\$0.143	\$0.131			.147	
1911	.141	.140		.146		.139	.131			.145	
1912	.144	.144		.152		.141	.133			.145	
1913	.157	.151		.168		.162	.151			.156	
1914	.156	.153		.169	\$0.163	.172	.151			.151	
1915	.155	.151		.171	.157	.154	.151			.150	
1917	.278	.271		.287		.250	.250				
1919	.398	.423		.408	.400	.437	.368			.409	
1920	.451	.444		.485	.451	.437	.398			.479	
1922	.322	.345		.326	.323	.326	.300			.313	
1924	.386	.394		.388	.410	.389	.349			.374	
1926	.374	.383		.383		.382	.335			.371	
1929	.375	.386		.382		.379	.349			.363	
<b>Pittsburgh:</b>											
1907	.154	.152	\$0.156							.154	
1908	.156	.154	.156							.157	
1909	.152	.152	.153							.151	
1910	.164	.166	.164	.162		.168	.167			.161	\$0.164
1911	.166	.165	.167	.164		.170	.168			.163	.166
1912	.167	.163	.168	.165		.169	.173			.163	.165
1913	.190	.191	.192	.190		.192	.191			.183	.191
1914	.190	.192	.193	.188	.190	.192	.188			.183	.192
1915	.190	.189	.193	.193	.189	.192	.189			.184	.192
1917	.301	.292	.299	.300		.300	.300			.321	
1919	.480	.484	.485	.471	.447	.489	.484			.482	.460
1920	.530	.525	.532	.537	.529	.537	.532			.528	.517
1922	.360	.366	.359	.365	.362	.359	.357			.358	.363
1924	.451	.451	.459	.448	.423	.466	.472			.451	.430
1926	.452	.441	.447	.452		.463	.469			.466	.431
1929	.463	.433	.458	.458		.467	.460			.469	.430

<sup>1</sup>Including earnings of common laborers in rail mills although average earnings for that department are not shown separately.

TABLE 4.—Average earnings per hour of common laborers in specified departments of the iron and steel industry, 1907 to 1929, by district and year—Continued

District and year	Average earnings per hour in—										
	All departments	Blast furnaces	Bessemer converters	Open-hearth furnaces	Puddling mills	Bloom-ing mills	Plate mills	Stand-ard rail mills	Bar mills	Sheet mills	Tin-plate mills
<b>Great Lakes and Middle West:</b>											
1907	\$. 158	\$. 182	\$. 154						\$. 159		
1908	. 153	. 182	. 152						. 158		
1909	. 151	. 183	. 146						. 157		
1910	1. 163	. 162	. 161	\$. 162		\$. 163	\$. 164		. 167		
1911	1. 166	. 166	. 164	. 166		. 166	. 164		. 166		
1912	1. 168	. 166	. 166	. 170		. 167	. 162		. 170		
1913	1. 189	. 189	. 190	. 190		. 190	. 195		. 189	\$. 187	\$. 186
1914	1. 189	. 190	. 191	. 191	\$. 182	. 190	. 190		. 190	. 180	. 186
1915	1. 188	. 187	. 191	. 191	. 180	. 190	. 189		. 190	. 190	. 186
1917	. 313	. 296	. 297	. 299		. 295	. 289			. 335	
1919	1. 469	. 466	. 501	. 485	. 464	. 487	. 469		. 450	. 463	. 434
1920	1. 541	. 549	. 545	. 559	. 521	. 528	. 514		. 526	. 547	. 535
1922	1. 363	. 374	. 367	. 366	. 361	. 374	. 349		. 362	. 352	. 357
1924	. 443	. 456	. 436	. 450	. 399	. 502	. 437		. 420	. 414	. 432
1926	. 458	. 459	. 439	. 448		. 514	. 438		. 455	. 503	. 410
1929	. 468	. 462	. 446	. 452		. 519	. 439		. 458	. 427	
<b>Southern:</b>											
1907	. 130	. 130									
1908	. 111	. 111									
1909	. 112	. 112									
1910	. 129	. 128		. 130		. 131					
1911	. 131	. 131		. 130		. 132					
1912	. 130	. 130		. 132		. 131					
1913	. 140	. 136		. 152		. 138			. 142		
1914	. 146	. 137		. 169	. 144	. 148			. 141		
1915	. 141	. 134		. 158	. 146	. 140			. 142		
1917	. 222	. 226		. 221		. 217					
1919	. 331	. 334		. 370	. 299	. 374			. 275		
1920	. 396	. 359		. 480	. 312	. 404			. 381		
1922	. 253	. 257		. 296	. 219	. 283			. 222		
1924	. 282	. 299		. 342	. 278	. 334			. 262		
1926	. 281	. 285		. 337		. 318			. 263		
1929	. 279	. 241		. 357		. 327			. 264		
<b>All districts:</b>											
1907	. 151	. 146	. 155						. 153		
1908	. 147	. 140	. 155						. 153		
1909	. 145	. 138	. 151						. 150		
1910	1. 158	. 150	. 163	. 157		. 162	. 159		. 180	. 164	. 165
1911	1. 161	. 151	. 166	. 161		. 163	. 158		. 159	. 166	. 164
1912	1. 162	. 152	. 167	. 164		. 163	. 161		. 160	. 168	. 167
1913	1. 181	. 173	. 192	. 185		. 186	. 175		. 169	. 190	. 189
1914	1. 181	. 177	. 193	. 185	. 173	. 187	. 174		. 173	. 188	. 189
1915	1. 180	. 171	. 193	. 186	. 167	. 187	. 174		. 173	. 188	. 190
1917	. 298	. 281	. 298	. 292		. 287	. 294			. 331	
1919	1. 461	. 457	. 489	. 468	. 436	. 469	. 450		. 443	. 462	. 461
1920	1. 506	. 474	. 537	. 525	. 457	. 511	. 498		. 506	. 536	. 533
1922	1. 336	. 315	. 363	. 354	. 303	. 350	. 336		. 316	. 356	. 359
1924	. 417	. 401	. 448	. 434	. 355	. 462	. 432	\$. 395	. 392	. 420	. 436
1926	. 419	. 399	. 443	. 429	. 357	. 451	. 425	. 421	. 411	. 475	. 429
1929	. 414	. 373	. 452	. 433	. 389	. 463	. 409	. 400	. 399	. 429	. 422

<sup>1</sup>Including earnings of common laborers in rail mills although average earnings for that department are not shown separately.

## AVERAGE HOURLY EARNINGS, 1929, BY DISTRICT

Table 5 shows, by districts, for 1929 the average hourly earnings for all occupations combined.

TABLE 5.—Average hourly earnings in each department, all occupations combined, 1929, by district

District	Blast furnaces	Bessemer converters	Open-hearth furnaces	Puddling mills <sup>1</sup>	Blooming mills	Plate mills	Standard rail mills <sup>1</sup>	Bar mills	Sheet mills	Tin-plate mills <sup>1</sup>
Eastern.....	\$0.499		\$0.676		\$0.613	\$0.540		\$0.545		
Pittsburgh.....	.579	\$0.650	.746		.670	.707		.685	\$0.806	
Great Lakes and Middle West.....	.600	.635	.743		.708	.686		.683	.778	
Southern.....	.360		.556		.554			.427		
All districts.....	.528	.643	.714	\$0.686	.666	.639	\$0.628	.625	.793	\$0.732

<sup>1</sup> Not reported by districts to avoid identification of any plant.

Average hourly earnings in the 10 departments ranged from 52.8 cents in blast furnaces to 79.3 cents in sheet mills. The great percentage of workers in unskilled or semiskilled positions accounts for the low earnings in blast furnaces. In sheet mills most of the employees work in three shifts at high speed, and as they work on a tonnage basis their earnings are governed by the amount they produce, which condition also prevails in tin-plate mills.

Due to the increased demand for steel, open-hearth furnaces were pushed for large tonnages, which aided employees in this department to earn an average of 71.4 cents per hour. Employees in the Bessemer-converter department earned an average of 64.3 cents per hour.

Puddling mills averaged 68.6 cents per hour, which is just 2 cents higher than the average for blooming mills. Earnings per hour in plate, standard rail, and bar mills were about the same in each department, ranging from 63.9 cents for plate mills to 62.5 cents for bar mills.

Earnings of employees in the various departments were higher in the Pittsburgh and Great Lakes districts than in the eastern or southern districts. This is due in a large part to the lower rate paid to unskilled and semiskilled workers in the latter districts. It is also not unusual to find plants in these districts carrying a larger percentage of unskilled workers than plants in the Pittsburgh and Great Lakes districts.

## SCOPE OF 1929 DATA

Information as of 1929 was obtained from plants located in 13 States. The plants covered have been grouped into four districts. These districts were established, not strictly on geographical lines, but rather according to similar industrial conditions. The "eastern" district covers the eastern parts of New York, Pennsylvania, and Maryland. The "Pittsburgh" district includes not only the plants in Pittsburgh proper but also others in western Pennsylvania, those along the border line of Ohio from Youngstown south to Bellaire, and those located in the "panhandle" of West Virginia. The "Great

Lakes and Middle West" district includes plants scattered along the Great Lakes and also some in inland territory, including Colorado. Although this last is a very large territory geographically, it is essentially a unit industrially as far as the iron and steel industry is concerned, the wage rates of the entire district being based largely on those paid in the large producing centers, Buffalo and Chicago. The "southern" district includes plants in Virginia, Tennessee, Alabama, Kentucky, and the southern parts of Ohio and Indiana. The southern Ohio and Indiana plants are included in the southern district because the conditions, both as to wages paid and the general class of labor employed, resemble much more closely the conditions of the Alabama and Kentucky plants than they do those of the other plants of Ohio and Indiana.

The actual number of plants and of employees covered in each district in each department in 1929 are shown in Table 6. Each department of an establishment has been counted as a separate plant.

TABLE 6.—Number of plants and of employees shown on pay rolls, by department and district

Department	Eastern district		Pittsburgh district		Great Lakes and Middle West district		Southern district		Total	
	Plants	Em- ploy- ees	Plants	Em- ploy- ees	Plants	Em- ploy- ees	Plants	Em- ploy- ees	Plants	Em- ploy- ees
Blast furnaces.....	6	1,351	12	3,909	10	4,486	9	2,476	37	12,222
Bessemer converters.....			6	1,224	5	1,027			11	2,251
Open-hearth furnaces.....	6	1,560	9	4,663	14	5,614	4	1,334	33	13,171
Puddling mills <sup>1</sup> .....									11	1,800
Blooming mills.....	5	639	10	3,024	11	2,128	4	475	30	6,266
Plate mills.....	6	1,230	6	1,543	5	1,251			17	4,024
Standard rail mills <sup>1</sup> .....									7	2,816
Bar mills.....	6	934	11	2,838	13	2,522	9	1,181	39	7,476
Sheet mills.....			9	6,382	6	6,216			15	12,598
Tin-plate mills <sup>1</sup> .....									8	8,386
Total.....	29	5,714	63	23,583	64	23,244	26	5,466	208	71,000

<sup>1</sup> Details not given by districts to avoid identification of any plant.

### IMPORTANCE OF THE INDUSTRY

The iron and steel industry is one of the largest and most important manufacturing industries in the United States. In 1890, with a population of approximately 63,000,000 people, the output of pig iron, including ferro-alloys, was 9,202,703 gross tons, or 327.5 pounds per capita; in 1900, with the population figure at about 76,000,000, the production was 13,789,242 gross tons, or around 400 pounds per capita; and in 1920, with a population of nearly 106,000,000, the production increased to 36,925,987 gross tons, or approximately 782 pounds per capita. In 1928 the production was 38,155,714 gross tons, which, with an estimated population of 120,000,000, equals approximately 712 pounds per capita.

According to the Commerce Yearbook, 1926, the United States in 1913 produced 39.6 per cent of the world's production of pig iron. In 1923 it was 58.8 per cent; in 1924, 46.8 per cent; in 1925, 48.5 per cent; in 1926, 51 per cent. During the same years the per cent of steel ingots and castings produced in the United States in relation to the world's output was 42, 58.2, 49, 51.1, and 52.2, respectively.

Table 7, taken from the reports of the Census of Manufactures, gives a good idea of the size and importance of the industry. In 1927 there was an average of 27,958 wage earners employed in blast furnaces and of 361,312 in steel works and rolling mills. The total wages paid these employees during the year was \$44,258,000 and \$601,275,000, respectively. This is an annual wage of \$1,583 for blast furnace employees and \$1,664 for employees in steel works and rolling mills.

The cost of materials in blast furnaces was \$579,555,000 and the value of the product was \$708,904,000. This is \$129,349,000 more than the cost of materials and represents the value added by manufacture. In the steel works and rolling mills the cost of material was \$1,689,655,000, the value of the products \$2,779,840,000, the difference, or \$1,090,185,000, representing the value added by manufacture.

Wages paid in blast furnaces in 1927 represent 34 per cent of the value added by manufacture, which compares with 31 per cent in 1925 and 43 per cent in 1914. In steel works and rolling mills wages represent 55 per cent of the value added by manufacture in 1927, 54 per cent in 1925, and 57 per cent in 1914.

TABLE 7.—Number of establishments, wage earners, cost of materials, value of products, and value added by manufacture in the iron and steel industry, 1914 to 1927

Branch of industry and year	Number of establishments	Average number of wage earners	Wages	Cost of materials	Value of products
<b>Blast furnaces:</b>					
1914	160	29,356	\$22,781,000	\$264,580,000	\$317,654,000
1919	209	43,296	76,446,000	644,021,000	824,383,000
1921	134	18,698	29,370,000	361,059,000	419,771,000
1923	169	36,712	58,936,000	827,630,000	1,007,613,000
1925	122	29,188	45,312,000	617,417,000	765,286,000
1927	116	27,958	44,258,000	579,555,000	708,904,000
<b>Steel works and rolling mills:</b>					
1914	427	248,716	188,142,000	590,826,000	918,665,000
1919	500	375,068	637,637,000	1,680,576,000	2,828,902,000
1921	494	235,515	324,987,000	1,095,125,000	1,481,659,000
1923	489	388,201	637,825,000	2,044,898,000	3,154,325,000
1925	473	370,726	614,985,000	1,811,961,000	2,946,068,000
1927	486	361,312	601,275,000	1,689,655,000	2,779,840,000

  

Branch of industry and year	Value added by manufacture	Average annual wages per wage earner	Cost of material per wage earner	Value of products per wage earner	Value added by manufacture per wage earner	Per cent wages are of value added
<b>Blast furnaces:</b>						
1914	\$53,074,000	\$776	\$9,013	\$10,821	\$1,808	43
1919	180,362,000	1,766	14,875	19,041	4,166	42
1921	58,721,000	1,571	19,310	22,450	3,140	50
1923	179,983,000	1,605	22,644	27,446	4,902	53
1925	147,869,000	1,553	21,153	26,219	5,066	51
1927	129,349,000	1,583	20,729	25,356	4,627	54
<b>Steel works and rolling mills:</b>						
1914	327,839,000	756	2,376	3,694	1,318	57
1919	1,148,326,000	1,700	4,480	7,542	3,062	56
1921	476,584,000	1,389	4,268	6,291	2,023	68
1923	1,109,927,000	1,643	5,266	8,125	2,859	57
1925	1,134,107,000	1,659	4,888	7,947	3,059	54
1927	1,090,185,000	1,664	4,676	7,694	3,017	56



## TREND OF EMPLOYMENT

In addition to studies of wages and hours of labor of employees in certain industries in the United States the Bureau of Labor Statistics monthly collects data covering employment and earnings in all of the more important ones. Such figures are published monthly in the Labor Review. Index numbers for employment in iron and steel are repeated in this bulletin for the purpose of throwing additional light on labor conditions in the iron and steel industry but they should not be confused with the index numbers developed by the wage study.

Since the employment figures are based on data collected monthly, it is of course not possible to cover wage conditions in the same detail as in the biennial wage studies. Such figures necessarily indicate the trend of conditions only in a general way and conclusions drawn from them must be considered in that light; for example, the index of employment shows principally the rise and fall of the number of wage earners employed in the industry. This, of course, indicates in a general way the regularity or continuity of employment but does not indicate a change in regular or actual hours or days of labor. The data collected cover only the number of employees appearing on the pay rolls and no reference is made to hours or days of employment. Likewise, the index of pay-roll totals is an index of total earnings during one pay period and does not indicate an increase or decrease in hourly or full-time weekly earnings. From it may be computed the increase or decrease in per capita earnings which might be due to changes in rates of pay, changes in production where employees are paid on tonnage basis, or changes in the amount of time actually put in.

In computing the index numbers for employment and earnings the average for the year 1926 was taken as the base or 100 per cent. The index for each month is simply the per cent that the average for that month is of the average for 1926. These indexes are presented in Table 8 for each month beginning with January, 1923, and ending with December, 1929.

TABLE 8.—Index numbers of employment and of pay rolls in the iron and steel industry, January, 1923, to December, 1929, by months and years

[Average for 1926=100]

Month	Index numbers of—													
	Employment							Pay rolls						
	1923	1924	1925	1926	1927	1928	1929	1923	1924	1925	1926	1927	1928	1929
January.....	96.5	101.0	100.2	100.5	95.0	86.9	93.4	87.1	97.5	101.1	99.8	92.3	83.5	95.5
February.....	99.3	105.8	102.0	102.0	96.4	89.8	94.0	92.1	107.8	102.4	102.7	98.2	83.4	100.2
March.....	101.0	108.5	102.7	101.7	97.7	91.5	95.0	94.5	110.2	102.9	104.4	101.2	95.3	102.2
April.....	101.3	107.8	100.4	102.3	97.3	91.4	95.9	92.0	107.3	100.1	103.4	102.0	93.1	104.8
May.....	103.3	98.3	98.2	101.0	96.4	91.2	97.1	104.1	96.3	98.2	100.3	96.5	93.3	105.9
June.....	105.9	91.4	95.4	99.3	94.3	90.5	97.2	105.6	80.1	91.9	99.2	94.4	91.7	104.0
July.....	102.8	86.1	94.0	97.8	92.3	89.6	96.6	91.1	69.7	85.8	93.3	83.9	86.5	97.6
August.....	105.4	83.8	94.0	98.8	91.2	90.7	97.5	101.2	77.2	90.6	95.1	88.0	92.2	103.4
September.....	104.5	86.3	94.5	100.3	90.6	91.2	96.3	98.8	79.8	89.2	99.2	85.8	91.0	101.7
October.....	104.2	89.9	95.8	100.2	89.5	91.5	93.9	103.8	86.4	96.4	103.7	85.9	96.7	99.1
November.....	102.2	90.3	97.2	99.1	87.8	93.1	92.3	101.0	87.3	96.0	100.2	83.8	97.6	92.3
December.....	98.3	95.4	100.1	96.7	86.5	92.8	87.5	96.0	96.2	102.2	98.5	84.5	95.8	85.2
Year.....	102.1	95.4	97.9	100.0	92.9	90.9	94.7	97.3	91.3	96.4	100.0	91.4	92.7	99.3

The yearly average index numbers as given in Table 8 show a decrease in employment from 1926 to 1927 and 1928, with an increase between 1928 and 1929. The 1926 wage data collected were mainly as of January, and 1929 data mainly as of March. While the 1926 wage study covered 200 separate establishment departments with 75,109 employees, the 1929 study included 208 such departments with 71,009 employees. Since each separate department of a company is counted separately, there may be two or more departments taken in a single plant. There were 180 departments that were common to both wage studies, which had 69,639 employees in 1926 and 61,892 employees in 1929, a decrease of 11 per cent in the number of employees in these identical departments.

Index numbers of employment in the iron and steel industry as shown in Table 8 were 100.5 in January, 1926, and 95.0 in March, 1929, a decrease of 5.5 per cent. The employment figures are based on about four times as many employees as are the wage studies. The establishments covered in the wage studies, it will be seen, had a reduction in force considerably greater than the industry as a whole shown in the employment index. During 1929 employment held up and increased until late in the year when a considerable decrease occurred. The total wages paid out according to the pay-roll index dropped as between 1926 and 1927, increased slightly in 1928, and rose in 1929 nearly to the level of 1926. But for the drop at the end of 1929 the pay-roll index would have stood higher than in any year given in Table 8. The December, 1929, pay-roll index fell to 85.2 and the employment index to 87.5. These index numbers reflect the industrial change which occurred late in the year.

#### EXPLANATION AND TREATMENT OF THE DATA

In the following pages of this report each of the 10 departments covered in the 1929 study has been treated as a separate industry. The treatment of the data is the same for each department, however, and the same forms of statistical tables have been used in each case. From these tables, of which there are eight, figures have been taken to a large extent for the summary tables already presented. Thus, a general explanation of the methods used in handling the data and the figures shown in the tables will serve as a guide in the study of the figures for each department and the summary of the figures for all departments previously presented.

*Adjustment of the data.*—As previously stated all data in this report refer to one representative pay period only. Unfortunately for statistical purposes there is no length of pay period universally followed by all companies. While a large majority of the plants in this industry pay their employees on a semimonthly basis, some establishments pay weekly, some biweekly, and at least one establishment pays three times a month. It would have been a prohibitive task to attempt to obtain data from an establishment for any group of days other than a regular pay period.

The period selected for this survey was from March 1 to 15, but that period was not always representative. A few of the establishments covered were closed down almost completely during the first half of March. Thus, while the schedules obtained are in a large measure for the March 1 to 15 period, a few were taken for other

periods. In the case of weekly periods the bureau agents combined the pay rolls for two consecutive weeks, making in effect a two-week pay period.

Therefore before combinations of actual time and actual earnings could be made and averages computed therefrom it was necessary to adjust the figures of a few establishments in order that all schedules would refer to the same or an equivalent length pay period. The adjustments were made for the principal occupations only, since no tables are presented wherein it was necessary to adjust the hours and earnings of the other employees.

In making the adjustment it was first assumed that all employees in an occupation would work the same per cent of full time during any period as they did during the period for which the schedule was taken. The full time of all employees in an occupation was then computed for the new period chosen as the basis for adjustment and the full time for the new period was then multiplied by the per cent of full time which the employees had worked during the period actually covered. That result then became the equivalent actual hours worked in that occupation as used in the preparation of the tables.

The actual earnings of employees were adjusted by multiplying the adjusted hours of employees in an occupation by the average earnings per hour of that occupation. The average earnings per hour were obtained before any adjustments were made and have not been affected by any later computations.

*Positions.*—The term "positions" or "jobs" as used in this report means the number of places to be filled by employees working the regular full time required to operate a plant under normal working conditions, with provision for two or three shifts or turns per day but with no provision for relief of employees; for example, a blast furnace must have a keeper on duty all of the time. If the furnace employees are on a 12-hour shift then there are two positions for keeper at the furnace; if on a 3-shift basis there are three keepers' positions.

*Employees.*—In each year prior to 1919 the number of positions has been used as the number of employees, but in 1919 and each later year the actual number of individual employees is shown.

In all tables in this report employees appear but once. In cases where they worked at two or more occupations during the period or at more than one set of hours or turns per day or week they have been tabulated under the occupation or number of hours or turns at which they spent the most of their time. This has resulted in disregarding the hours and earnings of some employees in some secondary occupations, but on the whole the figures eliminated were so small as to be of no consequence in determining the averages.

*Average earnings per hour.*—The earnings per hour shown in the tables include both the earnings of time workers and those of tonnage or piece workers. All earnings per hour are for individuals, no contractors being included. The average was obtained by dividing the total amount earned by the total number of hours actually worked in an occupation before any adjustment was made in the data.

*Average full-time hours per week.*—The full-time hours of labor as shown in the tables are the customary regular hours of work of individual employees under normal conditions in the establishments. The

working time is the time on duty, including intervals of waiting for work—in other words, the time between the hour of reporting for duty and the hour of going off duty. The working time of individuals is not always the working time of their occupation as a whole. Some plants which operate 7 days per week make provision for laying off each employee 1 day a week. In such a plant the full-time hours per week of an employee working 8 hours per day is 48 hours, and this figure would be used in the compilation of the averages presented in the tables.

In computing the average for all employees in an occupation the individual averages in the various plants were weighted by the number of positions in those plants instead of the number of employees on the pay roll. The number of positions in a plant is practically constant from year to year while considerable variation is shown in the number of employees. Thus the use of the number of employees as a weight would tend to change the average whether any change was actually made in the working time of employees or not.

*Average full-time weekly earnings.*—Full-time weekly earnings are the earnings per week of employees working their customary full-time or the earnings on broken time reduced to equivalent earnings for a full week. The average has been obtained in each instance by multiplying the average full-time hours per week by the average earnings per hour.

*Table A.*—Average customary full-time hours per week, average earnings per hour, and average full-time earnings per week, together with the index numbers computed from these averages for the country as a whole, are presented in this table for each of the principal occupations in each department. The table also shows a percentage distribution of employees according to their full-time hours per week. Figures for 1929 were compiled for this report and those for earlier years were taken from previous reports published by this bureau. For the purposes of comparison the class limits used in the distribution of hours of employees were necessarily very wide. A much more comprehensive distribution for employees in several of the occupations in 1929 is contained in Table E. The index numbers have been included as an aid in making a comparison of the actual data over a period of years. The index for each year is the per cent that the average for that year is of the average for 1913.

*Table B.*—A classification showing numbers and percentages of employees according to the number of turns per week customarily worked is presented in Table B. Figures are shown for employees in all occupations combined for 1929 and preceding years. The plants are grouped according to the four geographical districts used in this survey, and the number and per cent of employees in each district are shown in the table, as well as the total for all districts combined.

Most of the departments of the iron and steel industry are operated day and night. Each day of 24 hours is divided into two or three turns, usually of equal length, and each employee is expected to work but one turn per calendar day, except when changing. One turn to another employees frequently work two consecutive turns. It is customary for the men in these plants to alternate or rotate from one turn to another at regular intervals, spending equal periods of time on each turn. Thus the term "turns" as used in this table

means a day's work performed on day, night, or intermediate turn and the column headings which include more than one turn indicate a weekly shift from one turn to another. All employees do not change turns each week, however, as it is the practice in many plants for employees to work two weeks on a turn before a change is made. This serves only to increase the time necessary to make a complete rotation of turns. The number of turns worked in the long run is not affected, and in order to combine the data for the various plants all employees have been classified as though turns were all changed weekly.

Various provisions for the relief <sup>6</sup> of employees are in force in many plants whereby employees are given a day of rest even though the plant, and of course most of the occupations, may normally operate 7 days per week. Some 7-day plants have regular systems of relief requiring the men to lay off 1 day in 7, others 1 day in 14, etc. Only definite systems of relief where men are required to take advantage of the day of rest, or at least exercise the privilege reasonably often, have been considered. In the study of this table it must be kept in mind that the turns worked by individuals are shown and not the working turns of the occupations in which they are employed.

All employees in 1929 were classified as nearly as possible by their regular working time. Gas or repair turns have been disregarded when employees customarily worked such turns at less frequent intervals than once every three weeks, and relief systems have also been omitted in a few instances where the periods elapsing between reliefs were longer than that time.

*Table C.*—This table presents the most important facts for 1929 relative to the customary working time, actual earnings, and actual hours of employees in the principal occupations in each department. The data for each occupation in seven departments are presented by districts and for all districts combined. In the three remaining departments—puddling mills, rail mills, and tin-plate mills—data are presented only for the United States as a whole. In the arrangement of the table the averages are presented in three groups or sections: (1) Averages relating to the customary working time of employees; (2) averages for the hours worked and earnings received by employees while engaged in each specified principal occupation; and (3) averages for the hours and earnings of those same employees while engaged in those and any other occupations within the department at which they may have worked during the pay period.

The first group of averages, including customary turns per week, hours per turn, and hours per week, have been computed for the number of positions necessary to be filled in the different occupations instead of the actual number of employees hired during the pay period. (For definition of a position see p. 21.) For this reason the number of positions appears in the table in connection with these averages. The number of positions represents the number of men who would be employed at any one time in the occupation. Several men might be necessary to keep a position filled during the pay period, but only one man would be employed at a time. Thus the customary working time of each man employed in a position would be the same while he worked in that occupation, and the aggregate full-time hours or turns in a plant would depend upon the number of available positions

<sup>6</sup> See p. 10.

and not upon the number of men employed to fill them during the pay period. However, while the number of positions have been used as a weight for computing the averages, the working time of individual employees is shown in this table and not the hours or turns of the positions; for example, in a blast furnace having 5 stacks in operation 3 turns per day, there would be 15 positions for the occupation of keeper. The plant has a relief system in force whereby each man works but 6 turns each week, although the furnaces, and of course the positions, are necessarily in operation continuously, or 7 turns per week. In the computation of the averages shown in the table the 8 hours per turn, 6 turns, and 48 hours per week customarily worked by the men are used and each multiplied by 15, the number of positions, in order to obtain aggregates for the plant. While the 15 positions would remain constant with 5 stacks in operation, it might be necessary to employ 20 or even more different men during a pay period to keep those positions filled. Were the number of employees used as weights, the hours of labor in the different establishments would not be properly weighted and would depend to a large extent upon unusual plant conditions.

The second group of averages shows the average hours worked and earnings received for the pay period (subject to the adjustment of hours and earnings, as explained on p. 21), average earnings per hour, and average full-time earnings per week of the men who were actually employed during a majority of their time, at least, in the occupation specified. These averages are based on the hours and earnings of each employee in his principal occupation only and do not in any way refer to the number of positions. The actual hours which men have put in and the earnings which they have received are of greater significance than the hours and earnings of an impersonal particular job. (For further definition of employees see p. 21.)

However, while the averages in the second group are based upon employees they do not in any way constitute a measure of employment or unemployment. They refer to the occupation under consideration only, and it must not be assumed that the employees in that occupation had no further opportunity for work. A large percentage of the employees did work at more than one occupation during the period scheduled; hence none of the averages in this group measure the total work or total earnings of the employees.

The average hours worked during the pay period as shown in the table is the result of combining all the hours worked by all employees in that occupation and then dividing by the number of employees. The average earnings per pay period was obtained in the same way. The average earnings per hour and full-time weekly earnings are explained on pages 21 and 22.

The averages in the second group show the work done in a specified occupation only. The averages in the third group show the total work done by the same employees in any and all occupations at which they may have been engaged in the department during the pay-roll period, including the specified occupation. These averages have been deemed necessary, as the averages for the specified occupation alone fail to indicate the entire time and earnings of the individuals under consideration. The averages in the third group apply to an employee within the particular department only. To trace the employee from one department to another was practically impossible.

The averages were obtained by the same methods that were used for the second group of averages.

*Table D.*—The customary turns and hours worked by all employees in the several departments in 1929 are shown in detail in this table. The number of turns per week, hours per turn, hours per week, and average hours per week are presented for three groups of employees: Those who work day turns only, those who work night turns only, and those who alternate or rotate from day to night shift. Data are shown for each district and for all districts combined. Further, like figures are given for one representative key occupation in each department.

The order of arrangement begins with the highest number of average full-time hours per week. As the number of hours worked per day seldom varies during the period Monday to Friday, hours per turn are shown but once under that heading. The hours worked on Saturday and Sunday, however, often differ from the number worked during the first five days of the week, and hours are shown separately for both Saturday and Sunday.

It is the purpose of this table to give a clear picture of the customary working time of all employees in each department in every important detail. At the same time, however, the bureau has endeavored not to allow the numerous small changes, which occur at infrequent intervals of time and affect the hours and turns of employees in only a slight degree, to assume an importance not warranted by conditions. Thus, the regular working time of employees has been considered as nearly as possible, and gas or repair turns have been disregarded when employees customarily work such turns at less frequent intervals than once every three weeks in the case of three-shift workers and once every four weeks for two-shift employees. Relief systems have also been omitted in a few instances where the periods elapsing between reliefs were longer than that time.

The brackets appearing in the table have been used to indicate a working cycle—that is, employees working on shifts which have been bracketed customarily alternate or rotate from one shift to another until they have spent one week on each shift included. The hours and turns of employees who change regularly from one turn to another have been tabulated as though the shift was made weekly in all plants. As explained for Table B, this assumption is not entirely correct, as it is the practice in many plants for employees to work two weeks on a turn before a change is made. This, however, only serves to increase the time necessary to make a complete rotation of turns. The number of turns worked in the long run is not affected, and in order to combine the data for the various plants all employees have been classified as though turns were all changed weekly. The three 8-hour turns per day are shown as one day turn and two night turns—this for the reason that only one of the three turns is an all-daylight turn, the other two either beginning or ending in the night.

In some instances in the table hours are reported for the seven days of the week, yet the number of days worked are reported as six. This is owing to the fact that the figures are for a seven-day occupation wherein each employee was relieved one day in seven. Either relief was not always on the same day each week or information as to which day was not available; therefore, the hours for all days have been shown and the relief indicated in the full-time hours per week.

The table shows the extent of regular relief systems and their working, but it must not be assumed that there was no chance for rest where such has not been shown. In some plants, while there is no *regular* system of relief, the employees are not held strictly to the working days of the plant and may often take a day off as they desire it, the plant putting another man in the place of the one absent. As it was impossible to determine when or how often a man might be *excused*, such plants have been treated in this table as though no relief was granted.

Workmen whose labor is continuous and who are subjected to high temperatures usually have spell hands—that is, three men work on a two-man position or two men work on a one-man position, which arrangement allows each man in rotation intervals for rest. Such intervals of rest are considered as time on duty.

While this table shows the working time of all employees in the department as a whole, no effort has been made to show the hours and turns worked by employees in the different occupations separately. This was too formidable a task to be undertaken. However, in each department one of the principal occupations has been selected and shown as a sample of the hours and turns worked by members of the producing crew. All members of the producing crew do not always work the same hours, but usually there is very little difference, and the occupation shown will give an excellent idea of conditions as regards the productive gang proper. Common labor and certain other unskilled or slightly skilled employees quite often work more hours than the rest of the force.

The remaining four tables—E, F, G, and H—are distribution tables and show the 1929 hours and earnings of employees in considerable detail for a few of the more important principal occupations in each department. It would have been too great a task to attempt to classify all of the principal occupations in the minute detail in which these tables are presented, but the occupations for which data are shown may be accepted as fairly representative of all of the occupations. The occupations tabulated include unskilled, slightly skilled, and skilled employees, and are some of the most important occupations, both numerically and in the process. Common laborers, a very important occupation in this industry, have been included in each department.

In classifying employees in these tables a range of hours or earnings has been used which is sufficiently wide to include all employees for which data are shown, yet the class limits are small enough to show fairly the spread or variation of employees in each occupation. Thus, occupations in a department may be compared with one another or with occupations in other departments. The data are shown for each of the four geographical districts separately as well as for all districts combined.

*Table E.*—Employees in six of the principal occupations in each department, except standard rail and puddling mills, are classified according to their full-time hours per week. In standard rail and puddling mills employees in only five occupations are shown.

The classification of hours begins with employees who customarily work 40 hours per week and ends with those who work 84 hours per week and over. Employees who regularly work 48 hours, 56 hours, 60 hours, or 72 hours per week have been arranged in separate groups,



and the group of "84 and over" means 84 hours per week in practically all instances.

The classified hours of the table are average hours for the individual and do not reflect the long hours of one week that may alternate with shorter hours the next. Thus a man who works 72 hours one week and 60 hours the next has an average of 66 hours, which is tabulated in the group "66, under 72."

*Table F.*—This classification table begins with employees who earned an average of less than 20 cents per hour and ends with those who earned \$3 or more per hour. Employees are classified by 5-cent groups from 20 cents to \$1 per hour and by 10-cent groups from \$1 to \$2 per hour. All who earned \$2 or more per hour are shown in 25-cent groups up to \$3 and then by 50-cent groups.

Exceptionally high or low earnings per hour in practically all occupations indicate that the employees were working under unusual conditions, such as performing work on Sunday at time and one-half rate, or working on a turn which produced exceedingly high or low tonnage.

*Table G.*—The classification of hours actually worked begins with those who worked less than 32 hours during the pay period and ends with those who worked 192 hours and over.

In preparing this table no adjustment has been made in the data, although, as previously stated, all of the schedules do not cover pay periods of equal length. The hours actually worked by the employees, as taken from the schedules, have been tabulated in all instances. While some few of the schedules were taken for 14-day and 16-day pay periods the large majority of the schedules cover a 15-day period. One plant had three pay periods each month and the schedule for it was taken for 20 days. This plant has been omitted from this table. It was found from a thorough examination of the data that employees as a whole worked about the same ratio of full time in one pay-roll period as they did in another. Also, since the pay periods included were so nearly the same in length the actual grouping of the data was approximately the same in each case. Thus, as it was desirable to include all the employees possible in an occupation, all schedules except the one mentioned above have been used.

In classifying the actual hours worked by an employee all of the hours which he worked in any and all occupations in which he may have been engaged during the pay period were included and tabulated under the occupation at which he worked the longest time; for example, if a man worked 40 hours as a larry man in a blast furnace, 35 hours as a keeper, and 20 hours as a keeper's helper he would be classified under the occupation of larry man, but the table would show 95 hours of work.

It must not be assumed that employees worked all the time that there was work for them. Employees may have been ill, on vacation, may have quit, may have been discharged, etc. The data collected by the bureau do not show the availability of employment nor the various reasons for unemployment. The purpose of the table is to show what the employees in this industry are actually doing, but no attempt has been made to interpret the figures.

*Table H.*—In this table employees are classified according to their actual earnings during the pay period for which they were scheduled. The classification begins with those who earned under \$5 during the

pay period and ends with those who earned \$250 and over. The classification is by \$5 groups up to \$100 and by \$10 groups from \$100 to \$160. Earnings from \$160 to the end of the table are divided into four groups—two with a spread of \$20 each, one with a spread of \$50, and the last group of "\$250 and over."

The data in this table have been treated in the same way as those in Table G, and the explanation of that table should be read in connection with the explanation of this table.

In classifying the actual earnings received by an employee, all of the earnings shown on the pay roll for him in payment for work in any and all occupations in the department in which he may have been engaged during the pay period were included and tabulated under the occupation at which he worked the longest time; for example, if a man received \$20.80 as a larry man in a blast furnace, \$18.90 as a keeper, and \$10 as a keeper's helper, he would be classified under the occupation of larry men but the table would show earnings of \$49.70.

While the table shows the total earnings of employees in the various occupations, it must not be assumed that employees have received all the wages that it was possible for them to earn during the pay period, as is indicated in explanation of Table G, relating to hours worked.

*Index numbers.*—The wage studies of this industry prior to 1914 were limited to employees in certain of the principal occupations only. These occupations included actual members of the producing crews almost entirely, laborers being practically the only other occupation covered. No data were collected for employees in the several other less important occupations.

The occupations selected for the studies were assumed as fairly representative of all occupations, and the studies thus limited were accomplished in much less time than would have been required had all occupations been covered.

In the published reports for those earlier years the average full-time hours per week, average earnings per hour, and average full-time weekly earnings, and index numbers computed therefor were shown for each of the principal occupations separately, and the data were further consolidated and expressed in the form of index numbers for each department. In subsequent wage investigations the practice of basing the index numbers for the department upon the principal occupations only was continued, although in the studies of 1914, 1915, 1920, 1922, 1924, 1926, and 1929, all employees in the various plants were covered. This was done so that the data for the later years, though not complete, would be strictly comparable with years prior to 1914.

The method of computing index numbers from specified occupations alone was discontinued in 1926, and except for the connecting link between 1913 and 1914 the index numbers here presented for the departments and for the industry reflect the changes in all occupations as a composite whole.

The year 1913 has been used by the bureau as the base year for the computation of index numbers in its many wage and price studies and for that reason it has been deemed highly desirable to construct the index for this industry upon that base. Unfortunately, as stated, data were not collected for all occupations in 1913. However, there was very little change in wage conditions as between 1913 and 1914 so far as shown by the averages for the principal occupations. Also,

the change in the averages for all occupations between 1914 and 1915 was practically the same as the change in the averages for the principal occupations. Thus, since the change in the principal occupations between 1913 and 1914 was very slight, it has been assumed that the change in all occupations would also be very small and in the same ratio as the change in the principal occupations. The estimated average for 1913 from which the index number was computed was obtained from the proportion, "the average for the principal occupations in 1914 is to the average for all occupations for that year as the average for the principal occupations in 1913 is to x."

While the index numbers for the departments extend back only to 1913, the index numbers for the several occupations in Table A extend back as far as data are available.

The bureau has consolidated the data for the several departments into a general index to represent the iron and steel industry as a whole at least to the extent covered. This general index was constructed<sup>7</sup> by weighting the data for the various departments by the number of employees covered in each department in 1926.<sup>8</sup> The most desirable weighting, of course, would have been the total number of wage earners employed in the United States in each separate department. Such figures are not available as there are no authoritative records from which to obtain them. The Census of Manufactures does not show the wage earners in the different departments of steel works and rolling mills separately. However, the bureau in its studies has endeavored to cover a fair representation of wage earners in each department, and it is believed the relative weight given each department by the bureau's figures would not be materially changed by using the number of wage earners in the country generally, if such were available.

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<sup>7</sup> For 1926 and earlier years.

<sup>8</sup> The weighting for 1929 was the number of employees covered in the year.

## BLAST FURNACES

Data for 1929 are for 37 blast-furnace establishments located in 11 States, which during the pay-roll period covered operated 116 stacks and employed 12,222 wage earners in all occupations. Of these, 6,020 are in the 16 principal occupations for which separate averages are given. Comparable data for this department were first obtained in 1907. From 1907 to 1914 employees in only the principal occupations were included, while in 1914 and subsequent years all employees in all occupations were included.<sup>1</sup>

Hours of labor for all employees in blast furnaces decreased 19 per cent between 1914 and 1929. Between 1914, when average hours per week were 74.8, and 1922 there was little change in customary working time; but after the general adoption of the 8-hour day in 1923, weekly hours of labor declined, the 1924 average being 59.7 as compared with 72.1 in 1920 and 72.3 in 1922. Average hours per week increased slightly in 1926—to 59.8—and increased again to 60.7 in 1929. Table 1, page 3, shows average full-time hours per week, earnings per hour, and full-time weekly earnings for all employees in this department for specified years, 1913 to 1929.

Comparison of 1929 averages in Table A with similar averages for earlier years shows the general downward trend of average full-time hours per week in the principal occupations. The average hours per week for the principal occupations combined were 60.4 in 1929 as compared with 59.4 in 1926. This is an increase of 1 hour per week, which is almost identical with the change in hours for all employees stated above. Thus it can be seen that the hours per week of the principal occupations represent not alone the changes that have taken place in those occupations but also serve as a general indicator of changes in other occupations for which separate averages are not shown. When the principal occupations are considered separately it will be observed that in all of the 16 occupations save 1 there was an increase in full-time hours per week in 1929 as compared with 1926, but when compared with any year previous to 1924 all occupations save iron handlers and loaders show large decreases. In 1922 all of the principal occupations except 2 had a customary week of more than 70 hours, while in 1929 only 1 had a week of more than 70 hours and 11 had a week of less than 60 hours. Average hours per week in 1929 ranged from 73.2 for iron handlers and loaders to 54.3 for bottom fillers. The increase in full-time weekly hours for all the principal occupations combined in 1929 was influenced somewhat by the increase in the percentage of employees working 84 hours per week. These increases are particularly noticeable in stockers, iron handlers and loaders, pig-machine men, cindermen, and laborers. However, it might be well to state that this increase in per cent of employees working 84 hours per week was not brought about by a change in working time of identical plants represented in the 1926 and 1929 studies but rather by the inclusion of some plants which did not report in 1926 and some of the preceding years.

<sup>1</sup> Data were not obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

While the number of hours per day and per week have decreased materially since 1922, the percentage of employees working 7 days per week has increased. In 1922, as shown by Table 2 (p. 6), 69 per cent of all employees in blast furnaces had a week of 72 hours or over, while in 1929 only 11 per cent had a week of this length. Because a blast furnace must be kept in continuous operation it becomes necessary to have a producing crew on duty at all times, therefore the relief provision for employees is reflected in the number working 7 days per week. In 1922, as shown by Table B, the percentage of 7-day workers was at the lowest point, the total for that year being 29 per cent.

When the various districts are considered separately 60 per cent of the employees in the eastern district, 21 in the Pittsburgh district, 25 in the Great Lakes and Middle West district, and 34 per cent in the Southern district regularly worked a week of 7 days.

In 1924 after the adoption of the 8-hour day, relief systems whereby employees were relieved one day in 7 were partially abandoned, and the per cent of 7-day workers increased to 45 while the per cent of 6-day workers decreased to 20. However, the 8-hour day brought into effect a new working time per week—6 days, 7 days, and 7 days in rotation. This means that each employee is relieved one day each 3-week cycle by having another worker take his regular turn on the day he is off duty. In 1924 there were 30 per cent of all employees in blast furnaces working a week of 6 days, 7 days, and 7 days in rotation. In 1926 the per cent of employees working 7 days per week increased to 49 and in 1929 to 54.

When comparison by district is made for the years 1929 and 1926 the per cent of employees working 7 days per week in the Eastern district shows no change. In the Pittsburgh district there is a decided increase in 7-day workers from 33 per cent in 1926 to 42 per cent in 1929, while the percentage of employees working 6 days, 7 days, and 7 days in rotation was 28 in 1929 as compared with 40 in 1926. In the Great Lakes and Middle West district 65 per cent of all employees worked a week of 7 days as compared with 69 per cent in 1926. The decrease in 7-day workers was taken up by the increase in per cent of employees working 6 days, 7 days, and 7 days in rotation. There was no change in the per cent of 6-day workers. The Southern district shows an increase in 7-day workers from 27 per cent in 1926 to 37 per cent in 1929.

There was a decrease in the per cent of employees working 6 days, 7 days, and 7 days in rotation as well as in the per cent of employees working 6 days per week, the former being 26 per cent in 1926 as compared with 18 per cent in 1929.

In order that the prevailing hours per day and per week in this department may be more fully shown Table D is presented, which shows that out of 12,222 employees covered 3,342 worked day turns only, 160 night turns only, and 8,720 alternate or rotate from day to night shift. A total of 1,377 employees regularly worked an average of 12 hours per day, of which 1,011 customarily worked a week of 7 days. A total of 3,132 worked 10 hours each day and 6,711 a day of 8 hours. This table includes data for all employees whether on direct producing crews or not; but in order to give a clearer idea of the actual working time of members of the producing crew, separate figures are given for one key occupation, that of keeper. Of

350 employees who worked as keeper, 29 had a customary working time of 7 days per week, averaging 12 hours per day or 84 hours per week; 11 had a week of 6 days, 12 hours per day or 72 hours per week; 3 worked 8 hours per day, except 2 Saturdays out of 3 when they worked 12 hours, making a weekly average of 56 hours. The remaining 307 had an 8-hour day or hours that made an average equivalent thereto, of whom 196 customarily worked 7 days each week.

Table E shows the distribution of employees in six principal occupations according to their average full-time hours per week. There were 3 employees in these occupations whose average full-time hours per week were 48, and 410 whose hours were 84 or over. A total of 2,506 employees out of 4,191 had a week of over 48 and less than 60 hours.

Average hourly earnings in 1929 for employees in the various principal occupations, as shown in Table A, range from 91.8 cents for blowers to 37.3 cents for laborers. For all employees in both skilled and unskilled occupations average earnings per hour were 52.8 cents in 1929 as compared with 51.7 cents in 1926, an increase of approximately 2 per cent, while in principal occupations combined hourly earnings increased from 49.4 cents in 1926 to 50.8 cents in 1929, or about 3 per cent. Hourly earnings were at their peak in 1920, the average for that year being 57.1 cents, or over two and three-fourths times as great as in 1914. While 1922 shows a considerable decrease in earnings when compared with 1920, they were almost 100 per cent higher than in 1914. In 1924 earnings per hour were 52.0 cents, and the two subsequent studies in 1926 and 1929 show but little variation from that figure, the average for 1929 being 52.8 cents, or two and one-half times as great as in 1914.

The greatest change in hourly earnings in the principal occupations as between 1926 and 1929 will be found in the occupation of bottom fillers, whose earnings were 42.6 cents in 1926 as compared with 62.9 cents in 1929. This radical change was brought about by the exclusion of two southern plants which were not in operation during the period of the 1929 study, and resulted in reducing the number of bottom fillers from 344 to 35.

The occupation of top fillers also shows a decided change in hourly earnings for the same reason as that given for bottom fillers. It may be stated here that any average might be changed by a shift in the relative number of persons employed at different rates even though no individual had a change in his rate.

An analysis of the changes in average hourly earnings of keepers will tend to show in a general way what has taken place in hourly earnings in the principal occupations over the period 1907 to 1929. In 1907, keepers earned an average of 21.8 cents per hour, this rate remaining about stationary until 1912 when a slight increase is noted, the earnings for that year being 22.3 cents. The years 1913, 1914, and 1915 show practically no change from 1912; however, in 1917 there was a substantial increase and earnings rose to 34.4 cents per hour, which is 46 per cent more than in 1913. Both 1919 and 1920 show increases, the earnings for the latter year being 63.5 cents, the highest of any year for which data are available. In 1922 earnings decreased to 42 cents but in 1924 after the general adoption of the 8-hour day earnings increased to 57.9 cents. The years 1926

and 1929 show practically no change from 1924 as the index number of earnings for all three years was 246.

A distribution of hourly earnings of employees in six of the principal occupations in 1929 is given in Table F, which shows in a general way the spread of earnings of employees in other occupations of similar skill for which no distribution tables have been made.

Average full-time earnings per week for all employees were \$15.41 in 1914 as compared with \$32.05 in 1929, an increase of more than 100 per cent over 1914, but only of 4 per cent over 1926. In 1920 weekly earnings were \$41.17, or \$9.12 more than they were in 1929. Weekly earnings in the various principal occupations show similar or ever greater changes. Again using the occupation of keepers as an example it is found that these employees earned an average of \$19.28 per week in 1913 as compared with \$33.41 in 1929, an increase of 73 per cent over 1913, but only a small gain over 1926. In 1920 weekly earnings were \$46.45, or \$13.04 more than in 1929.

The 6,020 employees in the principal occupations worked an average of 112.8 hours in a 15-day pay period for which they received an average of \$57.20. This compares with 115.4 hours and \$60.96 for all employees in all occupations. The hours and earnings of employees as given above include all the hours worked and earnings received by employees shown in Table C. Blowing engineers worked the greatest number of hours, 123.6, and laborers the least, 105.1, while the highly skilled occupation of blowers had the highest earnings, \$112.09, and laborers the lowest, \$39.91.

A classification of employees in six principal occupations according to hours actually worked in 1929 is made in Table G, which shows that in the occupation of laborers 93 employees out of a total of 1,184 worked less than 32 hours per pay period, while only 3 worked 192 hours or more. The largest number, 186, is found under the heading "over 120 and under 132."

A like classification of earnings is made in Table H. Due to the variation of hours worked by employees as shown in Table G there is considerable difference in earnings of employees, as 46 laborers earned less than \$5 for the half-month pay period while 28 earned \$70 or over. The largest group, 164, earned \$55 and under \$60. Blowers show the widest spread in earnings, ranging from under \$10 to \$200 and under \$250, the average for the occupation being \$112.09.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Blast Furnaces

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—													
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84									
<b>Stockers:</b>																						
1907	18	824	81.4	\$0.170	\$13.83	104	89	92		2	9	13	77									
1908	18	473	79.1	.157	12.43	101	82	83		1	26	15	58									
1909	18	737	80.9	.158	12.75	104	82	85			10	30	60									
1910	32	1,445	79.9	.164	13.17	102	85	88	(1)		2	15	63									
1911	32	904	79.7	.168	13.40	102	88	89		1	12	7	62									
1912	34	1,069	78.8	.171	13.46	101	89	90		1	2	13	50									
1913	33	1,269	78.0	.192	15.00	100	100	100		1	3	18	23									
1914	35	1,031	74.9	.188	14.03	96	98	93		3	4	27	21									
1915	35	878	74.6	.188	13.99	96	98	93		2	5	27	22									
1917	14	441	77.4	.295	22.79	99	154	152			3	47	9									
1919	20	1,043	78.1	.465	36.32	100	242	242		13	(1)	6	6									
1920	27	1,624	75.5	.527	39.68	97	274	265		10	1	5	16									
1922	31	1,316	74.4	.352	26.06	95	183	174		3	1	10	49									
1924	36	1,774	60.5	.465	28.10	78	242	187		5	58	7	17									
1926	37	1,174	60.1	.465	27.95	77	242	186		1	56	11	20									
1929	37	877	62.6	.451	28.23	80	235	188	(1)	52	5	26	4									
<b>Bottom fillers:</b>																						
1907	7	293	84.0	.160	13.40	102	95	97					100									
1908	7	194	84.0	.150	12.59	102	89	91					100									
1909	7	282	84.0	.138	11.61	102	82	84					100									
1910	14	672	84.0	.152	12.77	102	90	92					100									
1911	15	417	84.0	.149	12.50	102	89	90					100									
1912	15	468	82.2	.152	12.53	100	90	90				15	85									
1913	13	469	82.1	.163	13.88	100	100	100				16	84									
1914	13	360	82.0	.167	13.76	100	99	99				17	83									
1915	9	148	82.4	.176	14.48	100	105	104				14	86									
1917	3	56	84.0	.270	22.68	102	161	163					100									
1919	4	72	82.2	.436	35.84	100	260	258				31	69									
1920	6	249	67.1	.568	38.35	82	338	276		42		23	35									
1922	7	311	72.8	.336	24.44	89	200	176		16		53	31									
1924	6	341	54.2	.480	26.01	66	286	187		100												
1926	4	344	53.5	.426	22.79	65	254	165		100												
1929	2	35	54.3	.629	34.15	66	374	246		100												
<b>Top fillers:</b>																						
1907	8	66	84.0	.177	14.86	105	93	98					100									
1908	8	44	84.0	.168	14.15	105	88	93					100									
1909	8	50	84.0	.161	13.56	105	84	89					100									
1910	13	142	82.8	.169	13.85	103	88	91		4			96									
1911	14	92	82.2	.171	13.84	102	90	91					98									
1912	14	96	80.0	.175	13.81	100	92	91		6		19	75									
1913	14	98	80.3	.191	15.19	100	100	100		6		16	78									
1914	13	80	80.1	.199	16.44	100	104	103		8		15	78									
1915	8	44	79.0	.213	16.44	98	112	108		14		9	77									
1917	3	22	84.0	.257	21.57	105	135	142					100									
1919	4	28	76.7	.468	35.90	96	245	226		21		21	57									
1920	6	74	71.2	.573	39.72	89	300	261		27		24	49									
1922	7	96	68.8	.398	26.02	86	203	171		27		53	20									
1924	7	111	56.8	.544	30.40	71	285	200		90		1	9									
1926	4	65	53.8	.500	26.90	67	262	177		100												
1929	2	17	54.4	.675	36.72	68	353	242		100												
<b>Larry men:</b>																						
1907	11	132	84.0	.195	16.41	102	90	92					100									
1908	11	86	84.0	.184	15.48	102	85	87					100									
1909	11	135	84.0	.186	15.64	102	86	88					100									
1910	21	231	84.0	.196	16.47	102	90	93					100									
1911	21	203	82.9	.194	15.99	101	89	90				9	91									
1912	23	241	78.2	.199	15.46	95	92	87		15		14	71									
1913	23	238	82.3	.217	17.77	100	100	100				14	86									
1914	27	192	78.6	.215	16.88	96	99	95				43	4									
1915	27	212	78.6	.211	16.61	96	97	93				43	4									
1917	14	183	77.2	.327	25.14	94	151	141				55	4									
1919	18	286	80.4	.542	43.58	98	250	245		6		9	12									
1920	24	369	73.3	.586	42.65	90	270	240		17		21	36									
1922	27	340	75.1	.402	29.98	91	185	169		4		58	15									
1924	32	502	57.7	.548	31.48	70	253	177		7		82	3									
1926	34	422	57.9	.551	31.90	70	254	180		90		2	9									
1929	36	412	58.5	.552	32.29	71	254	182		86		3	10									

1 Less than 1 per cent.

2 Including less than 1 per cent whose full-time hours were 91.



## BLAST FURNACES

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TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Blast Furnaces—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—					
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84	
<b>Larry men's helpers:</b>														
1907	10	115	84.0	\$0.159	\$13.35	102	88	85						100
1908	10	79	84.0	.152	12.80	102	80	81						100
1909	10	135	84.0	.149	12.53	102	78	79						100
1910	19	278	84.0	.165	13.88	102	86	88						100
1911	19	294	82.6	.168	13.89	100	88	88						88
1912	23	359	79.6	.172	13.64	96	90	87	10			14		76
1913	23	352	82.6	.191	15.78	100	100	100				11		89
1914	27	250	78.6	.187	14.67	95	98	93				43	3	54
1915	27	275	78.3	.185	14.43	95	97	91		(1)		46	3	51
1917	12	161	79.6	.292	23.20	96	153	147				34	5	60
1919	18	310	79.3	.491	38.94	96	257	247	10			9	13	68
1920	19	517	73.9	.531	39.09	89	278	248	8		10	16	55	10
1922	24	383	74.9	.356	26.40	91	186	167	4	(1)	3	56	14	23
1924	26	627	57.1	.485	27.38	69	254	174	16	74	1			6
1926	26	389	56.9	.493	28.05	69	258	178		93		2		5
1929	24	278	57.5	.495	28.46	70	259	180		92		4		4
<b>Skip operators:</b>														
1907	11	86	84.0	.193	16.19	101	89	90						100
1908	11	64	84.0	.184	15.49	101	85	87						100
1909	11	94	84.0	.183	15.40	101	84	86						100
1910	19	125	84.0	.197	16.56	101	91	92						100
1911	19	124	83.8	.198	16.60	101	91	92				2		98
1912	20	138	79.3	.206	16.19	96	95	90			13	9		78
1913	22	158	82.9	.217	17.97	100	100	100				9		91
1914	28	139	79.5	.214	16.98	96	99	94				35	6	60
1915	28	152	79.4	.215	17.03	96	99	95				36	5	59
1917	13	118	77.3	.343	26.52	93	158	148				56		44
1919	19	169	80.4	.636	43.09	97	247	240	5			15	6	74
1920	22	217	73.4	.594	43.30	89	274	241	18			28	26	28
1922	25	230	75.8	.401	30.20	91	185	168	3			63	15	29
1924	30	330	57.5	.543	30.98	69	250	172	10	78				7
1926	32	267	58.4	.545	31.83	70	251	177		86		3		10
1929	31	243	58.5	.547	32.00	71	252	178		86		3		11
<b>Blowers:</b>														
1907	18	78	84.0	.300	25.17	102	90	93						100
1908	18	68	84.0	.283	23.74	102	85	87						100
1909	18	86	84.0	.286	24.04	102	86	88						100
1910	32	131	83.5	.296	24.74	102	89	91						100
1911	33	123	82.9	.305	25.21	101	92	93			2			98
1912	34	139	80.3	.315	25.01	98	95	92				9		91
1913	34	154	82.2	.332	27.21	100	100	100			6	16		85
1914	38	143	80.7	.333	28.74	98	100	98				15	5	69
1915	38	149	80.6	.336	28.93	98	101	99				1	26	5
1917	18	94	77.8	.455	37.50	95	146	138				49	7	44
1919	24	134	79.8	.765	60.25	97	227	221	5	7		10	14	68
1920	28	198	73.2	.868	62.87	89	261	231	5	15		22	34	24
1922	32	195	72.4	.678	49.00	88	204	180		11		62	12	15
1924	36	262	58.3	.889	51.73	71	268	190		71		6	2	7
1926	37	241	58.5	.902	52.77	71	272	194		80	2	5	5	8
1929	37	226	58.7	.918	53.89	71	277	198		83		1	8	8
<b>Blowing engineers:</b>														
1907	20	100	84.0	.242	20.30	102	93	95						100
1908	20	85	84.0	.235	19.77	102	90	93						100
1909	20	103	84.0	.230	19.35	102	88	91						100
1910	34	153	84.0	.243	20.39	102	93	96						100
1911	35	137	82.9	.244	20.15	101	94	95						91
1912	35	142	80.6	.249	19.93	98	96	94			4			77
1913	35	156	82.0	.280	21.28	100	100	100				17		83
1914	38	147	79.3	.262	20.64	97	101	97				37	6	57
1915	38	153	79.1	.262	20.64	96	101	97				39	6	56
1917	18	122	76.1	.391	29.61	93	160	139				64		36
1919	24	143	80.0	.628	50.24	98	242	236		7		12	10	71
1920	28	164	73.7	.720	52.50	90	277	247		16		29	25	30
1922	32	213	74.2	.453	35.49	90	185	167		5		62	13	19
1924	36	244	58.7	.661	38.65	72	254	182		7		80	3	11
1926	37	197	59.5	.658	39.15	73	253	184		83		3		15
1929	37	180	59.7	.683	40.78	73	263	192		82		4		13

<sup>1</sup> Less than 1 per cent.<sup>2</sup> Including 1 per cent whose full-time hours per week were 91.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Blast Furnaces—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—					
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under 60	Over 48, under 60	Over 60, under 72	Over 72, under 84	84	
Blowing engineers' assistants:														
1907.....	11	67	84.0	\$0.203	\$17.02	101	90	91						100
1908.....	11	51	84.0	.199	16.72	101	88	90						100
1909.....	11	74	84.0	.191	16.08	101	85	86						100
1910.....	18	94	84.0	.207	17.38	101	92	93						100
1911.....	18	91	83.2	.205	17.06	100	91	91				7		93
1912.....	18	108	80.4	.211	16.85	97	94	90		8		10		81
1913.....	18	94	83.2	.225	18.67	100	100	100				6		94
1914.....	21	99	79.0	.223	17.57	95	99	94				36	12	52
1915.....	21	96	78.3	.223	17.41	94	99	93				42	13	46
1919.....	17	130	79.1	.565	44.69	95	251	239		7		17	15	61
1920.....	22	189	71.7	.632	45.24	86	281	242		20	6	30	25	25
1922.....	24	213	73.5	.424	31.08	88	188	168				67	16	11
1924.....	26	307	56.2	.584	32.74	68	280	175		7	87			3
1926.....	29	231	56.6	.579	32.77	68	257	176						6
1929.....	25	189	56.2	.613	34.45	68	272	185				2		3
Stove tenders:														
1907.....	20	140	84.0	.192	16.10	103	91	93						100
1908.....	20	96	84.0	.185	15.52	103	88	90						100
1909.....	20	140	84.0	.181	15.22	103	86	88						100
1910.....	34	200	84.0	.193	16.21	103	91	94						100
1911.....	35	180	82.7	.190	15.68	101	90	91						89
1912.....	36	214	79.5	.195	15.38	97	92	89		8				74
1913.....	35	220	81.9	.211	17.30	100	100	100				18		83
1914.....	38	183	79.7	.209	16.56	97	99	96				33	7	61
1915.....	38	186	79.4	.208	16.46	97	99	95				35	6	58
1919.....	24	204	80.3	.528	42.40	98	250	245		4		14	15	67
1920.....	28	297	73.7	.592	43.38	90	281	251		19		21	34	26
1922.....	32	379	75.2	.403	30.08	92	191	174		4		61	12	28
1924.....	36	473	67.5	.545	31.36	70	258	181		8	82			7
1926.....	37	862	67.5	.548	31.51	70	260	181			90			7
1929.....	36	847	57.7	.557	32.14	70	265	186			90			7
Keepers:														
1907.....	20	146	84.0	.218	18.34	102	93	95						100
1908.....	20	96	84.0	.210	17.68	102	89	92						100
1909.....	20	141	84.0	.205	17.26	102	87	90						100
1910.....	34	201	84.0	.215	18.09	102	91	94						100
1911.....	35	184	82.7	.217	17.95	101	92	93						89
1912.....	36	218	79.6	.223	17.59	97	95	91				8		74
1913.....	35	230	82.0	.235	19.28	100	100	100				17		83
1914.....	38	184	79.6	.233	18.47	97	99	96				34	7	60
1915.....	38	187	79.4	.232	18.33	97	99	95				35	6	58
1917.....	18	162	77.4	.344	26.55	94	146	138				52	7	41
1919.....	24	203	80.6	.562	45.30	98	239	235		4		11	14	70
1920.....	28	280	73.3	.635	46.45	90	270	241		18		24	34	25
1922.....	32	288	75.3	.420	31.47	92	179	163		4		58	13	25
1924.....	36	466	67.1	.579	32.79	70	246	170		9	81			7
1926.....	37	380	67.4	.577	33.12	70	246	172			91			7
1929.....	37	350	67.7	.579	33.41	70	246	173			89			8
Keepers' helpers:														
1907.....	20	616	84.0	.165	13.89	102	89	91						100
1908.....	20	409	84.0	.160	13.41	102	86	88						100
1909.....	20	596	84.0	.155	13.04	102	93	85						100
1910.....	34	877	84.0	.168	14.13	102	90	92						100
1911.....	35	742	83.1	.167	13.84	101	90	90						92
1912.....	36	870	80.2	.173	13.75	98	93	90				8		78
1913.....	35	950	82.2	.186	15.31	100	100	100		8		14		85
1914.....	38	734	80.6	.185	14.83	98	99	97				28	7	66
1915.....	38	727	80.1	.182	14.48	97	98	95				30	6	65
1917.....	18	392	77.6	.292	22.59	94	157	148				13	10	36
1919.....	24	650	80.2	.480	38.50	98	258	251		6		13	30	71
1920.....	28	1,168	74.5	.522	38.60	91	281	252		15		22	30	30
1922.....	32	1,178	75.3	.349	26.16	92	188	171		4		56	11	26
1924.....	36	1,654	68.6	.475	27.85	71	255	182		9	76			10
1926.....	37	1,516	69.1	.471	27.84	72	253	182			(1)	2		12
1929.....	37	1,142	69.5	.486	28.92	72	261	189			83		(1)	13

<sup>1</sup> Less than 1 per cent.

BLAST FURNACES

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Blast Furnaces—Continued

Occupation and year	Number of plants	Number of employ-ees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—							
						Full-time hours per week	Earn-ings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84			
<b>Iron handlers and loaders:</b>																
1907	9	203	73.2	\$0.193	\$14.20	101	88	88			60		6	24		
1908	9	163	73.0	.190	13.95	101	86	87			60		9	32		
1909	9	242	73.6	.177	13.05	102	80	81			57		7	36		
1910	18	305	74.2	.194	14.38	102	88	89			59		6	35		
1911	19	308	73.0	.185	14.17	101	89	88		1	61		6	31		
1912	19	406	73.1	.206	15.11	101	94	94		6	49	9	4	32		
1913	19	446	72.5	.220	16.07	100	100	100		2	8	47	9	29		
1914	16	333	71.5	.222	16.09	99	101	100	5	4	11	37	8	34		
1915	16	323	74.0	.204	15.22	102	93	95		2	3	53	2	39		
1917	4	4	106	.243	17.44	98	110	109				85	6	9		
1919	4	94	72.9	.361	26.32	101	164	164		2	71		11	16		
1920	8	260	72.2	.443	32.00	100	201	199		3	1	60	15	21		
1922	8	386	70.4	.307	21.67	97	140	125			12	37	49	2		
1924	7	288	65.7	.345	22.67	91	157	141				95		5		
1926	7	181	69.2	.349	24.15	95	158	150			36	45		19		
1929	5	55	73.2	.374	27.38	101	170	170		13	18		38	31		
<b>Pig-machine men:</b>																
1907	9	193	84.0	.167	14.03	103	87	89						100		
1908	9	187	83.9	.163	13.69	102	85	87						98		
1909	9	152	83.9	.162	13.57	102	84	86						98		
1910	16	291	83.9	.169	14.14	102	88	90		(1)	(1)			99		
1911	17	267	82.4	.169	13.98	101	88	89		(1)	(1)	12		87		
1912	17	275	81.9	.171	13.97	100	89	89				17		83		
1913	19	303	81.9	.192	15.72	100	100	100		(1)	(1)	17		83		
1914	21	259	79.2	.192	15.15	97	100	98		(1)	(1)	36	8	85		
1915	21	245	79.6	.190	15.07	97	99	98		(1)	(1)	1	7	80		
1917	10	154	77.9	.300	23.21	95	156	148				50	3	48		
1919	18	370	80.5	.477	38.40	98	248	244		9		4	7	80		
1920	21	390	72.2	.552	39.63	88	288	252		25		23	25	27		
1922	23	383	73.1	.380	27.73	89	198	176		12	1	58	6	23		
1924	26	534	67.5	.515	29.52	70	268	188		13	78		2	7		
1926	29	506	69.4	.501	29.76	73	261	189			(1)	1		14		
1929	29	377	61.7	.494	30.48	78	237	194		66	12	2	3	13		
<b>Cinder men:</b>																
1907	20	262	83.6	.173	14.46	105	97	101				2		10	88	
1908	20	245	82.6	.166	12.88	103	87	90				8		10	82	
1909	20	380	82.2	.150	12.34	103	84	86				9		13	78	
1910	32	482	82.9	.163	13.56	104	91	95			(1)	7		4	89	
1911	32	339	81.3	.168	12.84	102	88	90				10	10	2	78	
1912	32	397	75.2	.164	12.20	94	92	85		17	6	11	9	(1)	56	
1913	33	380	79.9	.179	14.27	100	100	100			1	12	15	7	64	
1914	31	286	78.3	.176	13.78	98	98	97			3	13	27	(1)	57	
1915	31	254	78.6	.174	13.64	98	97	96			4	2	9	24	62	
1917	13	168	78.4	.226	22.31	98	160	156					44		56	
1919	21	295	77.2	.473	36.52	97	264	256		14		7	9	11	60	
1920	23	87	68.4	.557	37.85	86	311	268		8	34	2	24	13	25	
1922	24	216	71.6	.390	27.76	90	218	195			13	10	4	38	14	20
1924	22	364	69.7	.483	28.71	75	270	201		6	53	18	21		1	
1926	22	183	59.2	.484	28.65	74	270	201		4	51	21	22		2	
1929	20	108	62.5	.486	30.88	78	272	218			47	19	25	1	8	
<b>Laborers:</b>																
1907	20	957	75.8	.146	11.13	106	85	90			11	37	(1)	5	47	
1908	20	718	72.8	.140	10.24	100	83	82			20	38		15	27	
1909	20	757	73.0	.138	10.17	101	81	82			13	50	2	7	28	
1910	34	1,423	74.7	.150	11.28	103	88	90			19	28	2	21	30	
1911	35	937	73.3	.151	11.14	101	88	90			21	31	3	14	31	
1912	35	1,049	73.1	.152	11.15	101	89	90			20	30	10	9	31	
1913	35	1,273	72.5	.171	12.43	100	100	100		(1)	22	34	10	4	29	
1914	37	1,096	70.8	.177	12.52	98	104	101		(1)	35	12	21	7	25	
1915	37	885	71.3	.171	12.20	98	100	98			2	29	16	19	26	
1917	17	698	75.3	.281	21.28	104	164	171			16	12	22	6	44	
1919	24	2,184	77.9	.457	35.60	107	267	286			4	8	11	5	15	67
1920	27	1,770	72.3	.474	34.60	100	277	278			11	8	24	7	33	17
1922	32	1,500	67.7	.315	21.69	93	194	174			5	29	16	34	2	13
1924	36	2,059	62.4	.401	25.16	86	235	202		(1)	25	17	54		1	2
1926	36	1,600	62.4	.389	24.34	86	227	194		(1)	15	50	33		2	2
1929	36	1,184	63.8	.373	23.80	88	218	191		(1)	22	34	39	(1)		5

<sup>1</sup> Less than 1 per cent.

<sup>2</sup> Including 1 per cent whose full-time hours per week were 91.

<sup>3</sup> Including less than 1 per cent whose full-time hours per week were 91.

TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by district and year—Blast Furnaces

District and year	Number of plants	Number of employees	Number of employees whose customary turns per week were—					Per cent of employees whose customary turns per week were—					
			6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	
<b>Eastern:</b>													
1914.....	6	1, 078	354	-----	46	-----	678	33	-----	4	-----	-----	63
1915.....	6	794	256	-----	5	-----	533	32	-----	1	-----	-----	67
1920.....	3	642	137	-----	-----	-----	505	21	-----	-----	-----	-----	79
1922.....	4	885	171	-----	180	-----	534	19	-----	20	-----	-----	60
1924.....	5	1, 512	150	-----	179	10	1, 173	10	-----	12	-----	1	78
1926.....	6	1, 588	125	-----	107	9	1, 347	8	-----	7	-----	1	85
1929.....	6	1, 351	108	3	85	5	1, 150	8	(1)	6	(1)	-----	85
<b>Pittsburgh:</b>													
1914.....	10	3, 296	1, 466	-----	405	-----	1, 427	44	-----	12	-----	-----	43
1915.....	10	3, 176	1, 470	-----	316	-----	1, 390	46	-----	10	-----	-----	44
1920.....	8	4, 916	1, 550	-----	1, 473	-----	1, 893	32	-----	30	-----	-----	39
1922.....	9	3, 481	1, 947	-----	811	-----	723	56	-----	23	-----	-----	21
1924.....	11	4, 898	519	-----	411	2, 278	1, 690	11	-----	8	-----	47	35
1926.....	11	4, 993	522	-----	806	2, 021	1, 644	10	-----	16	-----	40	33
1929.....	12	3, 909	543	146	494	1, 100	1, 626	14	4	13	-----	28	42
<b>Great Lakes and Middle West:</b>													
1914.....	11	3, 172	1, 883	-----	3	-----	1, 286	59	-----	(1)	-----	-----	41
1915.....	11	2, 761	1, 643	-----	3	-----	1, 115	60	-----	(1)	-----	-----	40
1920.....	9	3, 871	1, 743	-----	648	-----	2, 480	19	-----	17	-----	-----	64
1922.....	10	3, 383	2, 064	-----	473	-----	846	61	-----	14	-----	-----	25
1924.....	10	5, 760	1, 052	-----	132	1, 454	3, 122	18	-----	2	-----	25	54
1926.....	10	5, 128	1, 019	-----	-----	575	3, 534	20	-----	-----	-----	11	69
1929.....	10	4, 486	890	-----	26	656	2, 914	20	-----	1	-----	15	65
<b>Southern:</b>													
1914.....	11	1, 705	198	-----	-----	-----	1, 507	12	-----	-----	-----	-----	88
1915.....	11	1, 832	230	-----	-----	-----	1, 602	13	-----	-----	-----	-----	87
1920.....	8	2, 741	1, 104	-----	-----	-----	1, 637	40	-----	-----	-----	-----	60
1922.....	9	2, 967	1, 932	-----	36	-----	999	65	-----	1	-----	-----	34
1924.....	10	3, 370	1, 454	-----	73	846	997	43	-----	2	-----	25	30
1926.....	10	3, 620	1, 686	-----	10	948	976	47	-----	(1)	-----	26	27
1929.....	9	2, 476	1, 101	-----	2	456	917	44	-----	(1)	-----	18	37
<b>Total:</b>													
1914.....	38	9, 253	3, 901	-----	454	-----	4, 898	42	-----	5	-----	-----	53
1915.....	38	8, 563	3, 599	-----	324	-----	4, 640	42	-----	4	-----	-----	54
1920.....	28	12, 170	3, 534	-----	2, 121	-----	6, 515	29	-----	17	-----	-----	54
1922.....	32	10, 716	6, 114	-----	1, 500	-----	3, 102	57	-----	14	-----	-----	29
1924.....	36	15, 540	3, 175	-----	795	4, 588	6, 982	20	-----	5	-----	30	45
1926.....	37	15, 329	3, 352	-----	923	3, 553	7, 501	22	-----	6	-----	22	49
1929.....	37	12, 222	2, 642	149	607	2, 217	6, 607	22	1	5	-----	18	54

Less than 1 per cent.

**TABLE C.—Average customary working time of employees, per day and per week, and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Blast Furnaces**

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)								
		Number	Average customary full-time of employees in the position			Number	Averages for specified occupation only				Averages for specified and any other occupations			
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour	
<b>Stockers:</b>														
Eastern.....	6	63	6.9	9.9	68.5	69	126.8	\$58.92	\$0.465	\$31.85	133.1	\$61.65	\$0.463	
Pittsburgh.....	12	288	6.7	9.2	61.4	386	111.0	63.13	.479	114.4	29.41	64.94	.480	
Great Lakes and Middle West.....	10	252	6.9	8.1	55.7	294	97.1	62.99	.546	30.41	102.8	55.94	.544	
Southern.....	9	149	6.6	11.2	74.2	178	121.6	33.00	.271	20.11	131.7	33.98	.273	
<b>Total.....</b>	<b>37</b>	<b>752</b>	<b>6.8</b>	<b>9.3</b>	<b>62.6</b>	<b>877</b>	<b>109.7</b>	<b>49.45</b>	<b>.451</b>	<b>28.23</b>	<b>115.5</b>	<b>51.96</b>	<b>.450</b>	
<b>Bottom fillers:</b>														
Great Lakes and Middle West.....	1	21	6.7	8.0	53.3	23	90.5	61.30	.635	33.85	105.8	66.84	.632	
Southern.....	1	12	6.7	8.4	56.0	12	112.0	69.29	.619	34.66	117.1	72.82	.617	
<b>Total.....</b>	<b>2</b>	<b>33</b>	<b>6.7</b>	<b>8.1</b>	<b>54.3</b>	<b>35</b>	<b>101.8</b>	<b>64.04</b>	<b>.629</b>	<b>34.15</b>	<b>109.7</b>	<b>68.72</b>	<b>.627</b>	
<b>Top fillers:</b>														
Great Lakes and Middle West.....	1	9	6.7	8.0	53.3	10	103.7	70.24	.677	36.08	111.4	75.36	.677	
Southern.....	1	6	6.7	8.4	56.0	7	98.3	65.96	.671	37.58	108.2	68.99	.669	
<b>Total.....</b>	<b>2</b>	<b>15</b>	<b>6.7</b>	<b>8.2</b>	<b>54.4</b>	<b>17</b>	<b>101.4</b>	<b>68.48</b>	<b>.675</b>	<b>36.72</b>	<b>108.0</b>	<b>72.73</b>	<b>.673</b>	
<b>Larry men:</b>														
Eastern.....	6	40	7.0	9.0	68.0	42	125.7	68.98	.549	34.59	130.6	71.41	.547	
Pittsburgh.....	12	135	6.8	8.1	55.1	149	107.4	64.08	.597	32.89	109.9	65.38	.595	
Great Lakes and Middle West.....	10	169	7.0	8.0	55.6	165	111.1	68.18	.614	34.14	114.9	70.29	.612	
Southern.....	8	48	6.7	11.0	73.6	56	135.0	41.48	.307	22.60	139.3	42.94	.308	
<b>Total.....</b>	<b>36</b>	<b>382</b>	<b>6.9</b>	<b>8.5</b>	<b>58.5</b>	<b>412</b>	<b>114.5</b>	<b>63.15</b>	<b>.552</b>	<b>32.29</b>	<b>118.0</b>	<b>64.91</b>	<b>.550</b>	
<b>Larry men's helpers:</b>														
Eastern.....	5	25	7.0	9.6	67.2	25	131.9	63.59	.482	32.39	130.7	67.63	.483	
Pittsburgh.....	8	87	6.9	8.0	55.3	98	109.8	62.11	.517	28.59	107.0	55.45	.518	
Great Lakes and Middle West.....	7	104	6.9	8.0	55.5	127	95.3	49.92	.524	29.08	108.2	56.94	.526	
Southern.....	4	25	6.4	10.1	64.0	28	103.2	32.58	.316	20.22	117.3	37.94	.324	
<b>Total.....</b>	<b>24</b>	<b>241</b>	<b>6.9</b>	<b>8.4</b>	<b>57.5</b>	<b>278</b>	<b>101.3</b>	<b>50.18</b>	<b>.495</b>	<b>28.46</b>	<b>111.6</b>	<b>55.46</b>	<b>.497</b>	

TABLE C.—Average customary working time of employees, per day and per week, and average hours actually worked and earnings received per employee in pay period covered, 1919, by occupation and district—Blast Furnaces—Continued

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the position			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
<b>Skip operators:</b>													
Eastern.....	5	25	7.0	9.3	65.0	26	127.4	\$2.96	\$0.494	\$32.11	131.4	\$64.64	\$0.492
Pittsburgh.....	11	100	6.8	8.2	55.3	111	110.1	66.13	.601	33.24	111.8	67.01	.599
Great Lakes and Middle West.....	7	66	6.9	8.0	55.5	69	110.3	67.47	.612	33.97	114.8	69.97	.609
Southern.....	8	34	6.7	10.4	69.3	37	132.8	46.62	.351	24.32	135.3	47.60	.352
<b>Total.....</b>	<b>31</b>	<b>225</b>	<b>6.8</b>	<b>8.6</b>	<b>58.5</b>	<b>243</b>	<b>115.5</b>	<b>63.20</b>	<b>.547</b>	<b>32.00</b>	<b>118.3</b>	<b>64.64</b>	<b>.546</b>
<b>Blowers:</b>													
Eastern.....	6	25	6.9	9.3	63.8	25	133.9	108.78	.812	51.81	135.2	109.48	.810
Pittsburgh.....	12	68	6.7	8.3	55.5	71	116.3	115.98	.997	55.33	118.5	117.43	.991
Great Lakes and Middle West.....	10	90	6.9	8.0	55.4	94	110.5	113.95	1.031	57.12	114.4	116.84	1.021
Southern.....	9	34	6.5	10.8	70.4	36	141.5	89.21	.630	44.35	144.5	90.98	.630
<b>Total.....</b>	<b>37</b>	<b>217</b>	<b>6.8</b>	<b>8.7</b>	<b>58.7</b>	<b>226</b>	<b>119.8</b>	<b>110.08</b>	<b>.918</b>	<b>53.89</b>	<b>122.8</b>	<b>112.09</b>	<b>.913</b>
<b>Stove tenders:</b>													
Eastern.....	5	34	7.0	8.7	60.9	35	119.4	65.84	.552	33.62	123.5	67.81	.549
Pittsburgh.....	12	106	6.8	8.2	55.1	116	107.5	62.10	.577	31.79	110.4	63.72	.577
Great Lakes and Middle West.....	10	144	6.9	8.0	55.5	155	106.7	63.90	.599	33.24	111.2	66.45	.598
Southern.....	9	39	6.6	10.5	69.6	41	139.2	55.24	.397	27.63	144.4	57.70	.400
<b>Total.....</b>	<b>36</b>	<b>323</b>	<b>6.8</b>	<b>8.4</b>	<b>57.7</b>	<b>347</b>	<b>112.1</b>	<b>62.47</b>	<b>.557</b>	<b>32.14</b>	<b>116.1</b>	<b>64.64</b>	<b>.557</b>
<b>Blowing engineers:</b>													
Eastern.....	6	22	7.0	9.8	68.7	22	145.8	87.86	.603	41.43	146.4	88.13	.602
Pittsburgh.....	12	63	6.8	8.3	56.6	64	119.0	84.93	.714	40.41	119.0	84.93	.714
Great Lakes and Middle West.....	10	66	6.9	8.0	55.4	69	111.5	88.24	.791	43.82	114.7	90.61	.790
Southern.....	9	22	6.6	11.0	72.7	25	137.4	61.05	.444	32.28	140.0	62.15	.444
<b>Total.....</b>	<b>37</b>	<b>173</b>	<b>6.9</b>	<b>8.7</b>	<b>59.7</b>	<b>180</b>	<b>122.0</b>	<b>83.24</b>	<b>.683</b>	<b>40.78</b>	<b>123.6</b>	<b>84.33</b>	<b>.682</b>

<b>Blowing engineers' assistants:</b>													
Eastern.....	3	8	7.0	10.5	73.5	8	157.2	79.36	.505	37.12	157.5	79.49	.505
Pittsburgh.....	10	79	6.8	8.0	54.3	96	96.2	98.17	.604	32.80	99.3	60.12	.606
Great Lakes and Middle West.....	9	61	6.9	8.0	55.3	70	98.6	67.79	.688	38.05	108.3	74.48	.688
Southern.....	3	11	6.4	9.8	61.8	15	95.3	39.06	.410	25.34	109.7	45.34	.413
Total.....	25	169	6.8	8.3	56.2	189	99.6	61.11	.613	34.45	105.9	65.09	.614
<b>Keepers:</b>													
Eastern.....	6	39	7.0	8.8	61.9	41	122.2	66.29	.543	33.61	126.1	68.31	.542
Pittsburgh.....	12	113	6.8	8.1	55.1	119	112.6	71.17	.632	34.82	114.3	72.06	.631
Great Lakes and Middle West.....	10	139	6.9	8.0	55.5	146	106.3	66.35	.624	34.63	110.0	68.37	.621
Southern.....	9	39	6.6	10.5	69.3	44	129.9	47.80	.368	25.50	131.5	48.34	.368
Total.....	37	329	6.8	8.4	57.7	350	113.3	65.65	.579	33.41	116.0	67.10	.578
<b>Keepers' helpers:</b>													
Eastern.....	6	133	7.0	9.2	64.3	159	111.6	53.42	.479	30.80	117.8	56.18	.477
Pittsburgh.....	12	322	6.8	8.1	54.9	387	98.4	63.22	.541	29.70	102.9	55.52	.539
Great Lakes and Middle West.....	10	350	6.9	8.0	55.5	399	101.7	56.26	.553	30.69	108.0	59.64	.552
Southern.....	9	160	6.7	11.0	73.7	197	125.8	37.62	.299	22.04	130.3	38.91	.299
Total.....	37	965	6.9	8.7	59.5	1,142	106.1	51.62	.496	28.92	111.5	54.19	.496
<b>Iron handlers and loaders:</b>													
Great Lakes and Middle West.....	1	6	7.0	8.0	56.0	7	101.8	56.99	.560	31.36	113.8	63.79	.561
Southern.....	4	35	6.5	11.8	76.1	48	100.2	34.68	.346	25.33	105.8	36.47	.345
Total.....	5	41	6.5	11.2	73.2	55	100.4	37.52	.374	27.38	106.8	39.94	.374
<b>Pig-machine men:</b>													
Eastern.....	6	55	7.0	11.5	80.4	55	164.2	75.29	.459	36.90	168.0	76.99	.458
Pittsburgh.....	9	94	6.9	8.5	58.2	125	86.3	44.41	.514	29.91	91.2	47.08	.516
Great Lakes and Middle West.....	10	128	6.8	8.3	56.1	145	102.6	56.18	.548	30.74	109.1	59.68	.547
Southern.....	4	47	6.6	9.6	62.2	62	117.9	44.78	.380	23.64	120.9	45.71	.378
Total.....	29	324	6.8	9.1	61.7	377	108.3	53.49	.494	30.48	113.4	50.10	.495
<b>Cinder men:</b>													
Eastern.....	2	13	7.0	10.5	73.2	13	153.4	75.29	.491	35.94	153.4	75.29	.491
Pittsburgh.....	6	17	6.8	9.2	62.5	22	101.3	49.35	.487	30.44	104.2	50.98	.489
Great Lakes and Middle West.....	8	57	6.6	9.1	59.3	58	121.8	60.84	.499	29.59	124.2	62.12	.500
Southern.....	4	8	6.8	10.0	67.5	16	63.2	23.73	.376	25.38	64.8	24.28	.375
Total.....	20	95	6.7	9.3	62.5	108	113.3	55.08	.496	30.38	115.4	50.18	.487
<b>Laborers:</b>													
Eastern.....	5	108	6.8	10.1	68.3	148	99.0	38.43	.386	26.36	114.5	45.13	.394
Pittsburgh.....	12	223	6.6	9.6	63.3	304	98.0	42.42	.433	27.41	105.8	46.51	.439
Great Lakes and Middle West.....	10	293	6.5	9.3	60.7	339	85.7	39.59	.462	28.04	93.4	43.69	.467
Southern.....	9	281	6.4	10.3	65.9	343	107.9	25.95	.241	15.88	113.7	27.65	.243
Total.....	36	905	6.5	9.8	63.8	1,184	97.0	36.22	.373	23.80	105.1	39.91	.380

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Blast Furnaces

ALL EMPLOYEES

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by districts					
Turns per week	Day turns				Turns per week	Night turns				Average hours per week	Eastern	Pittsburgh	Great Lakes and Middle West	Southern	Total
	Hours					Hours									
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week						
7	12	12	12	84					84	14	19	1	66	100	
7	11½	11½	11½	80½					80½	1				1	
7	11	11	11	77					77	15	1			16	
7	11	10	10	75					75	1				1	
6	11½	11½	11½	69					74½		2			2	
7	11½	11½	11½	80½					73½	1			2	3	
7	10½	10½	10½	73½					72				2	4	
6	12	12	12	72					72	1			4	4	
6	12	12	12	72					72	1	2		53	56	
7	10½	9½	9½	71½					71½	2				2	
7	10	10	10	70					70	150	190	171	317	828	
6	11	10	10	65					70	6				6	
7	11	10	10	75					69½		1			1	
7	10	10	9½	69½					69				4	4	
6	11½	11½		69					69		1			1	
7	10	10	9	69					68					1	
7	10	9	10	69					68	9	1			1	
7	10	9	9	68					68					9	
7	10	10	10	70					66½	5				5	
7	10	10	10	70					66½					5	
6	10	10	10	60					66	2			8	10	
7	10	11		66					66	1				1	
7	10	8	8	66					65½		3			3	
7	9½	9	9	65½					65	1		3		1	
6	11	10	10	65					65		8	10		18	
6	10	10	10	60					65	29	88			117	
7	10	10	10	70					65					3	
7	10	10	6	65					64	3				2	
7	10	9	5	64					64	2				2	
7	10	9	9	68					63½	28	8			36	
6	10	9	9	59					63½	1				1	
7	10	9	4½	63½					63			5		5	
7	10	9	9	63					63					5	
7	10	10	10	70					62½			2		2	
6	10½			55					62	1				1	
6	9½	9½	9½	62					61½		1			1	
6	9½	9½	9½	57					60		39	55	224	318	
6	10	10	10	60					60	51	59	298	378	756	
6	10	10	10	60					60			16		16	
6	10	5	10	65					60	2				2	
6	10	5	5	55					59		3	36		39	
6	10	9	10	59					59	51	266	106		425	
6	10	9	9	59					58½			1		1	
6	9	9	9	54					57		2	2		4	
6	9½	9½		63					56½		10			10	
6	9½	9		56½					56½			18		18	
6	9	4½		49½					56					1	
7	9	9	9	63					56		1			1	
7	10	6	8	56					56		4	142		146	
7	8	8	8	56					55		5			5	
6	10	5	10	55					55	1	46	33	87	167	
6	10	5	5	55					54		1	18		19	
6	9	9		54					52		3			3	
7	8	8	8	56					52					3	
6	8	8	8	48					52	2				2	
6	8	8	8	48					51				2	2	
6	8½	8½		51					50			10		10	
6	9	5		50					48		9			9	
6	8	8	8	48					48			16	112	140	
6	8	8	8	48					48		1	3		4	
6	8	4		44					44					4	
Total										391	793	1,003	1,155	3,242	





TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Blast Furnaces—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by districts					
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Mid-dle West	South-ern	Total
Turns per week	Hours				Turns per week	Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						
7	12	12	12	84	7	12	12	12	84	84	2	4		17	23
7	11	11	11	77	7	13	13	13	91	84	6				6
6	12	12	12	72	6	12	12	12	72	72				11	11
7	8	8	12	60	6	8	8		48	56				3	3
					7	8	8	12	60						
7	8	8	8	56	7	8	8	8	56	56	33	46	117		196
					7	8	8	8	56						
7	8	8	8	56	6	8	8	8	48	53½		48	29	13	90
					7	8	8	8	56						
7	8	8	8	56	6	8	8	8	48	50½		21			21
					6	8	8	8	48						
Total											41	119	146	44	350

## KEEPERS ONLY

BLAST FURNACES

TABLE E.—Average and classified full-time hours per week in six specified occupations, 1929, by district—Blast Furnaces

Occupation and district	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—									
				48	Over 48, under 56	56	Over 56, under 60	60	Over 60, under 66	66, under 72	72	Over 72, under 84	84 and over
<b>Stockers:</b>													
Eastern.....	6	69	68.5			19		5		27		8	10
Pittsburgh.....	12	336	61.4	1	92	52		12	133	30			16
Great Lakes and Middle West.....	10	294	55.7		63	214		17					
Southern.....	9	178	74.2			12		9		41	35		81
Total.....	37	877	62.6	1	155	297		43	133	98	35	8	107
<b>Larry men:</b>													
Eastern.....	6	42	63.0			32							10
Pittsburgh.....	12	149	55.1		84	61							4
Great Lakes and Middle West.....	10	165	55.6		25	140							
Southern.....	8	56	73.6		14						14		28
Total.....	36	412	58.5		123	233					14		42
<b>Blowers:</b>													
Eastern.....	6	25	63.8		7	10							8
Pittsburgh.....	12	71	55.5		36	26	5				4		
Great Lakes and Middle West.....	10	94	55.4		22	72							
Southern.....	9	36	70.4		7	2				3	13		11
Total.....	37	226	58.7		72	110	5			3	17		19
<b>Keepers:</b>													
Eastern.....	6	41	61.9			33							8
Pittsburgh.....	12	119	55.1		69	46							4
Great Lakes and Middle West.....	10	146	55.5		29	117							
Southern.....	9	44	69.3		13	3					11		17
Total.....	37	350	57.7		111	199					11		29
<b>Keepers' helpers:</b>													
Eastern.....	6	159	64.3			117						3	39
Pittsburgh.....	12	387	54.9		239	137							11
Great Lakes and Middle West.....	10	399	55.5		80	319							
Southern.....	9	197	73.7		46	6					42		103
Total.....	37	1,142	59.5		365	579					42	3	153
<b>Laborers:</b>													
Eastern.....	5	148	68.3			9	18	11	5	92			13
Pittsburgh.....	12	304	63.3	2	36	4	1	49	142	70			
Great Lakes and Middle West.....	10	389	60.7		19	109	58	117		86			
Southern.....	9	343	65.9		3			225		66	2		47
Total.....	36	1,184	63.8	2	58	122	77	402	147	314	2		60







## BESSEMER CONVERTERS

The 1929 study in this department covers establishments which make steel ingots by the Bessemer process or which only partially reduce it in the converter and finish the product in an open-hearth or electric furnace. The latter is known as the duplex process and the finished product is open-hearth steel. Most establishments do some duplexing in addition to the manufacturing of regular Bessemer steel. It is not uncommon to find establishments duplexing all the product from the Bessemer converters during certain pay-roll periods; therefore, in order to get a period where at least 50 per cent of the time was spent on producing Bessemer ingots it was necessary to secure a 15-day period in February for one establishment and a 15-day period in January for two others.

Data for 1929 were collected from the pay rolls of 11 establishments located in 4 States and cover 2,251 employees in all occupations. Of this total 887 were in the principal occupations for which separate averages are given. In 1907, when data for this department were first secured, there were 11,667,549 gross tons of Bessemer steel ingots produced, or 117,813 gross tons more than open-hearth steel ingots produced for that year. In 1914 there were only 6,220,846 gross tons of Bessemer ingots produced as compared with 17,174,684 gross tons of open-hearth steel ingots. Figures for 1928 show 6,620,195 gross tons of Bessemer as against 44,113,956 gross tons of open-hearth steel ingots. In 1928 the amount of Bessemer steel ingots produced was only 13.10 per cent of the total production of steel ingots as compared with 14.68 per cent in 1926 and 27 per cent in 1914.

Although 11 Bessemer converter establishments covered in this study are identical with those covered in 1926, the number of employees, 2,251, in 1929 is approximately 24 per cent less than the number, 2,948, covered in 1926. This reduction in number of employees is mainly due to the fact that in 1926 there were five establishments operating Bessemer cupolas, while in 1929 there were only two. An increasing amount of hot metal is being charged and the effect of this change is clearly seen in the occupation of stockers, where the number of employees decreased from 317 in 1926 to 156 in 1929. Other occupations connected with the cupolas for which separate figures are not presented were similarly affected.

From 1907 to 1914 only employees in the principal occupations were covered, but in 1914 and subsequent years all employees in all occupations were included.<sup>1</sup> The Bessemer converter establishments covered by this and former studies are located in only two districts, the Pittsburgh and the Great Lakes and Middle West. No data are included from the eastern and southern districts, as the output of these districts is of minor importance. Earnings as a rule in this industry are higher in the Pittsburgh and the Great Lakes and Middle West districts than in the eastern or the southern district. This should be considered when comparing earnings of employees in the Bessemer department with those of other departments where all four districts are included.

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<sup>1</sup> Data were not obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

Average hours per week for Bessemer converter employees show an irregular downward trend over the period 1914 to 1929. In 1914 average hours per week for employees in this department were 68.4. No material change from this figure is noted until 1924, when the weekly hours were 52.3, this reduction having been brought about principally through the general adoption of the 8-hour day in 1923. Referring to Table 2, page 6, it can be seen that, while in 1922 there were only 17 per cent of all employees who had a week of less than 60 hours, in 1924 there were 78 per cent. Although 53 per cent of the employees in 1922 had a week of 72 hours, less than 1 per cent had a week of 72 hours in 1924. In 1929, 43 per cent of all employees had a week of 48 hours or less and no employees had a week of as many as 72 hours. Employees in 1926 had a customary full-time week of 52.6 hours, which is practically no change from that of 1924, while in 1929 the average was 53.7 hours—an increase of 1.1 hours over 1926, but as shown by the index numbers, 23 per cent less than in 1913. Average full-time hours per week, earnings per hour and full-time earnings per week, 1913 to 1929, for the department as a whole are shown in Table 1, page 3.

Comparisons of full-time hours per week of employees in the various principal occupations, which may be made from Table A, show similar reductions. The average weekly hours for the principal occupations combined were 69.7 in 1907; although 801 laborers, or nearly 50 per cent of the total number of employees in the principal occupations, had a full-time week of 78 hours. In 1929 there was only one occupation in which employees had a week of as many as 59 hours, while four had a week of less than 50 hours, the average for the principal occupations combined being 52.8 hours.

While hours per week have been greatly reduced in this department in recent years the change has not been altogether due to the shorter workday, as there has also been a decrease in the per cent of employees working 7 days per week. Although this department is usually in operation day and night for 6 days per week, a shutdown being made over Sunday for a period of 12 to 36 hours for the necessary repair work on vessels and other equipment when the converters are down. This repair necessarily leads to some 7-day work for some employees of the producing as well as the mechanical crews. In 1914, 13 per cent of all employees regularly worked a week of 7 days, and in 1920, 26 per cent; but in 1926 the percentage decreased to 12, and in 1929 to only 9. As the number of 7-day workers decreased there was an increase in the number of employees working 6 days, 6 days, and 7 days in rotation, and also in the number working 6 days, 7 days, and 7 days in rotation, the percentages for 1929 being 8 and 10, respectively, as compared with 7 and 5 in 1926.

In order that prevailing hours per day and per week in Bessemer converters may be more fully shown, Table D is presented. Out of 2,251 employees covered, 358 worked day turns only, 34 night turns only, and 1,859 alternate or rotate from day to night shift. It will be noted that in 1929 only 24 employees had a week of as many as 70 hours and no employee had a day of over 11 hours. There were 631 employees who had a 10-hour-day, of which 24 worked a week of 7 days, and 1,444 employees who worked the 8-hour day or its equivalent. Of the latter number 173 worked 7 days a week each week, while others had a 7-day week once every other week or once in 3 weeks.



Data for all employees, whether on direct producing crews or not, are included in Table D, but in order that a clearer idea of actual working time of members of the producing crews may be given, separate figures are shown for one key occupation—that of vessel men. Of the 28 employees there were 7 who worked 7 days one week, and 6 the next; 3 who worked 6 days per week every third week; 12 who worked 7 days every third week, and 6 who worked 6 days each week. Only 2 worked 10 hours each day, while 3 worked 10 hours each day except every other Saturday, when they worked 8 hours, and 18 worked 8 hours or less each day.

Table E shows the distribution of employees in six principal occupations by average full-time hours per week. According to this table there were 9 employees in these occupations whose average full-time hours were less than 44, and 7 whose hours were over 66 and under 72. Out of 541 employees, 269 had a week of 48 hours.

Average hourly earnings of employees in the various principal occupations range, in 1929, from \$1.301 for blowers to 45.2 cents for laborers. For all employees in both skilled and unskilled occupations the average earnings per hour were 64.3 cents in 1929 as compared with 64.1 cents in 1926; and in the principal occupations combined, hourly earnings were 73.0 cents in 1926 and 71.1 cents in 1929. Thus it can be seen that while earnings for the department as a whole increased, earnings per hour for the principal occupations decreased. This is due to the fact that the principal occupations constituted but 39 per cent of all the employees in the department, and that the remaining 61 per cent as a combined group had an increase in hourly earnings more than sufficient to outweigh the downward trend in the principal occupations. When hourly earnings for all employees in 1929 are compared with 1914 there is an increase of 152 per cent. Earnings per hour were at their peak in 1920, the average for that year being 67.7 cents or over two and one-fourth times as much as they were in 1914. While 1922 shows a considerable decrease when compared with 1920, earnings were 84 per cent higher than in 1914. Earnings per hour were 62.4 cents in 1924 as compared with 64.1 cents in 1926. There was little change in earnings as between 1926 and 1929, the average for 1929 being 64.3 cents. Hourly earnings for employees in the various principal occupations are shown in Table A.

The greatest change in hourly earnings in the principal occupations as between 1926 and 1929 will be found in the occupation of bottom makers, whose earnings were 82.6 cents in 1926 as compared with 71.3 cents in 1929, which decrease was brought about by a change in earnings in 9 out of the 11 establishments reporting. Analysis of the changes in average hourly earnings of vessel men will show in a general way what has taken place in hourly earnings in the principal occupations over the period 1907 to 1929. In 1907 vessel men earned an average of 79.3 cents per hour. In 1908 there was a decided decrease in earnings to \$0.528 per hour; the next two years, however, show increases and in 1910 earnings were 68.5 cents per hour. They again receded in 1911, but 1913 earnings of \$0.744 were the highest of any year up to that time except 1907. Earnings for 1919 were \$1.114, which is a decided increase over either 1915 or 1917; however, it was not until 1920 that earnings reached their highest level—\$1.273. In 1922 earnings again dropped, being 89.7 cents per hour. In 1924 there was an increase, which was followed by another in 1926, when

earnings were \$1.271, but decreased to \$1.212 in 1929, which, however, is 53 per cent higher than in 1913. A distribution of hourly earnings of employees in six of the principal occupations in 1929 is given in Table F, which shows in a general way the spread of earnings of employees in other occupations of similar skill for which no distribution tables have been made.

Average full-time earnings per week for all employees were \$17.44 in 1914, as compared with \$34.53 in 1929, an increase of 98 per cent over 1914, but only 2 per cent over 1926. Weekly earnings in the various principal occupations show similar or even greater increases. In the occupation of vessel men, for example, it was found that employees earned an average of \$41.52 per week in 1913 as compared with \$63.63 in 1929. This is an increase of 53 per cent over 1913, but is somewhat less than in 1926. In 1920, the peak year, weekly earnings were \$71, or \$7.37 more than in 1929.

The 887 employees in the principal occupations worked an average of 104.4 hours in a 15-day pay period, for which they received an average of \$72.61, which compares with 105.6 hours and \$67.94 for all employees in all occupations. The hours and earnings of employees as given above include all hours worked and earnings received by employees as shown in Table C. Regulators, first, worked the greatest number of hours, 116, and cupola melters the least, 84. Greatest earnings were in the occupation of blowers, \$147.41; and the least, \$45.99, in that of laborers.

A classification of employees in six principal occupations, by hours worked, in 1929, is made in Table G. This table shows that laborers had the greatest number of employees working under 32 hours per pay period, 10 out of a total of 196 working these hours, while the occupation of cinder pitmen was the only one that had any employees working over 168 hours. In the highly skilled occupations of blowers and steel pourers no employee worked under 72 hours per pay period and in the occupation of vessel men—also a skilled position—only 1 worked under 72 hours. The occupation of stockers had 19 employees who worked under 72 hours, while that of cinder pitmen had 11 and laborers 35.

A like classification of earnings is made in Table H. Due to the variation of hours worked by employees as shown in Table G for these same occupations there is considerable difference in earnings of employees within the same occupations. Laborers earned from less than \$5 for the period to between \$75 and \$80, while the lowest earnings of any blower were from \$95 to \$100 and the highest from \$200 to \$250. Only 1 vessel man earned less than \$85 for the period and 2 earned \$180 and under \$200.

BESSEMER CONVERTERS

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor. 1907 to 1929, by occupation—Bessemer Converters

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—								
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84				
<b>Stockers:</b>																	
1907	9	371	62.5	\$0.246	\$14.27	100	74	75	46	5	8	7	22	12			
1908	9	260	58.3	.275	14.93	93	83	78	58	11		10	10	12			
1909	9	266	63.6	.264	15.31	102	80	80	43	6		2	12	23	15		
1910	10	352	64.9	.266	16.03	104	80	84	32	9	8		19	6	26		
1911	10	241	61.7	.233	13.60	99	70	71	46	6	1		24	11	12		
1912	10	280	62.1	.306	17.38	99	92	91	45	9	1		6	8	15	16	
1913	10	337	62.5	.331	19.05	100	100	100	23	21	1	9	27	13	6		
1914	6	167	55.5	.351	18.59	89	106	98	63	6	1	1	22	7			
1915	6	157	55.6	.313	16.70	89	95	88	61	5	4	1	20	8			
1917	3	144	55.3	.599	31.45	88	181	165	69				31				
1919	6	196	64.6	.637	41.15	103	192	216	27				8	65			
1920	10	351	68.0	.699	47.33	109	211	243	18	2		17	46	4	13		
1922	10	230	70.2	.409	28.71	112	124	151	2	8	6	14	71				
1924	10	437	48.3	.613	29.59	77	185	155	84	8	9						
1925	10	317	48.3	.638	30.82	77	193	162	89	3	6	2					
1929	10	156	50.7	.628	31.84	81	190	167	68	12	17	3					
<b>Cupola melters:</b>																	
1907	7	15	65.2	.509	31.67	104	107	112	40			13	20	13	13		
1908	7	15	64.7	.350	22.20	104	73	70	40			13	20	13	13		
1909	7	15	64.7	.419	26.09	104	88	92	40			13	20	13	13		
1910	16	16	60.6	.447	25.85	97	94	82	38	19			19	13	13		
1911	8	17	65.2	.386	24.62	104	81	87	35			12	29	12	12		
1912	8	18	61.6	.409	23.82	99	86	84	50			11	17	11	11		
1913	8	19	62.4	.477	28.23	100	100	100	52	16		11	21	11	11		
1914	6	15	59.5	.390	23.00	95	82	81	20	40		13	13	13			
1915	6	15	59.3	.449	25.90	95	94	92	20	40			27	13			
1917	3	7	61.7	.760	45.24	99	159	160	43				57				
1919	4	9	62.2	.993	61.76	100	208	219	33				67				
1920	4	22	61.7	1.063	65.85	99	223	233		45			32	23			
1922	4	15	65.3	.674	43.31	105	141	153		40		14	53	13			
1924	5	19	49.3	.856	42.12	79	179	149	53	47							
1925	4	10	49.2	.888	43.69	79	186	155	40	60							
1929	1	4	40.0	.845	33.80	64	177	120	100								
<b>Cupola tappers:</b>																	
1907	8	50	60.5	.379	22.16	102	96	100	54			8	18	12	8		
1908	8	43	59.3	.335	19.67	100	85	88	56			5	30	5	5		
1909	8	43	61.5	.340	19.74	103	87	89	56				12	19	14		
1910	8	56	58.9	.362	20.30	99	92	91	64				13	14	9		
1911	9	45	60.4	.314	18.36	102	80	83	53				33	4	9		
1912	9	48	60.6	.369	20.94	102	94	94	56			4	10	21	8		
1913	9	69	59.5	.393	22.25	100	100	100	30			6	23	14			
1914	4	34	56.9	.286	16.47	96	73	74	26	71			29				
1915	4	24	55.8	.332	18.43	94	84	83		75			25				
1917	2	16	64.0	.677	34.85	91	172	157		75			25				
1919	5	29	60.2	.781	47.02	101	199	211		41			17	41			
1920	5	38	54.8	.979	53.78	92	249	242		68			18	13			
1922	3	11	60.3	.547	32.60	101	139	147		55			27	18			
1924	4	30	49.7	.723	36.04	84	184	162		37	63						
1925	5	21	49.3	.762	37.57	83	194	169		28	71						
1929	1	3	48.0	.661	31.78	81	168	143		100							
<b>Blowers:</b>																	
1907	9	20	65.4	.619	39.55	103	104	106	30			10	50	10			
1908	9	19	68.8	.466	32.41	109	78	87	16			11	63	11			
1909	9	19	68.8	.486	33.29	109	81	89	16			11	63	11			
1910	9	20	69.8	.536	37.00	110	90	99	15				60	15	10		
1911	10	20	72.0	.493	35.48	114	82	95				10	60				
1912	10	21	69.1	.529	36.36	100	88	97		14			10	67	10		
1913	10	23	63.3	.598	37.33	100	100	100		26	13		9	35	7		
1914	12	27	64.1	.545	34.48	101	91	92		22	11		7	52	7		
1915	12	27	64.0	.561	35.61	101	94	95		22	11		7	52	7		
1917	8	18	64.0	.784	48.77	101	131	131		33			6	67			
1919	8	18	63.4	1.226	77.73	100	205	208		33			17	21	10		
1920	11	29	59.7	1.249	74.66	94	209	200		52			17	21	10		
1922	11	33	60.7	.951	57.94	96	159	155		39			12	48			
1924	11	36	48.9	1.274	62.25	77	213	167		75	25						
1925	11	31	49.7	1.351	67.14	79	226	180		74	19		6				
1929	11	27	50.7	1.301	65.96	80	218	177		74	11		7				

1 Including 7 per cent whose full-time hours per week were 91.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bessemer Converters—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—						
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84		
<b>Regulators, first:</b>															
1907	9	26	62.3	\$0.437	\$27.28	92	97	90	46		8	31	8	8	
1908	9	25	64.7	.266	17.78	96	99	89	36		16	32	8	8	
1909	9	25	64.8	.344	22.97	96	76	76	36		8	40	8	8	
1910	10	31	62.1	.408	25.45	92	90	84	19	29		39		13	
1911	10	24	66.8	.377	24.79	99	84	82	25		17	50		8	
1912	10	25	64.7	.411	26.24	96	91	87	36		16	32	8	8	
1913	10	24	67.6	.451	30.28	100	100	100	25			8	33	33	
1914	11	24	63.8	.328	20.71	94	73	68	38		17	21	25		
1915	11	26	64.7	.351	22.91	96	78	76	35			35	31		
1917	8	17	66.8	.630	42.28	99	140	140	29			71			
1919	10	25	69.2	.864	59.79	102	192	197	16		12	52	20		
1920	11	36	61.5	1.002	61.63	91	222	204	22	19		8	14	36	
1922	11	32	64.3	.650	42.50	95	144	140	25		13	56	6		
1924	11	41	50.1	.919	46.05	74	204	152	56	37	7			6	
1926	10	28	51.8	.949	49.16	77	210	162	43	43	7	7			
1929	10	25	53.5	.910	48.69	79	202	161	20	56	16	8			
<b>Regulators, second:</b>															
1907	6	18	65.3	.427	27.81	96	108	104	33		11	33	22		
1908	6	14	73.5	.269	19.64	108	68	73			29	43	29		
1909	6	14	73.8	.365	26.80	108	93	100			14	57	29		
1910	8	22	67.5	.378	25.52	99	96	95	27		9	45		18	
1911	8	21	65.0	.333	21.41	95	85	80	29		19	52			
1912	9	24	67.0	.381	25.63	98	97	96	25		17	33	25		
1913	10	28	68.3	.394	26.81	100	100	100	21		14	29	36		
1914	11	25	66.5	.289	18.90	97	73	70	24		16	28	32		
1915	11	26	66.6	.324	21.64	98	82	81	23		8	46	23		
1917	8	19	67.4	.516	34.62	99	131	129	42			58			
1919	10	35	66.3	.754	49.99	97	191	186	14	9	11	66			
1920	9	31	61.1	.966	58.84	89	245	219	42	10	10	19	19		
1922	9	30	66.8	.639	43.07	98	162	161	20		17	63			
1924	9	43	48.7	.926	45.39	71	235	169	77	23					
1926	8	31	48.9	.945	46.21	72	240	172	81	19					
1929	8	27	49.7	.946	47.02	73	240	175	52	48					
<b>Vessel men:</b>															
1907	9	23	58.5	.793	44.58	101	107	107	52	13		9	17	9	
1908	9	22	61.1	.528	31.27	106	71	75	41	14		18	18	9	
1909	9	22	61.2	.630	37.19	106	85	90	41	14		18	18	9	
1910	10	26	57.8	.685	38.18	100	92	92	46	23		15		18	
1911	10	25	59.1	.580	32.45	102	78	78	48	12		24	8	8	
1912	10	26	58.3	.688	38.60	101	92	93	35	35		8	15	8	
1913	10	26	57.8	.744	41.52	100	100	100	23	46		15	15	8	
1914	12	31	55.6	.499	27.64	96	67	67	29	48		16	6		
1915	12	32	56.0	.554	30.87	97	74	74	28	47		19	6		
1917	8	30	61.9	.894	53.29	107	120	128	40			60			
1919	9	21	60.2	1.114	67.06	104	150	162	48			38	10		
1920	11	34	56.3	1.273	71.00	97	171	171	26	56		6	12		
1922	11	39	56.5	.897	50.59	98	121	122	33	38		5	23		
1924	11	45	51.4	1.166	59.98	89	157	144	7	93					
1926	11	29	51.8	1.271	65.84	90	171	159	14	79		7			
1929	11	28	52.5	1.212	63.63	91	163	153	21	61		18			
<b>Vessel men's helpers:</b>															
1907	9	47	57.0	.566	31.84	101	107	109	51	19		9	17	4	
1908	9	45	59.5	.376	21.65	105	71	74	40	20		18	18	4	
1909	9	45	59.6	.484	28.24	106	92	97	40	20		18	18	4	
1910	10	53	56.5	.506	28.22	100	96	97	45	28		15		11	
1911	10	51	57.6	.421	23.48	102	80	81	47	18		24	8	4	
1912	10	53	56.5	.467	25.70	100	88	88	45	28		8	15	4	
1913	10	53	56.4	.528	29.15	100	100	100	34	40		8	11	8	
1914	12	57	54.3	.342	18.42	96	65	63	37	42		7	14		
1915	12	56	55.5	.383	21.18	98	73	73	32	43			25		
1917	8	45	56.5	.654	35.94	100	124	123	60			40			
1919	11	71	62.4	.875	54.60	111	166	187	35	6	11	38	10		
1920	11	75	58.7	.984	66.86	104	186	195	24	40	16	9	11		
1922	11	82	57.9	.646	37.51	103	122	129	35	32		10	23		
1924	11	86	50.6	.889	44.72	90	168	153	31	69					
1926	11	89	50.9	.897	45.66	90	170	157	41	56		3			
1929	11	87	51.0	.900	45.90	90	170	157	39	54	4	4			

BESSEMER CONVERTERS

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bessemer Converters—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—													
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84									
<b>Cinder pitmen:</b>																						
1907	8	118	67.9	\$0.206	\$13.32	101	87	86	20			37	32	3	7							
1908	8	71	65.9	.173	11.27	98	73	72	30			17	39	14								
1909	8	92	68.4	.178	11.88	102	75	76	23			25	33	11	9							
1910	9	85	67.6	.211	13.69	100	89	88	7	18			54	12	9							
1911	9	62	69.8	.199	13.55	104	84	87	10			26	55	10								
1912	9	99	68.1	.200	13.23	101	84	85	21				46	30	2							
1913	9	113	67.3	.238	15.56	100	100	100	34				42	32	2							
1914	9	137	71.9	.213	15.30	107	89	98				35	58	8								
1915	9	48	72.0	.214	15.42	107	90	99				13	79	8								
1917	5	62	72.0	.325	23.40	107	137	150				100										
1919	10	100	69.7	.578	40.29	104	243	269	8	3		3	80	5								
1920	9	144	72.8	.592	43.11	108	249	277	9		2	5	28	27	29							
1922	10	137	74.1	.888	28.73	110	163	185	2				69	9	20							
1924	10	180	49.4	.656	27.46	73	234	178	74	18	8											
1926	11	122	61.4	.643	27.91	76	228	179	59	17	11	13										
1929	11	106	62.6	.657	29.30	78	234	188	61	14	14	11										
<b>Bottom makers:</b>																						
1907	9	17	73.4	.386	28.10	99	101	100				12	65	24								
1908	9	17	72.4	.283	20.45	98	74	73				24	65	12								
1909	9	16	73.1	.351	25.57	99	91	91				13	69	19								
1910	10	19	73.4	.346	25.28	99	90	90					79	11	11							
1911	10	19	71.8	.337	24.18	97	88	86				21	79									
1912	10	20	72.5	.345	24.96	98	90	89				20	70	10								
1913	10	20	73.8	.384	28.05	100	100	100				20	50	20	10							
1914	12	22	73.0	.293	21.34	99	76	76				18	64	9	9							
1915	12	22	73.0	.332	24.02	99	86	86				18	64	9	9							
1917	8	16	72.0	.510	36.73	98	133	131				100										
1919	11	21	67.1	.781	52.41	91	208	187	14	10		10	62		5							
1920	11	25	64.8	.911	59.57	88	237	212	20	8		28	44									
1922	11	24	66.8	.683	38.79	91	162	138	17			29	29	54								
1924	11	38	52.3	.777	40.59	71	202	145	63		26	11										
1926	11	27	61.3	.826	42.37	70	215	151	70		26	4										
1929	11	23	63.5	.713	38.15	72	186	136	43	17	35	4										
<b>Bottom makers' helpers:</b>																						
1907	9	30	73.5	.257	18.82	101	101	101				27	47	27								
1908	9	27	72.2	.204	14.75	99	80	79				26	67	7								
1909	9	29	73.1	.234	17.08	100	92	92				28	52	21								
1910	10	34	72.8	.235	17.10	100	92	92					88	6	6							
1911	10	31	72.2	.234	16.88	99	92	91				32	65	3	3							
1912	10	39	72.4	.224	16.19	99	88	87				31	59	10								
1913	10	40	73.1	.255	18.59	100	100	100				30	45	20	5							
1914	12	39	72.4	.225	16.29	99	88	88				31	54	10	5							
1915	12	38	72.6	.239	17.30	99	94	93				16	68	11	5							
1917	8	30	72.0	.377	27.13	99	148	146				100										
1919	11	49	69.6	.602	41.90	95	236	225	10	4		12	65		8							
1920	11	60	66.2	.695	46.27	91	273	249	25			37	38									
1922	11	61	68.3	.455	31.26	93	178	168	16			27	57									
1924	11	71	53.4	.605	32.19	73	237	173	55		31	14										
1926	11	44	52.3	.647	33.84	72	254	182	50		14	24	2									
1929	11	37	55.0	.590	32.45	75	231	175	38	8	49	5										
<b>Ladle liners:</b>																						
1907	9	21	65.1	.454	28.95	95	110	103	29		5	10	48	10								
1908	9	21	65.6	.306	19.78	95	74	70	29		5	19	38		10							
1909	9	21	65.1	.392	25.22	95	95	89	29		5	10	48	10								
1910	10	25	66.8	.378	25.05	97	91	89	24		4		56	8	8							
1911	10	24	68.3	.342	22.85	99	83	81	13		4	17	67									
1912	10	24	68.9	.369	24.95	100	89	88	13		4	17	58	8								
1913	10	22	68.7	.418	28.22	100	100	100	14		5	18	45	18								
1914	12	25	68.6	.304	20.77	100	73	74			12	4	16	60	8							
1915	12	26	68.8	.344	23.47	100	83	83			12	4	15	62	8							
1917	8	15	71.2	.583	41.45	104	141	147				7	69									
1919	11	26	69.8	.779	54.37	102	198	193	7	11		7	50	25								
1920	11	31	65.0	.929	59.85	95	224	212	26			16	39	16								
1922	11	29	67.4	.617	42.49	98	146	151	17			7	76									
1924	11	44	49.7	.851	42.60	72	201	149	70		16	14										
1926	11	31	50.6	.893	45.19	74	214	160	61	29	10											
1929	11	34	61.6	.818	42.21	75	196	150	59	21	15	6										

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bessemer Converters—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—						
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84		
<b>Ladle liners' helpers:</b>															
1907	9	39	68.2	\$0.255	\$16.65	96	103	97	15	3	26	51	5		
1908	9	31	87.5	.209	13.79	95	85	81	19	3	32	39		6	
1909	9	39	88.5	.230	15.28	97	93	89	15	3	26	46	10		
1910	10	39	68.7	.236	15.73	97	96	92	15	3		67	10	5	
1911	10	34	69.1	.233	15.75	97	94	92	9	3	41	47			
1912	10	34	69.6	.228	15.43	98	92	90	9	3	41	41	6		
1913	9	38	70.9	.247	17.09	100	100	100	8	3	37	21	32		
1914	11	34	69.1	.222	15.24	97	90	89		9	3	41	41	6	
1915	11	34	69.5	.233	15.91	98	94	93		3	24	59	6		
1917	8	34	71.3	.365	26.03	101	148	152		6		94			
1919	11	76	71.7	.551	39.51	101	223	231	3	5		8	66	18	
1920	10	43	69.9	.680	47.68	99	275	279	5		7	26	49	14	
1922	10	62	71.8	.442	31.05	101	179	182				15	85		
1924	11	86	52.0	.604	31.38	73	245	170	70	6	7	17			
1926	10	54	51.2	.631	32.31	72	255	189	70	13	6	11			
1929	11	37	51.8	.633	32.79	73	256	192	65	14	14	8			
<b>Stopper makers:</b>															
1907	9	10	72.8	.316	23.01	103	105	108			20		40	30	10
1908	9	9	72.9	.223	16.10	103	74	76			22		44	11	22
1909	9	9	71.6	.270	18.22	101	89	90			22	22	22	11	22
1910	10	12	73.0	.260	19.14	103	86	90			8		75		17
1911	10	10	72.0	.273	19.53	102	90	82			8		60		20
1912	10	10	70.8	.272	18.91	100	90	89			30		50		20
1913	10	10	70.6	.302	21.25	100	100	100			10	10	80		
1914	12	12	70.2	.251	17.60	99	83	83			8	33	58		
1915	12	12	69.7	.263	18.13	99	87	85			17	8	75		
1917	8	10	67.8	.433	29.15	96	143	137			20	30	50	7	
1919	11	15	69.6	.660	45.94	99	219	216	13		7	7	53		13
1920	11	12	61.5	.718	46.73	92	233	220	25		8	8	50	8	
1922	10	12	66.4	.459	30.52	94	152	144	17		28	8	42	8	
1924	11	19	56.6	.573	32.26	80	190	152	32		68	8			
1926	11	12	56.6	.594	33.62	80	197	158	33		58	8			
1929	11	12	59.3	.583	34.57	84	193	163	17	8	58	17			
<b>Stopper setters:</b>															
1907	9	45	51.5	.630	31.79	100	114	113	87				9	4	
1908	9	40	54.3	.343	18.50	105	62	66	75				20	5	
1909	9	34	55.4	.552	29.36	107	100	105	71				24	6	
1910	10	39	52.6	.577	29.81	102	104	106	69	15			10		5
1911	10	39	55.3	.498	26.08	107	90	93	69				31		
1912	10	42	51.7	.496	25.36	100	90	91	86				10	5	
1913	10	43	51.6	.553	28.01	100	100	100	88				9	5	
1914	12	44	50.7	.376	19.03	98	68	68	68	20			11		
1915	12	42	51.5	.423	21.76	100	76	78	71	14			14		
1917	8	40	49.6	.815	40.03	96	147	143	90				10		
1919	11	46	53.7	1.092	58.64	104	197	209	67	9		2	15	7	
1920	11	50	51.0	1.225	61.45	99	222	219	88				8	4	
1922	11	43	52.3	.786	40.98	101	142	146	84				16		
1924	11	53	48.8	.977	47.65	95	177	170	72	28					
1926	11	40	49.5	1.014	50.19	96	183	179	75	18		8			
1929	11	33	50.4	1.036	52.21	98	187	186	76	9	9	6			
<b>Steel pourers:</b>															
1907	9	29	55.4	.693	36.39	99	108	106	72				14	14	
1908	9	28	57.4	.439	24.25	103	69	71	64				21	14	
1909	9	28	57.5	.676	31.61	103	90	92	64				21	14	
1910	10	32	55.6	.617	32.74	100	96	95	66	9			13		13
1911	10	30	55.1	.535	27.91	99	84	81	70				30		
1912	10	34	55.7	.570	30.65	100	89	89	71				18	12	
1913	10	34	55.7	.640	34.39	100	100	100	71				18	12	
1914	12	37	52.5	.444	23.42	94	69	68	67	24			19		
1915	12	35	53.5	.525	27.95	96	82	81	60	17			23		
1917	8	27	52.7	.849	43.62	95	133	127	78				22		
1919	10	30	56.5	1.110	62.72	101	178	182	63			3	27	7	
1920	11	38	52.9	1.326	69.30	95	207	202	79				16	5	
1922	10	35	52.9	.905	47.31	95	141	138	80				20		
1924	11	46	48.8	1.073	52.16	88	168	152	70	30					
1926	9	27	48.0	1.210	58.08	86	189	169	93	7					
1929	9	26	48.0	1.162	56.94	88	182	166	88		12				

BESSEMER CONVERTERS

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1919, by occupation—Bessemer Converters—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—						
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84		
<b>Mold cappers:</b>															
1907	8	48	54.5	\$0.347	\$18.02	92	96	89	75				17	8	
1908	8	39	53.7	.196	10.57	90	54	52	77				18	5	
1909	8	43	54.0	.271	14.26	91	75	70	77				14	9	
1910	9	52	57.0	.314	16.90	96	87	84	23	46			19	4	8
1911	9	37	64.2	.282	17.36	108	78	86	32				62	5	
1912	10	52	61.5	.301	17.23	103	84	85	46			12	27	15	
1913	10	61	59.5	.360	20.28	100	100	100	54			10	23	13	
1914	10	39	60.8	.260	15.67	102	72	77	38	8			54		
1915	10	40	60.9	.294	17.53	102	82	86	38	8		10	45		
1917	5	29	54.6	.631	33.01	92	175	163	72				28		
1919	9	55	61.5	.688	42.31	103	191	209	29	20			36	15	
1920	9	70	58.0	.755	43.56	97	210	215	64				29	7	
1922	10	49	58.1	.672	33.16	98	159	164	61			8	24	6	
1924	9	66	48.4	.728	35.19	81	202	174	89	11					
1926	7	33	47.7	.782	37.80	80	217	184	100						
1929	8	33	51.7	.708	36.60	87	197	180	52	27	9	12			
<b>Ingot strip-</b>															
<b>pers:</b>															
1907	9	29	67.4	.310	19.60	96	93	86	31			14	21	21	14
1908	9	28	68.4	.238	16.34	98	71	72	21				21	21	36
1909	9	28	70.2	.264	18.17	100	79	80	21				14	21	21
1910	10	31	68.1	.303	19.69	97	91	86	10	19			32	19	19
1911	10	27	70.4	.282	19.26	101	84	84		11			22	44	22
1912	10	28	68.8	.320	20.90	98	96	92	11	11			14	29	36
1913	10	28	69.9	.334	22.81	100	100	100		21			7	21	50
1914	12	29	66.0	.313	20.11	94	94	88	21	10			7	28	28
1915	12	31	66.2	.332	21.39	95	99	94	19	10				39	32
1917	8	33	68.7	.479	31.71	98	143	139		18				64	7
1919	10	36	65.3	.726	47.41	93	217	208	8	25			14	47	6
1920	11	34	59.1	.892	52.66	85	267	230	41	24				6	29
1922	11	39	65.5	.613	39.90	94	184	175	15	18			10	38	5
1924	11	47	51.0	.804	40.88	73	241	179	57	43					
1926	8	26	50.0	.801	40.05	72	240	176	54	47					
1929	7	21	53.0	.844	44.73	76	253	196	43	43	14				
<b>Laborers:</b>															
1907	9	801	78.0	.155	12.12	104	81	84			(?)	3	21	33	42
1908	9	425	76.2	.155	11.80	101	81	82			6	8	31	22	34
1909	9	564	76.9	.151	11.62	102	79	81				4	25	39	30
1910	10	786	77.8	.163	12.69	104	85	88		2		2	35	20	41
1911	10	593	74.6	.166	12.39	99	86	86			3	4	43	36	12
1912	10	626	75.7	.167	12.64	101	87	88			(?)	5	39	28	26
1913	10	681	75.1	.192	14.38	100	100	100				5	40	33	20
1914	12	546	74.0	.193	14.27	99	101	99			(?)	1	6	47	13
1915	12	496	74.3	.193	14.31	99	101	100				2	9	45	10
1917	8	492	73.4	.208	21.92	98	155	152				2	24	37	29
1919	11	691	70.8	.489	34.62	94	255	241		5	5	5	24	34	31
1920	10	726	74.9	.337	40.17	100	280	279		4	2	2	25	19	24
1922	11	454	70.7	.368	25.64	94	189	178		10	1	15	67	2	6
1924	11	593	58.0	.448	25.87	77	233	180	26	4	53	17			
1926	11	201	59.4	.443	26.31	79	231	183	18	(?)	57	25			
1929	11	196	57.6	.452	26.04	77	235	181	29	11	35	25			

<sup>1</sup> Including 7 per cent whose full-time hours per week were 91.

<sup>2</sup> Less than 1 per cent.

TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by district and year—Bessemer Converters

District and year	Number of plants	Number of employees	Number of employees whose customary turns per week were—							Per cent of employees whose customary turns per week were—										
			5	5 and 6 alternately	5, 6, and 6 in rotation	5, 6, and 7 in rotation	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	5	5 and 6 alternately	5, 6, and 6 in rotation	5, 6, and 7 in rotation	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7
<b>Pittsburgh:</b>																				
1914	7	1,500					1,061	67	75	6	291					71	4	5	( <sup>1</sup> )	19
1915	7	1,463					1,044	61	65	6	287					71	4	4	( <sup>1</sup> )	19
1920	6	1,900					1,136	42	138		584					60	2	4		31
1922	6	1,394					1,078	23	61	5	227					77	2	4	( <sup>1</sup> )	16
1924	6	1,894					1,515	140	39	24	176					80	7	2	1	9
1926	6	1,737			9		1,315	139	33	60	181					76	8	2	3	10
1929	6	1,224	28	6			860	123	37	30	141	2	( <sup>1</sup> )	1		70	10	3		12
<b>Great Lakes and Middle West:</b>																				
1914	5	767					757		4		6				99			1		1
1915	5	755					740		2		13				98			( <sup>1</sup> )		2
1920	5	1,259					714	60	192	52	241				97	5		15		19
1922	5	1,057					899	69		70	19				85	7			7	2
1924	5	1,563					943	104	91	336	89				60	7		6	21	6
1926	5	1,211			225		480	67	186	87	166			19	40	6		15	7	14
1929	5	1,027				3	591	47	122	192	72			( <sup>1</sup> )	58	5		12	19	7
<b>Total:</b>																				
1914	12	2,267					1,818	67	79	6	297				80	3		3	( <sup>1</sup> )	13
1915	12	2,218					1,784	61	67	6	300				80	3		3	( <sup>1</sup> )	14
1920	11	3,159					1,850	102	330	52	825				59	3		10		26
1922	11	2,451					1,977	92	61	75	246				81	4		2		10
1924	11	3,457					2,458	244	130	360	265				71	7		4	10	8
1926	11	2,948			234		1,795	206	219	147	347			8	61	7		7	5	12
1929	11	2,251	28	6		3	1,451	169	159	222	213	1	( <sup>1</sup> )		64	8		7	7	9

<sup>1</sup> Less than 1 per cent.



**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Bessemer Converters**

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)								
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations			
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour	
<b>Stockers:</b>														
Pittsburgh.....	5	79	5.9	8.3	49.2	87	98.4	\$59.41	\$0.597	\$29.37	105.9	\$62.58	\$0.591	
Great Lakes and Middle West...	5	60	6.2	8.6	52.8	99	90.2	60.43	.670	35.35	98.0	64.39	.657	
Total.....	10	139	6.0	8.4	50.7	186	95.4	59.86	.628	31.84	102.4	63.38	.619	
<b>Cupola melters:</b>														
Pittsburgh.....	1	3	5.0	8.0	40.0	4	62.0	52.39	.845	33.80	84.0	68.54	.756	
<b>Cupola tappers:</b>														
Great Lakes and Middle West...	1	3	6.0	8.0	48.0	3	85.3	56.40	.661	31.73	85.3	56.40	.661	
<b>Blowers:</b>														
Pittsburgh.....	6	15	6.0	8.0	48.0	15	113.8	142.65	1.253	60.14	113.8	142.65	1.253	
Great Lakes and Middle West...	5	12	6.3	8.7	54.2	12	112.6	153.36	1.362	73.82	112.6	153.36	1.362	
Total.....	11	27	6.1	8.3	50.7	27	113.3	147.41	1.301	66.96	113.3	147.41	1.301	
<b>Regulators, first:</b>														
Pittsburgh.....	6	14	6.2	8.3	51.6	15	102.3	91.33	.893	46.08	117.2	102.55	.875	
Great Lakes and Middle West...	4	10	6.4	8.8	55.2	10	109.3	102.24	.935	52.55	114.1	107.31	.940	
Total.....	10	24	6.3	8.5	53.5	25	105.1	95.69	.910	48.69	116.0	104.46	.901	
<b>Regulators, second:</b>														
Pittsburgh.....	5	17	6.1	8.0	49.0	19	93.5	85.92	.919	45.03	101.8	91.71	.901	
Great Lakes and Middle West...	3	8	6.4	8.0	51.0	8	91.1	92.39	1.014	51.71	101.6	100.98	.994	
Total.....	8	25	6.2	8.0	49.7	27	92.8	87.84	.946	47.02	101.8	94.46	.928	
<b>Vessel men:</b>														
Pittsburgh.....	6	16	6.3	8.0	49.9	16	99.0	121.44	1.227	61.23	109.1	126.12	1.156	
Great Lakes and Middle West...	5	11	6.5	8.7	56.2	12	96.4	114.96	1.193	67.06	107.1	121.07	1.130	
Total.....	11	27	6.3	8.3	52.5	28	97.9	118.66	1.212	63.63	108.2	123.95	1.145	

TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Bessemer Converters—Continued

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)								
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations			
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour	
<b>Vessel men's helpers:</b>														
Pittsburgh.....	6	33	6.2	8.0	49.2	36	93.2	\$83.08	\$0.892	\$43.89	103.4	\$89.84	\$0.869	
Great Lakes and Middle West.....	5	20	6.5	8.4	54.1	21	102.1	93.17	.913	49.39	112.7	101.07	.897	
Total.....	11	53	6.3	8.1	51.0	57	96.5	86.80	.900	45.90	106.8	93.98	.880	
<b>Cinder pitmen:</b>														
Pittsburgh.....	6	53	6.0	8.6	52.2	58	102.4	53.17	.519	27.09	114.2	59.64	.522	
Great Lakes and Middle West.....	5	42	6.4	8.3	53.0	50	90.1	54.64	.606	32.12	104.7	62.54	.598	
Total.....	11	95	6.2	8.5	52.6	108	96.7	53.85	.557	29.30	109.8	60.98	.555	
<b>Bottom makers:</b>														
Pittsburgh.....	6	14	6.0	8.7	52.3	14	103.8	72.02	.694	36.30	107.4	74.07	.690	
Great Lakes and Middle West.....	5	8	6.2	9.0	55.6	9	83.5	62.64	.760	41.70	92.9	68.51	.738	
Total.....	11	22	6.1	8.8	53.5	23	95.9	68.35	.713	38.15	101.7	71.89	.707	
<b>Bottom makers' helpers:</b>														
Pittsburgh.....	6	17	6.0	8.6	51.5	18	103.0	64.88	.630	32.45	109.4	68.78	.629	
Great Lakes and Middle West.....	5	18	6.1	9.6	58.3	19	105.6	58.37	.553	32.24	118.8	66.64	.561	
Total.....	11	35	6.1	9.1	55.0	37	104.3	61.54	.590	32.45	114.2	67.68	.593	
<b>Ladle liners:</b>														
Pittsburgh.....	6	14	6.1	8.3	50.8	15	110.1	91.73	.833	42.32	113.5	93.75	.826	
Great Lakes and Middle West.....	5	17	6.2	8.5	52.4	19	95.5	76.91	.806	42.18	109.7	84.87	.774	
Total.....	11	31	6.2	8.4	51.6	34	102.0	83.45	.818	42.21	111.4	88.79	.797	
<b>Ladle liners' helpers:</b>														
Pittsburgh.....	6	20	6.1	8.2	49.6	24	93.0	58.77	.632	31.35	101.1	63.71	.630	
Great Lakes and Middle West.....	5	12	6.3	8.8	55.6	13	87.9	55.74	.634	35.25	112.1	69.15	.617	
Total.....	11	32	6.1	8.4	51.8	37	91.2	57.70	.633	32.79	105.0	65.62	.625	

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<b>Stopper makers:</b>													
Pittsburgh.....	6	6	6.8	9.9	62.8	6	126.1	99.87	.564	34.79	126.1	69.87	.554
Great Lakes and Middle West.....	5	5	6.0	9.2	55.2	6	76.5	48.28	.630	34.78	93.8	56.40	.605
Total.....	11	11	6.2	9.6	59.8	12	101.3	59.06	.583	34.57	109.7	63.13	.576
<b>Stopper setters:</b>													
Pittsburgh.....	8	20	6.0	8.0	48.0	21	93.2	96.17	1.032	49.54	96.5	97.73	1.013
Great Lakes and Middle West.....	5	11	6.3	8.7	54.7	12	97.5	101.51	1.042	57.00	108.3	106.66	.984
Total.....	11	31	6.1	8.3	50.4	33	94.7	98.11	1.036	52.21	100.8	100.94	1.002
<b>Steel pourers:</b>													
Pittsburgh.....	6	16	6.0	8.0	48.0	16	96.6	117.42	1.191	57.17	111.1	123.85	1.114
Great Lakes and Middle West.....	3	9	6.0	8.4	50.7	10	86.7	96.19	1.109	56.23	103.0	108.84	1.057
Total.....	9	25	6.0	8.2	49.0	26	94.0	109.25	1.162	56.94	108.0	118.08	1.093
<b>Mold cappers:</b>													
Pittsburgh.....	5	19	6.1	8.3	50.9	23	82.2	87.35	.668	35.53	89.1	61.74	.693
Great Lakes and Middle West.....	3	10	6.2	8.6	53.2	10	90.2	65.82	.729	38.78	103.3	71.67	.694
Total.....	8	29	6.1	8.4	51.7	33	84.6	89.92	.708	36.60	93.4	64.76	.693
<b>Ingot strippers:</b>													
Pittsburgh.....	5	13	6.5	8.0	52.3	17	87.2	74.32	.852	44.56	87.2	74.32	.852
Great Lakes and Middle West.....	2	3	6.0	9.3	56.0	4	87.5	70.76	.809	45.30	123.6	89.33	.723
Total.....	7	16	6.4	8.3	53.0	21	87.3	73.64	.844	44.73	94.2	77.18	.820
<b>Laborers:</b>													
Pittsburgh.....	6	75	6.1	9.3	56.2	100	83.8	38.38	.458	25.74	98.0	46.12	.471
Great Lakes and Middle West.....	5	72	6.1	9.6	59.1	96	87.0	38.82	.446	26.36	101.9	45.86	.450
Total.....	11	147	6.1	9.4	57.6	196	85.3	38.59	.452	26.04	99.9	45.99	.460

BESSEMER CONVERTERS

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bessemer Converters

ALL EMPLOYEES

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district			
Day turns					Night turns					Average hours per week	Pitts-burgh	Great Lakes and Middle West	Total
Turns per week	Hours				Turns per week	Hours							
	Mon-day to Friday	Sat-ur-day	Sun-day	Per week		Mon-day to Friday	Sat-ur-day	Sun-day	Per week				

Group A.—Day turn only

7	10	10	10	70					70	12	4	16
7	10	9	10	69					69		7	7
7	10	8	9½	67½					67½	9		9
6	10	10		60					65	1	22	23
7	10	10	10	70								
6	10	10	10	60					60		36	36
6	10	10		60					60	69	58	127
6	10		10	60					60	1		1
6	10	9		59					59	6	63	69
6	8	8		48								
6	8	8		48					50½		1	1
7	8	8	8	56								
6	8	8		48					48	6	62	68
6	8½	4½		47					47		1	1
Total										104	254	358

Group B.—Night turn only

				7	10	10	10	70	70	2		2
				6	11	10	11	66	66	10		10
				6	10	10	10	60	60		5	5
				6	10	10		60	60		3	3
				6	10		10	60	60	9	1	10
				6	8	8	8	48	48		1	1
				6	8		8	48	48	1	2	3
Total										22	12	34

Group C.—Weekly changes from one shift to another

7	10	10	10	70	7	10	10	10	70	70	6	6
7	10	10	10	70	6	10	10	10	60	65		16
7	10	10	10	70	7	10	10	10	70	70		16
6	10	10	10	60	6	10	10	10	60	65	4	4
7	10	10	10	70	7	10	10	10	70	70		7
6	10	10		60	6	10	10		60	65	7	7
7	10	10	10	70	6	10	10		60	65		17
7	10	10	10	70	6	10	10	10	60	65	8	8
6	10	10		60	6	10	10	10	70	65		64
7	10	10	8	68	6	10	10		60	64		3
7	10	10	10	70								
6	10	10		60	6	10		10	60	63½	27	27
6	10		10	60								
6	10	10		60	6	11		10	66	63	3	3
6	10	10		60	6	10	10	10	60	60		53
6	10	10		60	6	10	10		60	60		98
6	10	10		60	6	10		10	60	60	103	103
6	10		10	60	6	10		10	60	80	3	3
6	10		10	60	6	10		10	60	60	2	2
6	10	10		60	6	10	10		60	60		
6	10	10		60	6	10		10	60	59½	1	1
6	10	9		59								
7	8	8	8	56	7	8	8	8	56	56	112	173
7	8	8	12	60	6	8	8	8	48			
6	9	9		54	6	8	8	12	60	56	13	13
6	8	8		48	6	9	9	9	54		3	3
6	8	8		48	7	8	8	11	59	53½	9	9

BESSEMER CONVERTERS

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bessemer Converters—Continued

ALL EMPLOYEES—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district			
Day turns					Night turns					Average hours per week	Pittsburgh	Great Lakes and Middle West	Total
Turns per week	Hours				Turns per week	Hours							
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week				

Group C.—Weekly changes from one shift to another—Continued

7	8	8	8	56	6	8	8	8	48	53½		57	57
7	8	8	8	56	6	8	8	8	56	53½		9	9
7	8	8	8	56	7	8	8	8	56	53½	30		30
6	8	8		48	7	8	8	8	56	53½		113	113
6	8	8		48	7	8	8	8	56	52	8		8
6	8	8		48	7	8	10	8	58	51½	23		23
7	8	8	8	56	6	8		8	48	50½	45	11	56
6	8	8		48	6	8		8	48	50½		3	3
6	8	8		48	7	8	8	8	56	50½		3	3
6	8	8		48	7	8	8	8	56	50½	6	32	38
6	8	10		50	6	8		8	48	50		3	3
6	8	8		48	7	8	10	10	60	50			
6	8	8		48	7	8	6	8	54	50	12		12
6	8	8		48	6	8		8	48	50			
6	8	8	4	52	6	8		11	51	49½	1		1
7	8	8		52	6	8		8	48	49½	9		9
6	8	8		48	6	8	8	8	48	48	7		7
6	8	8		48	6	8	8	8	48	48			
6	8	8		48	6	8	8	8	48	48	373	201	574
6	8	8		48	6	8	8	8	48	48	265	4	269
6	8	8		48	5	8			40	44	6		6
5	8			40	5	8			40	40	28		28
5	8			40	5	8			40	40			
Total											1,098	761	1,859

VESSEL MEN ONLY

6	10	10		60	7	10	10	10	70	65		2	2
7	10	10	8	68	6	10	10	10	64			3	3
6	8	8		48	7	8	8	11	59	53½	2		2
6	8	8		48	7	8	8	8	56	53½		3	3
6	8	8		48	7	8	8	8	56	53½			
6	8	8		48	7	8	10	8	58	51½	3		3
6	8	8		48	6	8		8	48	51½			
6	8	8		48	7	8	8	8	56	50½		3	3
6	8	8		48	6	8	6	8	48	50½		3	3
7	8	8	4	52	6	8		8	48	50	3		3
6	8	8		48	6	8		8	48	49½	3		3
6	8	8		48	6	8		8	48	48			
6	8	8		48	6	8		8	48	48	3		3
6	8	8		48	6	8		8	48	48	2		2
6	8	8		48	6	8		8	48	48	1		1
Total											16	12	28



TABLE F.—Average and classified earnings per hour in six specified occupations, 1929, by district—Bessemer Converters

Occupation and district	Number of employees	Average earnings per hour	Number of employees whose earnings in cents per hour were—																			
			40, under 45	45, under 50	50, under 55	55, under 60	60, under 65	65, under 70	70, under 75	75, under 80	80, under 85	85, under 90	90, under 95	95, under 100	100, under 110	110, under 120	120, under 130	130, under 140	140, under 150	150, under 160	160, under 170	180, under 190
<b>Stockers:</b>																						
Pittsburgh	87	\$0.597	2		48	12	5	8	4		3		1									
Great Lakes and Middle West	69	.670		15	11	1	16	2	3		4	4	5	3	2							
Total	156	.628	2	15	59	13	21	10	7		7	4	6	5	5	2						
<b>Blowers:</b>																						
Pittsburgh	15	1.253									1			3	1	5			1	3	1	
Great Lakes and Middle West	12	1.362								2				2	2					3	3	3
Total	27	1.301								2	1			5	3	5			1	3	4	3
<b>Vessel men:</b>																						
Pittsburgh	16	1.227								1	1	1		1		2	3			2	2	
Great Lakes and Middle West	12	1.193										2		2	4	1	3			3	3	
Total	28	1.212								1	1	3		1	2	6	4	3		5	2	
<b>Cinder pitmen:</b>																						
Pittsburgh	58	.519	7	10	26	1	14															
Great Lakes and Middle West	50	.606	4	3	18	9	1		12			3										
Total	108	.557	11	13	44	10	15		12			3										
<b>Steel pourers:</b>																						
Pittsburgh	16	1.191							2		1			1	2	2	7		1			
Great Lakes and Middle West	10	1.109												4	5	1						
Total	26	1.162							2		1			5	7	3	7		1			
<b>Laborers:</b>																						
Pittsburgh	100	.458	56	3	41																	
Great Lakes and Middle West	96	.446	80	4	12																	
Total	196	.452	136	7	53																	

BESSEMER CONVERTERS

**TABLE G.—Average and classified hours actually worked by employees in six specified occupations in pay period covered, 1929, by district—  
Bessemer Converters**

Occupation and district	Number of employees	Average hours worked	Number of employees who during the pay period worked hours specified																							
			Under 32	32, under 40	40, under 48	48, under 56	56, under 64	64, under 72	72, under 80	80	Over 80, under 88	88	Over 88, under 96	96	Over 96, under 104	104	Over 104, under 112	112	Over 112, under 120	120	Over 120, under 132	132	Over 132, under 144	Over 144, under 156	Over 156, under 168	192 and over
<b>Stockers:</b>																										
Pittsburgh	87	105.9	2	1	2	1	8	2	2	5	5	13	1	3	7	2	3	8	14	4	4					
Great Lakes and Middle West	69	98.0	5	4	4	1	1	4	5	2	3	2	9	1	4	5	5	10	5	5						
Total	156	102.4	2	5	1	6	5	9	6	2	10	7	16	3	12	8	6	8	5	18	19	4	4			
<b>Blowers:</b>																										
Pittsburgh	15	113.8					1				1	1		1	7				1	2	1					
Great Lakes and Middle West	12	112.6										2		3	1		3		3							
Total	27	113.3					1				1	3		4	1		7	3	3	1	2	1				
<b>Vessel men:</b>																										
Pittsburgh	16	109.1					1		2	1	2	1	2				1		3		1	2				
Great Lakes and Middle West	12	107.1		1							2	1	1		1		2		2		2					
Total	28	108.2		1			1		2	1	4	2	3		1	1	2		5		3	2				
<b>Cinder pitmen:</b>																										
Pittsburgh	58	114.2	1		1		4	2	1		3	1	5	3	2	1	1	6		7		10	8	1	1	
Great Lakes and Middle West	50	104.7	2	1	1	1	1	1	1		1	6	1	2	5	1	3	5	5	11		2	1			
Total	108	109.8	3	1	2	1	4	3	2		4	7	6	5	7	2	4	11	5	18		12	9	1	1	
<b>Steel pourers:</b>																										
Pittsburgh	16	111.1					1		1	1	2	2		1	2		2					1	3			
Great Lakes and Middle West	10	103.0					1		1					3	3	1	1									
Total	26	108.0					2		2	1	2	2	2		4	5	1	3				1	3			
<b>Laborers:</b>																										
Pittsburgh	100	98.0	2	2	3	4	8	9	4	4	1	2	8	8	2	10	4	2	15	1	4	7				
Great Lakes and Middle West	96	101.9	8	1	2	1	3	1	2	3	3	4	3	4	2	8	4	5	5	30	5	5	2			
Total	196	99.9	10	3	2	4	7	9	11	7	7	5	8	12	4	18	8	7	5	45	1	9	9			





## OPEN-HEARTH FURNACES

Data for this department with few exceptions cover open-hearth furnaces that use the basic process of manufacture. Information for acid furnaces were included in a few instances where establishments operated a furnace or two of this kind in connection with the basic type. The 1926 and 1929 studies include data for both stationary and "Talbot" furnaces, although 1924 and all studies previous to that time cover only furnaces of the stationary type.

The 1929 study includes pay-roll data from 33 open-hearth furnace establishments located in 9 States and employing 13,171 wage earners in all occupations, 7,452 of these being found in the 15 principal occupations. Pay-roll data for this department were first obtained in 1910, and for that year and all years up to 1914 cover only the principal occupations; but data for all employees in all occupations were included in the figures for 1914 to 1929.<sup>1</sup> Comparable figures are presented in Table A for employees in the principal occupations from 1910 to 1929.

When full-time hours per week for employees in the department as a whole in 1929 are compared with 1914 there is a decrease of 23 per cent. Average full-time hours per week in 1914 were 74.5, and in 1920, 68.7, or 8 per cent less than in 1914. In 1922 there was a slight increase, but in 1924 the effect of the 8-hour day was reflected in a decrease of weekly hours to 58, or 23 per cent less than in 1914. Since 1924 there has been little change in weekly hours, the averages for 1926 and 1929 being 57.1 and 57.7, respectively.

Average full-time hours per week for all employees in the principal occupations combined in 1913 were 77, but by 1926 had dropped to 56.1, a reduction of 27 per cent; and in 1929 full-time hours per week had increased to 56.9, but were 26 per cent less than in 1914. Comparison of full-time hours per week of employees in the 15 principal occupations which may be made from Table A show that in 1929, 14 had an increase in customary working time per week over 1926, and 1 occupation—stock cranemen—had a reduction of 0.5 hour per week. Hours per week ranged from 60.5 for laborers to 54.9 for switchmen. In only one occupation, that of laborers, was there more than 18 per cent of the employees working 60 hours or more per week.

While hours per day and per week were considerably less in 1924, 1926, and 1929 as compared with 1922 and earlier years, the 7-day week has increased among employees. This is especially true when 1929 is compared with any of the preceding years. The heavy demand for steel during the latter part of 1928 and which continued into 1929 caused some plants to increase the regular operating time of their furnaces from 6 to 7 days per week; no provision, however, for relief of employees had been put into effect at the time of this study. Another factor that helped to increase the percentage of 7-day workers in 1929 was the collection of data from 2 additional establishments, both of which worked 7 days per week and had no system of relief for employees in the 7-day occupations. Table B shows that 34 per cent of all employees covered in this department in 1914 regularly worked a week of 7 days. There was practically no

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<sup>1</sup> No data were obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

change in this figure until 1922, when 7-day workers decreased to 27 per cent and 6-day workers increased to 50 per cent. In 1924, after the 8-hour day had generally been adopted for the old 12-hour day, the per cent of employees working 7 days per week increased to 52, while the per cent of 6-day workers decreased to 16. The number of 7-day workers in 1926 was the same as in 1924, but the 6-day workers increased to 26 per cent. In 1929 the 6-day workers decreased to 15 per cent, which is lower than that of any other year shown; and the per cent of employees who regularly work 7 days per week increased to 66, an increase of almost 27 per cent over 1926.

In order that the prevailing hours per day and per week for employees in open-hearth furnaces may be more fully shown Table D is presented, which shows that out of 13,171 wage earners covered, 1,874 worked day turns only, 85 worked night turns only, and 11,212 alternated or rotated from day to night shift. Of the total employees, 553 had a working-day which averaged 11 hours or over, while 9,039 had a working-day of 8 hours or less. Of the 553 employees, 305 worked a 7-day week regularly, as did also 7,443 of the 9,039 employees. Data in Table D are for all employees in all occupations, but that there may be a clearer idea of the customary working time of employees on the producing crews, separate figures for one key occupation—melters' helpers, first—are given. Of the 980 employees shown in this occupation, 13 worked regularly a day of 12 hours 7 days each week, 10 a day of 12 hours with 1 day off duty in each 4 weeks, and 6 averaged 12 hours a day except every fourth Saturday, when they had a night turn of 8 hours. A day of 8 hours was regularly worked 7 days each week by 738, and 6 days per week by 54 employees.

Table E shows the distribution of employees in six principal occupations by average full-time hours per week. The table shows that out of a total of 4,954 employees, only 1,146 worked over 56 hours per week, and of these only 114 worked 72 hours or more per week.

While the hours of labor for employees in 1929 show large decreases as compared with 1922 and earlier years, earnings show large increases over all years. In 1914 earnings per hour were 23.7 cents, increasing slightly in 1915 to 24.6 cents. In the 5-year period—1915 to 1920—great changes occurred in the industry and earnings per hour in the latter year were 67.1 cents, an increase of 183 per cent over 1914. Earnings per hour in 1922 were reduced to 48 cents, but after the adoption of the 8-hour day in 1923 earnings per hour again increased to 63.5 cents in 1924. In 1929 earnings were 71.4 cents which, when compared with 67.7 cents in 1926, is an increase of a little over 5 per cent, but three times what they were in 1914. Hourly earnings of employees in the various principal occupations show the same changes. Using the occupation of melters' helpers, first, as an example, it is seen that earnings were 41.6 cents per hour in 1910 and increased to 44 cents in 1913. Little change occurred until 1917, when earnings had advanced to 58.6 cents, or 33 per cent over 1913. In 1920 earnings per hour were more than a dollar for the first time, averaging \$1.089. This was the highest point until 1926, when earnings per hour reached \$1.170. In 1929, earnings of \$1.247 showed an increase of practically 7 per cent over 1926 and of 183 per cent over 1913. Earnings per hour for the principal occupations combined were 76 cents in 1929 as compared with 72.1 cents in 1926, which is an increase

of 5 per cent, the same as that for all employees in all occupations. A distribution of average hourly earnings of employees in six principal occupations in 1929 is given in Table F.

Average full-time earnings per week were two and one-fourth times as much in 1929 as in 1914. From 1914, when weekly earnings were \$17.66, little change is noted until 1920, when they were \$46.10, or more than two and one-half times as high as in 1914. Earnings dropped to \$36.83 in 1924, but increased to \$38.66 in 1926 and to \$41.20 in 1929, an increase of 7 per cent over 1926, but 11 per cent less than in 1920. The decrease in full-time weekly earnings as between 1920 and 1929 was caused by the decrease in weekly hours—16 per cent—being greater than the increase in hourly earnings—about 6 per cent.

Weekly earnings for various principal occupations show about the same changes as weekly earnings for the department as a whole. For example, melters' helpers, first, earned an average of \$32.27 in 1910, \$33.89 in 1913, and \$75.09 in 1920. The increase in weekly hours partially offset the decrease in hourly earnings in 1922, the average for that year being \$55.34. However, in 1924 the increase in hourly earnings more than offset the decrease in weekly hours and weekly earnings rose to \$59.16. In 1926 weekly earnings increased to \$64.70 and in 1929 to \$69.71, the latter being 7.7 per cent higher than in 1926 but 7.2 per cent less than in 1920.

The 7,452 employees in the 15 principal occupations worked an average of 107.5 hours during the 15-day pay period covered by this study, for which they received an average of \$81.27. This includes all the hours worked and earnings received by these employees as shown in Table C. This compares with an average of 110.4 hours worked and \$78.84 received by all employees in all occupations during the same period. Hours worked ranged from 121.6 for ingot strippers to 97.9 for laborers. Laborers likewise received the lowest earnings, \$43.51, while melters' helpers, first, received the highest amount, \$137.35. Charging machine operators received the next largest earnings, \$108.84, and door operators the next lowest, \$44.12.

A classification of employees in the six principal occupations by hours actually worked in 1929 is made in Table G. This table shows that of 1,478 laborers, 135 worked less than 32 hours during the pay period, while in the skilled occupation of steel pourers only one worked less than 32 hours. The largest number of laborers is found under the group "over 120, under 132," while in all other occupations the largest number is found under the group of 120 hours. Only one occupation—ladle cranemen—had any employees working as many as 192 hours.

A like classification of earnings is made in Table H. Considerable variation is found in the earnings of employees in the same occupation due to the number of hours worked by employees in these occupations. The earnings received by melters' helpers, first, show the widest spread, one employee having earned \$5 and under \$10 and two, \$250 or more; while laborers show the least spread, 43 employees having had earnings under \$5, and one earned between \$95 and \$100.

OPEN-HEARTH FURNACES

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Open-Hearth Furnaces

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—										
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84						
<b>Stockers:</b>																			
1910.....	17	448	76.8	\$0.177	\$13.69	99	90	89											28
1911.....	17	419	77.4	.172	12.73	96	87	83			3	26	24	24	28	19			19
1912.....	17	413	77.0	.176	13.51	99	89	88				7	25	40	28				28
1913.....	17	417	77.8	.197	15.30	100	100	100					8	22	40	31			31
1914.....	22	409	77.0	.204	15.66	99	104	102			(1)	8	21	48					23
1915.....	22	366	77.3	.199	15.41	99	101	101			2	8	21	38	30				30
1917.....	13	243	77.4	.296	22.92	99	150	150					38	33	29				29
1919.....	17	476	75.7	.506	38.30	97	257	250			10		22	50	18				18
1920.....	19	573	70.9	.573	40.18	91	291	263			26		9	17	39	10			10
1922.....	22	647	73.9	.379	28.07	95	192	183	3	4			29	19	27	18			18
1924.....	26	781	58.2	.540	31.37	75	274	205	7	78			2	4	5	4			4
1926.....	30	687	57.8	.535	30.92	74	271	202	13	71			2	4	3	7			7
1929.....	32	659	57.9	.560	32.42	74	284	212	8	74	5	3	1	2					7
<b>Stock crane-men:</b>																			
1910.....	13	75	78.8	.223	17.60	100	94	93			1		3	16	40	40			40
1911.....	13	70	75.6	.207	15.61	96	87	83			1		23	10	43	23			23
1912.....	14	72	78.9	.226	18.02	100	96	96						11	47	42			42
1913.....	15	94	79.1	.238	18.85	100	100	100					5	10	45	40			40
1914.....	20	98	78.4	.237	18.58	99	100	99					4	12	49	35			35
1915.....	20	94	77.4	.253	19.77	98	106	105					4	23	47	26			26
1917.....	11	64	77.4	.338	26.11	98	142	139						38	34	28			28
1919.....	15	115	75.2	.556	41.81	95	234	222			10			22	55	13			13
1920.....	17	150	67.8	.686	47.02	86	288	249			35		12	11	35	7			7
1922.....	20	178	73.3	.460	33.85	93	193	180			13		10	25	38	14			14
1924.....	25	228	57.3	.647	36.97	72	272	196			86			2	3	7	1		1
1926.....	28	220	57.5	.682	39.22	73	287	209			9	77	(1)	2	4	4	4		4
1929.....	30	254	57.0	.706	40.24	72	297	213	10	81			2	2	2	4			4
<b>Charging-machine operators:</b>																			
1910.....	17	73	76.8	.294	22.52	98	88	86					8	34	27	30			30
1911.....	17	72	74.7	.287	21.37	96	86	82					25	25	33	17			17
1912.....	17	72	75.8	.312	23.67	97	83	81					14	36	25	25			25
1913.....	17	76	78.0	.335	26.12	100	100	100					13	16	32	39			39
1914.....	22	86	77.4	.307	23.66	99	92	91					5	33	33	30			30
1915.....	22	86	77.7	.330	25.55	100	99	98					5	30	33	33			33
1917.....	13	64	77.1	.467	35.91	99	139	137						44	28	28			28
1919.....	17	98	75.3	.753	56.70	97	225	217			10			24	48	17			17
1920.....	19	137	67.2	.895	59.83	86	267	229			38		4	14	42	2			2
1922.....	22	133	72.2	.625	45.09	93	187	173			16		12	31	23	19			19
1924.....	26	203	56.3	.863	48.43	72	258	185			4	88		3	2	2			2
1926.....	31	221	55.7	.951	52.97	71	284	203			10	83		3	2	2			2
1929.....	33	256	56.2	.958	53.84	72	286	206	9	85				1	3	2			2
<b>Door operators:</b>																			
1910.....	15	165	75.9	.101	7.72	99	90	89					12	38	22	28			28
1911.....	15	160	75.5	.100	7.53	98	89	87					21	24	31	24			24
1912.....	15	157	76.0	.102	7.72	99	91	89					20	28	21	31			31
1913.....	15	160	76.9	.112	8.68	100	100	100					20	19	28	34			34
1914.....	19	170	77.0	.109	8.35	100	97	96					14	24	32	31			31
1915.....	19	176	76.5	.111	8.43	99	99	97					14	25	38	24			24
1919.....	15	165	73.8	.321	23.69	96	287	273			14			41	24	22			22
1920.....	15	264	66.1	.402	26.27	86	359	303			45		10	13	28	4			4
1922.....	16	288	70.1	.279	19.76	91	249	228			5	14		20	38	8			16
1924.....	16	346	55.0	.381	21.22	72	340	244			7	89		3					1
1926.....	17	222	54.9	.374	20.53	71	334	237			19	76		3					2
1929.....	15	219	55.2	.433	23.90	72	387	275			5	93							2

1 Less than 1 per cent.     2 Including less than 1 per cent whose full-time hours per week were 39.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Open-Hearth Furnaces—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—						
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84		
<b>Melters' helpers, first:</b>															
1910.....	17	341	77.7	\$0.416	\$32.27	101	95	95	-----	-----	-----	-----	31		
1911.....	17	338	75.3	.400	30.12	98	91	89	-----	-----	7	22	40	31	
1912.....	17	347	76.5	.417	31.89	99	95	94	-----	-----	17	21	21	49	13
1913.....	17	364	77.1	.440	33.89	100	100	100	-----	-----	3	16	55	19	19
1914.....	22	404	75.6	.420	31.60	98	95	93	-----	-----	9	14	62	15	15
1915.....	22	422	75.5	.437	32.80	98	99	97	-----	-----	10	13	63	14	14
1917.....	13	272	76.3	.586	44.36	99	133	131	-----	-----	11	54	13	33	33
1919.....	17	402	74.9	.966	72.35	97	220	213	-----	-----	33	34	33	22	22
1920.....	19	620	69.4	1.089	75.09	90	248	222	-----	-----	15	6	60	2	2
1922.....	22	622	71.4	.775	55.34	93	176	163	-----	-----	33	46	32	8	8
1924.....	26	885	55.5	1.064	59.16	72	242	175	-----	-----	9	2	4	-----	-----
1926.....	31	924	55.3	1.170	64.70	72	266	192	-----	-----	6	2	3	-----	-----
1929.....	33	980	55.9	1.247	69.71	73	283	206	-----	-----	92	2	1	-----	-----
<b>Melters' helpers, second:</b>															
1910.....	17	339	76.6	.272	20.87	100	93	93	-----	-----	-----	8	38	22	13
1911.....	17	335	74.5	.263	19.62	97	90	88	-----	-----	-----	35	21	21	23
1912.....	17	347	75.8	.274	20.77	99	94	93	-----	-----	-----	20	37	14	29
1913.....	17	360	76.7	.292	22.36	100	100	100	-----	-----	-----	19	29	14	37
1914.....	22	402	74.7	.278	20.70	97	95	93	-----	-----	9	15	25	29	22
1915.....	22	420	74.5	.291	21.57	97	100	97	-----	-----	10	14	24	31	21
1917.....	13	272	75.9	.397	29.93	99	136	134	-----	-----	-----	54	20	26	26
1919.....	17	410	74.4	.693	51.56	97	237	231	-----	-----	-----	33	39	17	1
1920.....	19	721	69.1	.781	53.80	90	287	241	-----	-----	12	3	7	55	1
1922.....	22	704	71.2	.557	39.50	93	191	177	-----	-----	16	12	47	21	8
1924.....	26	1,072	55.3	.758	41.98	72	280	188	-----	-----	2	94	2	3	-----
1926.....	31	923	55.0	.827	45.49	72	284	203	-----	-----	11	84	(1)	3	-----
1929.....	33	984	55.8	.886	49.44	73	308	221	-----	-----	7	91	1	2	-----
<b>Melters' helpers, third:</b>															
1910.....	17	393	76.5	.196	14.97	98	92	89	-----	-----	-----	8	36	30	27
1911.....	17	394	73.9	.185	13.67	95	86	82	-----	-----	-----	20	37	36	8
1912.....	17	414	75.4	.199	15.01	97	93	90	-----	-----	-----	7	30	46	16
1913.....	16	458	77.9	.214	16.64	100	100	100	-----	-----	-----	1	25	38	36
1914.....	21	442	77.4	.207	15.98	99	97	96	-----	-----	-----	-----	39	30	31
1915.....	21	454	77.7	.212	16.44	100	99	99	-----	-----	-----	-----	38	29	33
1917.....	11	268	77.5	.328	25.26	99	153	152	-----	-----	-----	6	44	20	36
1919.....	17	602	76.6	.532	40.75	98	249	245	-----	-----	-----	-----	30	36	28
1920.....	19	970	67.8	.645	45.64	87	301	262	-----	-----	35	2	12	46	1
1922.....	22	980	72.9	.432	31.44	94	202	189	-----	-----	10	2	13	35	19
1924.....	26	1,329	55.5	.601	33.39	71	281	201	-----	-----	1	92	1	3	1
1926.....	31	1,161	55.2	.630	34.72	71	294	209	-----	-----	10	83	1	3	1
1929.....	33	1,026	55.6	.687	38.20	71	321	230	-----	-----	6	92	1	1	1
<b>Stopper setters:</b>															
1910.....	10	30	76.2	.313	23.63	99	96	94	-----	-----	-----	-----	37	57	7
1911.....	10	29	73.5	.313	23.11	95	96	92	-----	-----	-----	28	21	52	-----
1912.....	10	29	75.8	.329	24.92	98	101	99	-----	-----	-----	-----	21	72	7
1913.....	9	30	77.3	.325	25.10	100	100	100	-----	-----	-----	-----	13	80	7
1914.....	10	32	75.0	.287	21.46	97	88	86	-----	-----	-----	-----	63	25	13
1915.....	10	32	74.6	.296	21.96	97	91	88	-----	-----	-----	25	38	25	13
1917.....	8	36	75.3	.414	30.90	97	127	123	-----	-----	-----	-----	67	11	22
1919.....	10	45	73.8	.684	50.48	95	210	201	-----	-----	16	-----	36	27	22
1920.....	12	71	68.4	.778	53.17	88	239	212	-----	-----	-----	34	13	42	11
1922.....	17	83	70.9	.561	39.73	92	173	158	-----	-----	7	13	12	33	18
1924.....	21	123	56.1	.763	42.07	71	235	168	-----	-----	5	89	3	-----	3
1926.....	25	119	54.4	.860	46.78	70	265	186	-----	-----	18	79	2	-----	2
1929.....	27	121	56.2	.870	48.89	73	268	195	-----	-----	2	93	2	-----	2

1 Less than 1 per cent.

OPEN-HEARTH FURNACES

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Open-Hearth Furnaces—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—								
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84				
<b>Steel pourers:</b>																	
1910.....	14	47	75.3	\$0.308	\$23.05	98	83	81	-----	-----	-----	11	49	17	23		
1911.....	14	44	73.7	.304	22.32	96	82	78	-----	-----	-----	23	27	41	9		
1912.....	15	50	76.5	.321	24.57	99	87	86	-----	-----	-----	20	24	28	28		
1913.....	16	56	77.0	.370	28.46	100	100	100	-----	-----	-----	4	25	46	25		
1914.....	21	70	76.4	.339	25.94	99	92	91	-----	-----	-----	11	37	29	23		
1915.....	21	70	75.7	.356	26.99	98	96	95	-----	-----	-----	11	43	29	17		
1917.....	12	48	76.0	.466	35.60	99	126	125	-----	-----	-----	54	25	21	21		
1919.....	17	69	73.2	.796	58.27	95	215	205	-----	16	-----	32	42	10	2		
1920.....	18	112	68.0	.929	62.31	88	251	219	-----	36	-----	13	50	2	2		
1922.....	21	101	70.4	.645	45.48	91	174	160	-----	18	-----	9	26	26	16		
1924.....	25	147	56.5	.837	47.38	73	226	166	-----	13	76	-----	3	4	4		
1926.....	31	148	55.6	.889	49.43	72	240	174	-----	16	75	-----	3	3	3		
1929.....	33	159	56.3	.927	52.19	73	251	183	-----	6	88	-----	3	3	1		
<b>Mold cappers:</b>																	
1910.....	8	40	76.5	.217	16.49	97	85	82	-----	-----	-----	55	15	30	30		
1911.....	8	38	74.0	.215	15.78	94	84	79	-----	-----	-----	21	26	42	11		
1912.....	9	52	79.3	.228	18.00	101	89	90	-----	-----	-----	15	8	27	50		
1913.....	12	68	78.6	.255	20.04	100	100	100	-----	-----	-----	6	12	41	41		
1914.....	13	70	77.7	.232	17.96	99	91	90	-----	-----	-----	11	26	31	31		
1915.....	13	72	76.1	.254	19.24	97	100	96	-----	-----	-----	11	42	28	19		
1917.....	6	38	76.7	.364	28.16	98	143	141	-----	-----	-----	58	5	37	5		
1919.....	11	97	74.3	.588	43.69	95	231	218	-----	11	-----	25	60	4	4		
1920.....	7	73	70.0	.635	44.65	89	249	223	-----	23	-----	4	73	-----	-----		
1922.....	8	92	65.5	.480	31.33	83	180	156	-----	14	16	-----	12	15	42		
1924.....	7	86	55.0	.609	34.21	70	239	171	-----	44	56	-----	-----	-----	-----		
1926.....	7	70	50.9	.620	31.56	65	243	157	-----	50	41	-----	-----	-----	-----		
1929.....	6	49	55.3	.673	37.22	70	264	186	-----	8	92	-----	-----	-----	-----		
<b>Ladle crane-men:</b>																	
1910.....	16	90	77.2	.294	22.76	100	96	86	-----	-----	-----	9	28	31	32		
1911.....	16	86	74.6	.287	21.32	97	84	81	-----	-----	-----	24	34	23	19		
1912.....	16	90	76.2	.317	24.22	99	93	92	-----	-----	-----	70	32	31	27		
1913.....	17	90	77.2	.341	26.34	100	100	100	-----	-----	-----	9	18	44	29		
1914.....	22	104	76.5	.305	23.34	99	89	89	-----	-----	-----	6	24	47	23		
1915.....	22	107	76.0	.327	24.92	98	96	95	-----	-----	-----	6	29	47	19		
1917.....	13	82	76.4	.466	35.64	99	137	135	-----	6	-----	51	24	24	24		
1919.....	17	119	75.6	.733	55.41	98	215	210	-----	-----	-----	30	51	13	13		
1920.....	19	146	68.3	.837	56.63	88	245	215	-----	36	-----	3	17	42	2		
1922.....	21	153	72.9	.588	42.83	94	172	163	-----	12	-----	13	33	24	17		
1924.....	25	239	55.2	.832	46.06	72	244	175	-----	5	80	-----	2	3	1		
1926.....	28	239	54.9	.900	49.41	71	264	188	-----	5	92	-----	2	2	2		
1929.....	30	257	55.8	.941	52.51	72	276	199	-----	5	75	-----	1	2	1		
<b>Ingot strippers:</b>																	
1910.....	15	46	73.7	.275	19.88	99	93	91	-----	7	-----	22	30	17	24		
1911.....	15	51	71.9	.256	18.06	97	86	83	-----	6	-----	8	63	20	4		
1912.....	15	55	72.9	.278	19.99	98	94	92	-----	5	-----	69	18	7	7		
1913.....	15	61	74.5	.296	21.85	100	100	100	-----	5	-----	46	30	20	20		
1914.....	18	47	75.8	.292	21.72	102	99	99	-----	6	-----	30	47	17	17		
1915.....	18	48	76.3	.303	22.76	102	102	104	-----	6	-----	29	42	23	23		
1917.....	13	39	70.9	.449	30.85	95	152	141	-----	23	-----	36	16	26	26		
1919.....	15	48	69.9	.749	52.36	94	253	240	-----	33	-----	17	46	4	4		
1920.....	16	71	69.3	.790	54.21	93	267	248	-----	1	34	-----	11	32	21		
1922.....	18	65	72.8	.559	40.61	98	189	186	-----	8	15	-----	6	26	32		
1924.....	20	98	57.8	.726	42.11	78	245	193	-----	8	76	-----	2	7	7		
1926.....	26	126	56.0	.767	42.95	75	259	197	-----	8	85	-----	2	3	2		
1929.....	28	116	57.3	.831	47.62	77	281	218	-----	8	89	-----	2	5	2		

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Open-Hearth Furnaces—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—						
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84		
<b>Engineers, locomotive:</b>															
1910	14	107	77.3	\$0.244	\$18.92	101	83	84			6	23	45	26	
1911	15	114	74.3	.247	18.32	97	84	81			38	19	35	8	
1912	15	117	75.8	.262	19.86	99	89	88			14	10	67	9	
1913	16	119	76.6	.285	22.55	100	100	100			12	19	52	17	
1914	21	137	76.5	.281	21.51	100	95	95			10	20	48	21	
1915	21	138	77.1	.279	21.57	101	95	96			6	21	49	24	
1919	17	166	75.6	.666	50.35	99	226	223		4		40	40	16	
1921	18	214	69.6	.732	50.83	91	243	225		27		22	11	37	3
1922	20	219	71.4	.527	37.62	93	179	167		19		7	42	16	16
1924	23	325	55.4	.700	38.73	72	237	172		11	82	1	2	2	2
1926	28	363	54.7	.772	42.23	71	262	187		20	73	(1)	3	2	1
1929	30	389	56.1	.762	42.75	73	258	190		6	86	3	2	1	2
<b>Switchmen:</b>															
1910	14	109	77.3	.185	14.29	101	50	81			6	22	44	28	
1911	15	117	74.4	.186	13.85	98	81	79			38	19	34	9	
1912	15	118	75.2	.199	14.92	99	87	85			15	19	56	10	
1913	16	127	76.3	.230	17.55	100	100	100			13	23	49	16	
1914	21	149	76.5	.226	17.29	100	98	99			11	23	44	22	
1915	21	150	77.0	.225	17.33	101	98	99			5	25	45	25	
1919	17	194	76.2	.555	42.29	100	241	241		2		40	39	16	
1920	18	297	69.3	.617	42.84	91	268	244		27		19	11	41	2
1922	20	275	72.0	.439	31.61	94	191	180		13		11	39	19	18
1924	23	406	56.0	.586	32.80	73	255	187		12	80	2	1	1	3
1926	28	413	54.8	.616	33.76	72	268	192		22	71	(1)	1	2	1
1929	30	435	54.9	.645	35.41	72	280	202		6	87	3	(1)	1	3
<b>Laborers:</b>															
1910	17	1,038	74.5	.157	11.69	98	84	82		4	6	20	13	35	22
1911	17	806	73.2	.161	11.78	96	86	83		4	7	24	15	37	14
1912	17	948	74.7	.164	12.21	98	88	86		6	5	13	17	39	20
1913	17	1,109	76.2	.187	14.24	100	100	100		4	4	6	25	31	30
1914	22	805	69.5	.185	12.84	91	99	90		(1)	11	27	14	4	34
1915	22	723	70.8	.186	13.19	93	99	93		8	21	22	6	30	13
1917	13	653	74.4	.292	21.73	98	156	153				22	20	38	20
1919	17	1,266	76.2	.468	35.66	100	250	250		3	6	7	7	56	20
1920	18	1,393	68.5	.525	36.21	90	281	254		1	27	2	22	3	43
1922	21	892	67.9	.354	24.22	89	189	170		17	15	24	18	17	7
1924	25	2,037	59.0	.434	25.73	77	232	181		3	41	11	40	3	1
1926	30	1,537	59.2	.429	25.40	78	229	178		22	25	14	33	6	1
1929	33	1,548	60.5	.433	26.20	79	232	184		9	31	15	44	(1)	1

<sup>1</sup> Less than 1 per cent.



TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by district and year—Open-Hearth Furnaces

District and year	Number of plants	Number of employees	Number of employees whose customary turns per week were—							Per cent of employees whose customary turns per week were—										
			5	5 and 6 alternately	5, 6, and 6 in rotation	6	5 and 7 alternately	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	5	5 and 6 alternately	5, 6, and 6 in rotation	6	5 and 7 alternately	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7
<b>Eastern:</b>																				
1914	6	1,064				635			215		214			60				20		20
1915	6	1,118	2	2		655		3	225		229			(1)	(1)		(1)		20	
1920	4	955		12		630	13		202	18	80			66	1			21	2	8
1922	5	1,241	1			699			412	33	96	(1)		56				33	3	8
1924	5	987				579		82	253	24	49			59			8	26	2	5
1926	6	1,672				661		36	183	212	580			40			2	11	13	35
1929	6	1,560		2		355		41	111	204	847			23			3	7	13	54
<b>Pittsburgh:</b>																				
1914	6	2,149				468		10	852		819			22			(1)	40		38
1915	6	2,013				404			814		795			20				40		39
1920	6	3,190				670			2,049	227	244			21				64	7	8
1922	5	2,554				1,104		228	944	16	264			43			9	37	1	10
1924	7	4,361				289		1,177	466	413	2,036			6			27	11	9	47
1926	8	4,642			113	1,519		74	580		2,376			2			2	12		51
1929	9	4,663				339		631	421	61	3,211			7			14	9	1	69
<b>Great Lakes and Middle West:</b>																				
1914	7	1,632				751			311		570			46				19		35
1915	7	1,755				846			356		553			48				20		32
1920	6	3,067				214			793		2,060			7				26		67
1922	9	3,678				1,848		112		153	1,565			50			3		4	43
1924	10	4,943				772		116	12	702	3,341			16			2	(1)	14	68
1926	12	5,660				959		216	5	1,103	3,377			17			4	(1)	19	60
1929	14	5,614				979		5	130	406	4,094			17			(1)	2	7	73
<b>Southern:</b>																				
1914	3	570				269			38	9	254			47				7	2	45
1915	3	539				226			58	3	252			42				11	1	47
1920	3	958				655			1		302			68				(1)		32
1922	3	825				484			4		337			59				(1)		41
1924	4	1,320				258			5	435	622			20				(1)		33
1926	4	1,450				319			1	481	649			22				(1)		47
1929	4	1,334				274			39	447	574			21				3	34	43
<b>Total:</b>																				
1914	22	5,415				2,123		10	1,416	9	1,857			39				26	(1)	34
1915	22	5,423	2	2		2,131		3	1,453	3	1,829			(1)	(1)			27	(1)	34
1920	19	8,170		12		2,169	13		3,045	245	2,686			27				37	3	33
1922	22	8,298	1			4,135		338	1,360	202	2,262	(1)		50			4	16	2	27
1924	26	11,611				1,878		1,375	736	1,574	6,048			16				12	6	52
1926	31	13,424			113	3,468		328	749	1,796	6,982			1				2	6	52
1929	33	13,171		2		1,947		677	701	1,118	8,726			15				5	5	8

<sup>1</sup> Less than 1 per cent.

**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Open-Hearth Furnaces**

Occupation and district	Positions		Employees working in scheduled pay period (15 days)											
	Number of plants	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations				
		Number	Turns per week	Hours per turn		Hours per week	Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour	
<b>Stockers:</b>														
Eastern.....	6	102	6.7	9.2	60.9	107	117.9	\$61.98	\$0.526	\$32.03	120.2	\$62.93	\$0.523	
Pittsburgh.....	9	223	6.7	8.1	53.9	227	106.6	63.06	.592	31.91	108.0	63.96	.592	
Great Lakes and Middle West.....	13	246	6.9	8.5	58.0	262	112.1	65.60	.585	33.93	113.9	66.58	.584	
Southern.....	4	48	6.9	10.0	69.2	53	125.7	50.11	.399	27.61	130.3	52.24	.401	
<b>Total.....</b>	<b>32</b>	<b>619</b>	<b>6.8</b>	<b>8.6</b>	<b>57.9</b>	<b>659</b>	<b>112.2</b>	<b>62.85</b>	<b>.560</b>	<b>32.42</b>	<b>114.1</b>	<b>63.89</b>	<b>.560</b>	
<b>Stock cranimen:</b>														
Eastern.....	6	38	6.7	9.4	61.8	39	120.0	75.25	.627	38.75	123.3	77.28	.627	
Pittsburgh.....	9	85	6.8	8.1	55.5	115	86.9	62.31	.717	39.79	90.2	64.87	.719	
Great Lakes and Middle West.....	12	83	6.9	8.0	55.1	84	113.9	87.78	.771	42.48	116.0	89.72	.773	
Southern.....	3	16	7.0	9.0	63.0	16	131.8	70.41	.534	33.64	141.3	75.67	.536	
<b>Total.....</b>	<b>30</b>	<b>222</b>	<b>6.8</b>	<b>8.4</b>	<b>57.0</b>	<b>254</b>	<b>103.8</b>	<b>73.23</b>	<b>.706</b>	<b>40.24</b>	<b>107.0</b>	<b>75.68</b>	<b>.707</b>	
<b>Charging-machine operators:</b>														
Eastern.....	6	40	6.7	8.8	58.6	44	108.6	85.73	.789	46.24	113.1	88.75	.784	
Pittsburgh.....	9	83	6.8	8.0	54.8	87	109.2	109.20	1.000	54.80	111.0	110.49	.995	
Great Lakes and Middle West.....	14	103	6.9	8.0	55.3	105	112.9	116.40	1.031	57.01	115.5	118.55	1.026	
Southern.....	4	20	6.9	9.0	62.2	20	116.5	88.92	.764	47.52	127.5	94.84	.744	
<b>Total.....</b>	<b>33</b>	<b>246</b>	<b>6.8</b>	<b>8.2</b>	<b>56.2</b>	<b>256</b>	<b>111.2</b>	<b>106.53</b>	<b>.958</b>	<b>53.84</b>	<b>114.5</b>	<b>108.84</b>	<b>.950</b>	
<b>Door operators:</b>														
Pittsburgh.....	3	36	6.4	8.1	52.0	40	95.6	46.90	.491	25.53	97.3	47.86	.492	
Great Lakes and Middle West.....	9	118	6.9	8.0	55.6	137	96.2	42.50	.433	24.07	104.0	46.26	.445	
Southern.....	3	27	6.9	8.4	57.9	42	87.8	23.98	.354	20.50	85.3	33.58	.394	
<b>Total.....</b>	<b>15</b>	<b>181</b>	<b>6.8</b>	<b>8.1</b>	<b>55.2</b>	<b>219</b>	<b>91.9</b>	<b>39.75</b>	<b>.433</b>	<b>23.90</b>	<b>99.2</b>	<b>44.12</b>	<b>.445</b>	

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<b>Melters' helpers, first:</b>													
Eastern	6	114	6.8	8.7	59.1	122	111.6	118.51	1.062	62.76	115.4	120.82	1.047
Pittsburgh	9	330	6.8	8.0	54.7	372	106.8	140.12	1.312	71.77	109.0	142.23	1.305
Great Lakes and Middle West	14	468	6.9	8.0	55.6	434	107.4	139.52	1.269	72.22	109.1	141.40	1.296
Southern	4	79	6.9	8.5	58.4	82	117.7	118.49	1.007	58.81	120.1	120.16	1.000
<b>Total</b>	<b>33</b>	<b>931</b>	<b>6.9</b>	<b>8.1</b>	<b>55.9</b>	<b>980</b>	<b>108.6</b>	<b>135.35</b>	<b>1.247</b>	<b>69.71</b>	<b>110.7</b>	<b>137.35</b>	<b>1.240</b>
<b>Melters' helpers, second:</b>													
Eastern	6	114	6.7	8.7	58.1	121	107.6	85.41	.794	46.13	116.2	91.65	.789
Pittsburgh	9	327	6.8	8.0	54.7	345	102.7	96.55	.940	51.42	108.3	102.03	.942
Great Lakes and Middle West	14	397	6.9	8.0	55.6	430	102.6	93.04	.907	50.43	108.9	98.92	.908
Southern	4	77	6.9	8.5	58.5	88	101.7	71.66	.704	41.18	114.3	79.78	.698
<b>Total</b>	<b>33</b>	<b>915</b>	<b>6.9</b>	<b>8.2</b>	<b>55.8</b>	<b>984</b>	<b>103.2</b>	<b>91.42</b>	<b>.886</b>	<b>49.44</b>	<b>110.1</b>	<b>97.47</b>	<b>.885</b>
<b>Melters' helpers, third:</b>													
Eastern	6	109	6.5	8.8	57.3	108	103.8	63.43	.611	35.01	114.9	70.27	.612
Pittsburgh	9	305	6.8	8.0	55.0	341	98.5	74.62	.750	41.25	107.3	80.33	.749
Great Lakes and Middle West	14	390	6.9	8.1	55.7	400	97.2	68.39	.704	39.21	106.1	75.22	.709
Southern	4	77	6.8	8.2	55.5	117	74.9	33.68	.450	24.98	89.6	40.11	.448
<b>Total</b>	<b>33</b>	<b>872</b>	<b>6.8</b>	<b>8.1</b>	<b>55.6</b>	<b>1,020</b>	<b>96.1</b>	<b>65.98</b>	<b>.687</b>	<b>38.20</b>	<b>105.5</b>	<b>72.39</b>	<b>.686</b>
<b>Stopper setters:</b>													
Eastern	4	17	6.5	8.5	55.1	17	112.5	102.50	.911	50.20	113.0	103.08	.913
Pittsburgh	7	38	6.9	8.1	55.2	38	115.4	100.26	.869	47.97	118.9	102.60	.863
Great Lakes and Middle West	12	64	7.0	8.0	56.0	54	112.7	102.08	.906	50.74	115.5	104.25	.902
Southern	4	12	6.9	9.0	62.3	12	127.8	87.34	.683	42.55	127.8	87.34	.683
<b>Total</b>	<b>27</b>	<b>121</b>	<b>6.9</b>	<b>8.2</b>	<b>56.2</b>	<b>121</b>	<b>115.6</b>	<b>100.11</b>	<b>.870</b>	<b>48.89</b>	<b>117.4</b>	<b>101.89</b>	<b>.868</b>
<b>Steel pourers:</b>													
Eastern	6	25	6.5	9.2	59.3	25	112.9	88.12	.781	46.31	119.9	93.03	.776
Pittsburgh	9	50	6.8	8.0	54.8	53	106.7	105.60	.989	54.20	109.7	108.27	.987
Great Lakes and Middle West	14	66	6.9	8.0	55.6	68	110.5	106.24	.962	53.49	113.3	108.98	.962
Southern	4	13	6.8	8.6	59.1	13	134.2	109.94	.819	48.40	135.5	111.06	.819
<b>Total</b>	<b>33</b>	<b>154</b>	<b>6.8</b>	<b>8.3</b>	<b>56.3</b>	<b>159</b>	<b>111.5</b>	<b>108.45</b>	<b>.927</b>	<b>52.19</b>	<b>115.0</b>	<b>106.41</b>	<b>.926</b>
<b>Mold cappers:</b>													
Pittsburgh	3	19	7.0	8.0	56.0	19	115.7	89.70	.775	43.40	116.9	90.73	.776
Great Lakes and Middle West	3	29	6.9	8.0	54.9	30	107.8	65.08	.604	33.16	111.8	67.43	.603
<b>Total</b>	<b>6</b>	<b>48</b>	<b>6.9</b>	<b>8.0</b>	<b>55.3</b>	<b>49</b>	<b>110.9</b>	<b>74.62</b>	<b>.673</b>	<b>37.22</b>	<b>113.8</b>	<b>76.47</b>	<b>.672</b>
<b>Ladle crane men:</b>													
Eastern	6	42	6.6	8.7	57.0	42	121.0	91.64	.757	48.15	122.2	92.34	.756
Pittsburgh	8	90	6.9	8.0	55.3	92	111.4	108.21	.972	53.75	114.0	109.71	.962
Great Lakes and Middle West	12	98	6.9	8.0	55.4	103	109.1	112.47	1.031	57.12	113.8	116.37	1.023
Southern	4	20	6.9	8.4	57.6	20	117.6	91.40	.777	44.76	119.6	93.10	.778
<b>Total</b>	<b>30</b>	<b>250</b>	<b>6.8</b>	<b>8.2</b>	<b>55.8</b>	<b>257</b>	<b>112.5</b>	<b>105.90</b>	<b>.941</b>	<b>52.51</b>	<b>115.7</b>	<b>108.25</b>	<b>.936</b>

OPEN-HEARTH FURNACES

TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—**Open-Hearth Furnaces**—Continued

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
<b>Ingot strippers:</b>													
Eastern.....	4	16	6.7	9.8	64.9	17	123.9	105.40	.818	53.09	138.0	110.80	.803
Pittsburgh.....	7	34	6.9	8.1	55.6	34	113.8	104.89	.921	51.21	115.0	105.82	.920
Great Lakes and Middle West.....	13	54	6.9	8.0	55.6	55	116.0	94.95	.818	45.48	117.2	96.01	.819
Southern.....	4	10	6.9	8.8	60.8	10	139.5	92.13	.660	40.13	139.9	92.28	.660
<b>Total.....</b>	<b>28</b>	<b>114</b>	<b>6.9</b>	<b>8.4</b>	<b>57.3</b>	<b>116</b>	<b>119.3</b>	<b>99.16</b>	<b>.831</b>	<b>47.62</b>	<b>121.6</b>	<b>100.73</b>	<b>.829</b>
<b>Engineers, locomotive:</b>													
Eastern.....	6	48	6.7	8.8	58.5	50	119.8	85.38	.713	41.71	120.7	86.05	.713
Pittsburgh.....	9	141	6.8	8.2	55.4	164	101.1	83.09	.822	45.45	102.4	83.99	.820
Great Lakes and Middle West.....	11	128	6.9	8.0	55.2	132	114.0	85.43	.749	41.34	114.4	85.67	.749
Southern.....	4	36	6.8	8.7	59.3	43	106.5	68.94	.647	38.37	107.7	69.63	.646
<b>Total.....</b>	<b>30</b>	<b>353</b>	<b>6.8</b>	<b>8.3</b>	<b>56.1</b>	<b>389</b>	<b>108.5</b>	<b>82.61</b>	<b>.762</b>	<b>42.75</b>	<b>109.4</b>	<b>83.24</b>	<b>.761</b>
<b>Switchmen:</b>													
Eastern.....	6	54	6.7	8.6	57.2	55	119.3	76.44	.641	36.67	122.3	78.19	.639
Pittsburgh.....	9	148	6.8	8.1	55.1	177	97.0	64.85	.669	36.86	98.1	65.59	.669
Great Lakes and Middle West.....	11	146	6.9	8.0	51.8	163	105.1	68.22	.649	33.62	106.9	69.41	.649
Southern.....	4	35	6.8	9.3	63.4	40	111.6	61.26	.549	34.81	117.5	64.38	.548
<b>Total.....</b>	<b>30</b>	<b>383</b>	<b>6.8</b>	<b>8.2</b>	<b>54.9</b>	<b>435</b>	<b>104.2</b>	<b>67.25</b>	<b>.645</b>	<b>35.41</b>	<b>106.3</b>	<b>68.50</b>	<b>.645</b>
<b>Laborers:</b>													
Eastern.....	6	119	6.5	10.0	65.2	142	106.6	40.70	.382	24.91	116.3	45.71	.393
Pittsburgh.....	9	428	6.8	9.1	61.8	700	73.9	33.83	.458	28.30	81.2	38.14	.470
Great Lakes and Middle West.....	14	421	6.5	9.1	59.1	528	99.3	44.94	.462	26.71	109.4	50.82	.464
Southern.....	4	154	6.2	9.2	57.2	178	109.5	39.08	.357	20.42	114.7	41.23	.360
<b>Total.....</b>	<b>33</b>	<b>1,122</b>	<b>6.6</b>	<b>9.2</b>	<b>60.5</b>	<b>1,548</b>	<b>89.7</b>	<b>38.85</b>	<b>.433</b>	<b>26.20</b>	<b>97.9</b>	<b>43.51</b>	<b>.445</b>

OPEN-HEARTH FURNACES

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Open-Hearth Furnaces

ALL EMPLOYEES

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Mid-dle West	South-ern	Total
Turns per week	Hours				Turns per week	Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						
7	12	12	12	84					84		15		1	16	
7	11½	11½	11½	80½					80½				1	1	
7	11	11	11	77					77	3	5		1	9	
7	11	9½	10	74½					74½	1				1	
7	10½	10½	10½	73½					73½		3		1	4	
6	12	12		72					72				1	1	
7	10½	8½	12	72					72	2				2	
7	10½	8½	10	70					70	13				13	
7	10	10	10	70					70	49	339	114	30	532	
7	10	10	8	68					68			3		3	
7	10	8	9½	67½					67½		33			33	
7	9½	9½	9½	66½					66½		43		3	46	
6	11	11	11	66					66				1	1	
6	11	11		66					66	2	4		12	18	
6	10	10	5½	65½					65½	1				1	
6	10	10		60					65	2	6			8	
7	10	10	10	70					65						
7	9½	9½	8	65					65				8	8	
7	9½	9½	6	64½					64½	1				1	
6	10½	10½		63					63				1	1	
6	9	9	9	63					63	3	6	7	18	34	
7	10	6	6	62					62	1				1	
7	10	11½		61½					61½	1				1	
6	10½	8½		60					60	48				48	
6	10	10	10	60					60			73	43	116	
6	10	10		60					60	21	25	246	80	372	
6	10		10	60					60			2		2	
7	8½	8½	8½	59½					59½	4				4	
6	10	9		59					59	2				2	
6	9	9		54					58½						
7	9	9	9	63					58½	1				1	
6	10	7½		57½					57½	1				1	
6	9½	9½	9½	57					57			1		1	
6	9½	9½		57					57			2		2	
7	8	8	8	56					56		22	153	7	184	
6	10	5½		55½					55½	69				69	
6	10	5		55					55		4		26	30	
6	9	9		54					54		1	1	15	17	
6	9	7½		52½					52½	1				1	
6	8	12	8	52					52		3			3	
6	8	12		52					52		3			3	
6	8	8		48					52	1		12		13	
7	8	8	8	56					48		2	2		4	
6	8	8	8	48					48		39	139	82	260	
6	8	8		48					48		1			1	
6	8	7		47					47						
6	8	4		44					44		2			2	
6	8	3		43					43		3			3	
Total										229	559	755	331	1,874	





TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Open-Hearth Furnaces—Continued

## ALL EMPLOYEES—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	South-ern	Total
Turns per week	Hours				Turns per week	Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						
6	8	8	---	48	7	8	8	8	56	52	---	---	6	---	6
6	8	12	---	52	7	8	7	8	55	51½	---	15	---	---	15
6	8	11½	---	51½	7	8	7½	8	55½	51½	---	3	---	---	3
6	8	12	---	52	7	8	6½	8	54½	51½	---	30	---	---	30
6	8	12	---	52	6	8	6	8	54	51½	---	122	---	---	122
6	8	12	---	52	7	8	5½	8	53½	51½	---	9	---	---	9
6	8	12	---	52	7	8	5	8	53	51	---	10	---	---	10
7	8	8	8	56	6	8	8	8	48	50%	---	35	---	---	35
7	8	8	8	56	6	8	8	8	48	50%	33	---	---	---	33
7	8	8	8	56	6	8	8	8	48	50%	---	---	5	---	5
6	8	8	8	48	6	8	8	8	50	50%	---	3	---	---	3
6	8	8	---	48	6	8	8	8	48	50%	---	17	---	---	17
6	8	8	---	48	6	8	8	8	56	50%	6	---	---	---	6
6	8	12	8	52	6	8	8	8	48	50%	---	6	---	---	6
6	8	12	---	52	6	8	12	8	52	49½	---	4	---	---	4
6	8	8	8	48	6	8	8	8	48	48	---	215	336	---	551
6	8	8	---	48	6	8	8	8	48	48	84	---	---	3	87
6	8	8	---	48	6	8	8	8	48	48	---	---	7	---	7
6	8	8	---	48	6	8	8	8	48	48	---	4	5	---	9
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	1,320	4,096	4,803	993	11,212

## Group C.—Weekly changes from one shift to another—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	South-ern	Total
Turns per week	Hours				Turns per week	Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						
7	12	12	12	84	7	12	12	12	84	84	13	---	---	---	13
7	12	12	12	84	6	12	12	12	72	81	---	---	---	10	10
7	12	12	12	84	7	12	12	12	84	81	---	---	---	---	---
6	11	11	---	66	6	13	13	13	78	76%	6	---	---	---	6
7	11	11	11	77	7	13	8	13	86	---	---	---	---	---	---
7	8	8	11	59	6	8	8	8	48	56	10	---	42	---	52
7	8	8	8	56	7	8	8	8	61	56	69	264	359	46	738
7	8	8	8	56	7	8	8	8	56	56	---	---	---	---	---
7	8	8	8	56	6	8	8	8	48	53½	---	---	26	---	26
7	8	8	8	56	7	8	8	8	56	53½	5	---	---	---	5
6	8	12	---	52	7	8	6	8	54	51½	---	57	---	---	57
7	8	8	8	56	6	8	8	8	48	50%	19	---	---	---	19
6	8	8	8	48	6	8	8	8	48	48	---	21	33	---	54
6	8	8	8	48	6	8	8	8	48	48	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	122	342	434	82	980

## MELTERS' HELPERS, FIRST, ONLY

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	South-ern	Total
Turns per week	Hours				Turns per week	Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						
7	12	12	12	84	7	12	12	12	84	84	13	---	---	---	13
7	12	12	12	84	6	12	12	12	72	81	---	---	---	10	10
7	12	12	12	84	7	12	12	12	84	81	---	---	---	---	---
6	11	11	---	66	6	13	13	13	78	76%	6	---	---	---	6
7	11	11	11	77	7	13	8	13	86	---	---	---	---	---	---
7	8	8	11	59	6	8	8	8	48	56	10	---	42	---	52
7	8	8	8	56	7	8	8	8	61	56	69	264	359	46	738
7	8	8	8	56	7	8	8	8	56	56	---	---	---	---	---
7	8	8	8	56	6	8	8	8	48	53½	---	---	26	---	26
7	8	8	8	56	7	8	8	8	56	53½	5	---	---	---	5
6	8	12	---	52	7	8	6	8	54	51½	---	57	---	---	57
7	8	8	8	56	6	8	8	8	48	50%	19	---	---	---	19
6	8	8	8	48	6	8	8	8	48	48	---	21	33	---	54
6	8	8	8	48	6	8	8	8	48	48	---	---	---	---	---
<b>Total</b>	---	---	---	---	---	---	---	---	---	---	122	342	434	82	980



OPEN-HEARTH FURNACES

TABLE E.—Average and classified full-time hours per week in six specified occupations, 1929, by district—Open-Hearth Furnaces

Occupation and district	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—										
				48	Over 48, under 56	56	Over 56, under 60	60	Over 60, under 66	66, under 72	72	Over 72, under 84	84 and over	
<b>Melters' helpers, first:</b>														
Eastern.....	6	122	59.1		24	79							6	13
Pittsburgh.....	9	342	54.7	21	57	264								
Great Lakes and Middle West.....	14	434	55.6	33		401								
Southern.....	4	82	58.4		26	46							10	
<b>Total.....</b>	<b>33</b>	<b>980</b>	<b>55.9</b>	<b>54</b>	<b>107</b>	<b>790</b>							<b>16</b>	<b>13</b>
<b>Melters' helpers, second:</b>														
Eastern.....	6	121	58.1	18	3	82						6	12	
Pittsburgh.....	9	345	54.7	22	59	264								
Great Lakes and Middle West.....	14	430	55.6	24		406								
Southern.....	4	88	58.5		26	51							11	
<b>Total.....</b>	<b>33</b>	<b>984</b>	<b>55.8</b>	<b>64</b>	<b>88</b>	<b>803</b>						<b>6</b>	<b>23</b>	
<b>Melters' helpers, third:</b>														
Eastern.....	6	108	57.3	13	52	22						8	13	
Pittsburgh.....	9	341	55.0	12	57	272								
Great Lakes and Middle West.....	14	460	55.7	26		434								
Southern.....	4	117	55.5		92	17								8
<b>Total.....</b>	<b>33</b>	<b>1,026</b>	<b>55.6</b>	<b>51</b>	<b>201</b>	<b>745</b>						<b>8</b>	<b>13</b>	<b>8</b>
<b>Steel pourers:</b>														
Eastern.....	6	25	59.3	3	9	6							4	3
Pittsburgh.....	9	53	54.8	4	9	40								
Great Lakes and Middle West.....	14	68	55.6	3		65								
Southern.....	4	13	59.1		6	5								2
<b>Total.....</b>	<b>33</b>	<b>159</b>	<b>56.3</b>	<b>10</b>	<b>24</b>	<b>116</b>						<b>4</b>	<b>3</b>	<b>2</b>
<b>Ladle cranemen:</b>														
Eastern.....	6	42	57.0	6	6	24						2	4	
Pittsburgh.....	8	92	55.3		15	77								
Great Lakes and Middle West.....	12	103	55.4	7		96								
Southern.....	4	20	57.6		9	9								2
<b>Total.....</b>	<b>30</b>	<b>257</b>	<b>55.8</b>	<b>13</b>	<b>30</b>	<b>206</b>						<b>2</b>	<b>4</b>	<b>2</b>
<b>Laborers:</b>														
Eastern.....	6	142	65.2				11	50	2	79				
Pittsburgh.....	9	700	61.8	7	100	138			206	240			2	7
Great Lakes and Middle West.....	14	528	59.1	77	2	116	101	126		106				
Southern.....	4	178	57.2	60	6			60	23	28				1
<b>Total.....</b>	<b>33</b>	<b>1,548</b>	<b>60.5</b>	<b>144</b>	<b>108</b>	<b>254</b>	<b>112</b>	<b>236</b>	<b>231</b>	<b>453</b>			<b>2</b>	<b>8</b>





**TABLE H.—Average and classified earnings actually received by employees in six specified occupations in pay period covered, 1929, by district—  
Open-Hearth Furnaces<sup>1</sup>**

Occupation and district	Number of employees	Average earnings per pay period	Number of employees whose earnings during the pay period were—																																
			Under \$5	\$5, under \$10	\$10, under \$15	\$15, under \$20	\$20, under \$25	\$25, under \$30	\$30, under \$35	\$35, under \$40	\$40, under \$45	\$45, under \$50	\$50, under \$55	\$55, under \$60	\$60, under \$65	\$65, under \$70	\$70, under \$75	\$75, under \$80	\$80, under \$85	\$85, under \$90	\$90, under \$95	\$95, under \$100	\$100, under \$110	\$110, under \$120	\$120, under \$130	\$130, under \$140	\$140, under \$150	\$150, under \$160	\$160, under \$180	\$180, under \$200	\$200, under \$250	\$250 and over			
<b>Melters' helpers, first:</b>																																			
Eastern	122	\$120.82						1		1				2		3	5	8	3	4	5	13	16	7	16	21	8	6							
Pittsburgh	342	142.23				1	1	2	1	1				2		1	1	3	6	4	16	17	24	38	48	46	43	33	21	28		2			
G. L. and M. W.	434	141.40		1						2			1		2	4	4	6	10	7	12	38	51	55	51	55	86	34		4					
Southern	60	117.78						1							1	1	1	1	4	1	2	6	21	10	11	2									
<b>Total</b>	<b>958</b>	<b>137.59</b>		1		1	1	3	3	3	1	4	1	4	4	8	6	11	16	19	19	30	48	99	106	130	120	106	125	55	32		2		
<b>Melters' helpers, second:</b>																																			
Eastern	121	91.65			1				1		3	2	1	2	2	4	8	9	12	19	6	17	15	13	3	2									
Pittsburgh	345	102.05		1			4		1	1	2	1	5	1	6	14	18	17	17	22	29	34	57	43	25	15	8	12	11		3				
G. L. and M. W.	430	98.92		1	3	2		1	1	1	2	2	5	5	4	2	7	15	28	33	49	66	90	61	39	11	2	1							
Southern	64	76.43				1					2	3	2	6	6	4	8	6	6	6	6	2	6												
<b>Total</b>	<b>960</b>	<b>97.62</b>		2	5	3	4	3	2	1	8	7	13	14	18	24	41	46	63	80	90	119	168	117	67	28	10	13	11		3				
<b>Melters' helpers, third:</b>																																			
Eastern	108	70.27		1		1			1	1	4	5	8	10	6	8	19	22	13	1	3	5													
Pittsburgh	341	80.33		4	4	1		2	2	1	1	5	5	9	14	36	37	43	48	42	33	18	12	11	4	9									
G. L. and M. W.	463	75.22	3	5	1	5	4	1	3	7	6	9	12	16	30	30	66	60	61	67	23	20	27	3	1										
Southern	109	39.29	5	5	8	5	2	4	9	8	23	11	4	9	11	3	1	1																	
<b>Total</b>	<b>1,018</b>	<b>72.56</b>	8	15	13	12	6	7	15	17	34	30	29	44	61	77	123	120	122	110	59	43	39	14	5	9									
<b>Steel pourers:</b>																																			
Eastern	25	93.03												1	6	2			2		2		2	2	6										
Pittsburgh	53	108.27								1				2			1	1		2		4	2	9	14	3	1	2	1				2		
G. L. and M. W.	68	108.98				1			1								2	2	2	4	2	4	10	14	12	6	4	1	3	2			2		
Southern	11	104.70																				5	3	3											
<b>Total</b>	<b>157</b>	<b>105.90</b>				1			1					2	7	2	5	5	6	6	10	17	28	31	15	5	3	4	4		2				
<b>Ladle cramenen:</b>																																			
Eastern	42	92.34														1			4	11	12	5	3	3	3										
Pittsburgh	92	109.71			1		1				1	1			2			2	2	2	6	8	16	30	8	5	7	1	1						
G. L. and M. W.	103	116.37				1								1	1	3	1	2	3	6	18	20	25	8	8	13	1	1							
Southern	14	91.00												1	1	1	1	1	2	1	5	2													
<b>Total</b>	<b>251</b>	<b>108.49</b>			1		1							1	1	5	4	6	16	19	12	22	39	53	33	13	20	2	1						
<b>Laborers:</b>																																			
Eastern	142	45.71	2	1	4	3	2	10	6	14	18	50	11	13	1	4	1	1	1	1															
Pittsburgh	700	38.14	34	33	36	50	54	61	50	46	48	41	81	53	60	25	18	6	2	1															
G. L. and M. W.	528	50.82	5	11	9	6	12	16	19	27	63	69	56	102	69	28	15	9	6	5	1														
Southern	108	38.44	2		1	3	7	3	4	17	63	5																							
<b>Total</b>	<b>1,478</b>	<b>43.42</b>	43	47	50	62	75	90	79	104	192	165	148	168	130	58	34	16	9	6	1	1													

<sup>1</sup> The figures for 1 plant which cover a 20-day period have not been included in this table.

## PUDDLING MILLS

Wrought iron, the product of puddling mills, is made from pig iron, often mixed with scrap, by oxidizing and removing most of the silicon, carbon, manganese, and phosphorus content. In the manufacture of wrought iron, hand labor is used to a greater extent than in the production of most forms of tonnage steel. Wrought iron may be produced by two processes, puddling or busheling, both of which are hand-labor operations, one using mostly pig iron and the other practically all scrap. Due to the heavy labor involved and the intense heat to which puddlers are subjected by the hand process, fewer workmen are taking up the puddling trade.

The two greatest items of expense in hand puddling are fuel and labor costs. Usually the old-type hand furnace required a ton of soft coal to produce a like amount of iron. However, this amount may vary somewhat from plant to plant. To offset these items inasmuch as possible and to produce larger tonnages, experiments have been conducted for several years with mechanical puddling devices. The necessary equipment for mechanical puddling is quite expensive and most plants in this department have not shown any great change in working conditions in recent years. However, one large establishment has recently perfected what is said to be a successful method of producing wrought iron by the mechanical process and is now erecting a new plant to carry on production by this process. The present study, however, includes only plants doing hand puddling.

Data were collected from the pay rolls of 11 plants located in 6 States and cover 1,800 employees in all occupations. Of this number 1,467 were in the principal occupations for which separate averages are given. This is practically a complete census of wage earners in puddling mills, as all plants that were operating at the time this study was made were included. A comparison of the total number of plants and employees in 1929 with similar figures for 1914 shows the decline in importance of this department in the industry. Comparable figures for this department were first obtained in 1914 and data here given are for the period 1914 to 1929.<sup>1</sup> The decline in number of plants reporting after 1924, together with the decrease in number of employees in these plants, made it inadvisable to present data for the years 1926 and 1929 by geographical district, as operations have been curtailed in some parts of the country to such an extent that district comparisons would be misleading. In 1929 no establishments were found to be in operation in the Great Lakes and Middle West district.

The hours of labor for puddling-mill employees as a whole have not fluctuated to the same extent as for employees in some of the other departments. A day's work in the puddling operation usually consists of 5 heats per shift, which requires somewhere between 8 and 10 hours, and since it is still the custom of this department to produce this number of heats, the adoption of the 8-hour day in the industry did not affect employees in this department to any great extent. In 1914 the hours of labor per week were 53.2. Not much change from

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<sup>1</sup> Data were obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

this figure is noted until 1924, when hours increased to 55.7, or 5 per cent more than in 1914. Hours decreased in 1926 to 52.1 and again in 1929 to 50.3.

While customary working time for the department as a whole shows little change, comparison of working time of employees in some of the principal occupations shows considerable variation. Stockers, for example, customarily worked 57.6 hours per week in 1914, which hours gradually increased to 61.3 in 1920, almost  $7\frac{1}{2}$  hours more than the average for the department as a whole for the same year. In 1922 average hours for stockers were 58.9 and in 1924 decreased further to 57.4, which is practically the 1914 average. In 1926 hours were 51.1, which was also the average for 1929 and only 0.8 hour more than the average for the department as a whole.

Puddling mills during former studies were usually operated 6 days or 6 days and 5 nights per week. Operating conditions, however, had materially changed between 1926 and 1929, so that the customary operating time had reduced the working time of most employees either to 6 days and 5 nights or to 5 days and 5 nights per week. Very few employees are required to work 7 days per week, as most of the repair work is done on Saturday, when the plants are not operating. Table B shows that in 1914 there were 63 per cent of all employees working 6 days one week and 5 the next, with 13 per cent regularly working a 5-day week. In 1920 less than 1 per cent had a 5-day week regularly, 26 per cent had a straight 6-day week, 13 per cent a 6-day week once in each 3 weeks, and 60 per cent had a 6-day and a 5-day week alternately. In 1926 no employee had a 6-day week once in each 3 weeks, but 67 per cent had alternating weeks of 6 and of 5 days. In 1929 the per cent of employees working 6 days and 5 days per week alternately had been reduced to 39, and 37 per cent had a regular 5-day week. In no year did over 2 per cent of all employees work a 7-day week.

The working time of all employees in 1929 is given in Table D. Of the 1,800 employees in this table, 495 worked days only, 37 nights only, and 1,268 alternated or rotated from day to night work. Thirty-eight employees had a customary working time of 12 hours or its equivalent each day they were on duty, while 1,007 had a day of 9 hours or less. Employees shown in Table D include all wage earners of the department, whether or not directly connected with the furnaces or muck-rolls. To give a better idea of the working time of employees directly connected with the puddling furnaces, the table includes separate figures for puddlers, level-handed. The work of puddlers, level-handed, is the same as that of a puddler and his helper, the only difference being that each of two puddlers, level-handed, operating a furnace assumes an equal amount of responsibility with the earnings divided equally, while a puddler assumes full responsibility, usually paying his helper 30 to 40 per cent of the furnace earnings. Of the 702 employees who worked as puddlers, level-handed, 87 worked days only, while the remainder alternated from day to night duty. Of the total puddlers, level-handed, 406, or approximately 58 per cent, customarily worked 5 days each week. This gives an excellent idea of the operating conditions in this department. Two employees had a customary week of 30 hours, which was due to one plant operating its muck rolls on a 12-hour shift, but splitting the furnace crews into 2 shifts of 6 hours each in order to provide labor for as many employees as possible. Most of the puddlers in this plant

work with a helper, and are not included in this occupation, but are shown on page 96, in Table D.

Table E shows the distribution of employees in five principal occupations by average full-time hours per week. The table shows that out of a total of 1,160 in the 5 occupations, 397 worked between 40 and 44 hours, 661 between 48 and 56, while only 23 worked as many as 60 hours per week.

Earnings per hour have more than doubled during the period 1914 to 1929, having risen from 32.8 cents in 1914 to the high point of 88.5 cents in 1920, or an increase of 170 per cent. In 1922 earnings in this department as in all other departments declined, having dropped to 49.6 cents but in 1924 advanced to 72.1 cents. The year 1926 brought another decline and earnings dropped to 65.7 cents, nearly 4½ per cent less than the hourly earnings of 68.6 cents for 1929. Tonnage rates paid in most plants in this department are based directly on the selling price of the product; that is, at the close of regular intervals rates are adjusted in accordance with the price of bar iron during that period. Thus, rates paid in this department in most occupations are subject to wide fluctuations in a 2 or 3 year study such as this bureau makes. However, it might be noted that the tonnage rates paid in January, 1926, were practically the same as those paid in March, 1929.

Hourly earnings of employees in the various principal occupations are shown in Table A; for example, puddlers, level-handed, earned an average of 41.6 cents per hour in 1914, which dropped to 39.2 cents in 1915. During the period of the 1919 study earnings were \$1.101 per hour, or 165 per cent more than in 1914. This was further increased to \$1.227 in 1920, the peak for earnings of employees in this occupation.

There was a slump in the industry in 1921, the effect of which was still evident in 1922, the average being 62.9 cents for that year. However, by 1924 earnings had regained most of the loss suffered in 1922, and puddlers, level-handed, earned \$1.051 per hour. Earnings in 1926 dropped to 87.7 cents, which is only slightly less than the average of 88 cents for 1929. A distribution of employees according to average earnings per hour in five principal occupations is shown in Table F.

As average hours per week for the department did not show any decided change over the period 1914 to 1929, average full-time weekly earnings followed very closely the trend of hourly earnings. In 1914 weekly earnings were \$17.45, which increased until they reached \$47.70 in 1920, an increase of 173 per cent over 1914. There was a decided reduction in weekly earnings in 1922, to \$25.84, but an increase to \$40.16 in 1924. Earnings were \$34.51 in 1929, which is a slight increase over 1926, when the average was \$34.23. Weekly earnings in the various principal occupations show like changes over the period 1914 to 1929. Puddlers, level-handed, for example, earned \$20.37 in 1914 as compared with \$62.25 in 1920, and \$29.22 in 1922, which is 43 per cent above the 1914 average. In 1924 earnings increased to \$48.39, which was \$5.15 more than in 1926. Due to the decrease in full-time weekly hours between 1926 and 1929, weekly earnings decreased to \$40.74 in the latter year, but were exactly twice as high as in 1914.

The 1,467 employees in the principal occupations worked an average of 83.5 hours during the 15-day pay period covered by this

study, for which they received an average of \$60.68, which includes all the hours worked and earnings received by these employees as shown in Table C. This compares with an average of 81.9 hours and \$56.19 for all employees in all occupations during the same period. Roll engineers worked the most time, 124.8 hours, and heaters' helpers the least, 68.7 hours. Laborers received the least money, \$37.19, while rollers—a highly skilled occupation—earned the largest amount, \$120.74. The next largest amount, \$105.80, was earned by heaters.

A classification of employees in five principal occupations, by hours actually worked in 1929, is made in Table G. This table shows that puddlers, level-handed, had the largest number of employees, 64, working under 32 hours per pay-roll period while rollers had the least. The occupation of laborers shows the widest variation in hours, 9 having worked under 32 and 1 over 156 and under 168 hours.

A like classification of earnings is made in Table H. Considerable variation is shown in the earnings of employees in the different occupations as well as for employees in the same occupation. Laborers earned from less than \$5 for the period to \$60 and under \$65. Puddlers, level-handed, earned from \$5 and under \$10 to \$130 and under \$140, while two rollers earned between \$200 and \$250.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1914 to 1929, by occupation—Puddling Mills

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1914=100)			Per cent of employees whose average full-time hours per week were—									
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84					
<b>Stockers:</b>																		
1914	28	300	57.6	\$0.205	\$11.78	100	100	100	12	45	11	30	1					
1915	28	304	58.1	.204	11.85	101	100	101	10	42	12	34	1					
1919	11	141	59.9	.486	29.11	104	237	247	11	11	15	61	2					
1920	15	407	61.3	.504	31.30	106	246	266	1	12	29	55	3					
1922	13	214	58.9	.396	23.64	102	193	201	8	32	7	53	(1)					
1924	17	188	57.4	.490	27.50	100	234	233	1	59	13	27	1	1				
1926	13	134	51.1	.527	26.93	89	257	229	28	55	13	3						
1929	11	86	51.1	.524	26.78	89	256	227	19	63	15		3					
<b>Puddlers:</b>																		
1914	13	458	54.8	.416	22.76	100	100	100	2	98								
1915	13	422	52.4	.390	20.45	96	94	90	2	98								
1919	7	176	50.9	1.128	57.31	93	271	252	31	69								
1920	8	187	49.2	1.311	64.69	90	315	284	37	63								
1922	9	203	48.5	.687	33.49	89	165	147	44	56								
1924	11	293	52.8	.912	48.10	96	219	211	3	97								
1926	8	185	53.5	.767	41.03	98	184	180	2	97								
1929	7	169	52.1	.784	40.85	95	188	179	7	93								
<b>Puddlers, level handed:</b>																		
1914	17	896	49.3	.416	20.37	100	100	100	49	51								
1915	17	924	48.0	.392	18.60	97	94	91	65	35								
1919	9	512	48.8	1.101	53.73	99	265	264	26	74								
1920	11	860	50.8	1.227	62.25	103	295	306	23	77								
1922	12	936	74.0	.629	29.22	95	151	143	69	40								
1924	16	1,275	45.7	1.051	48.39	93	253	236	45	55								
1926	11	922	49.3	.877	43.24	100	211	212	52	47								
1929	9	702	46.3	.880	40.74	94	212	200	55	45								

<sup>1</sup> Less than 1 per cent.



PUDDLING MILLS

y full-time hours per week, earnings per hour, and index numbers therefor, 1914 to 1929, by occupation—Continued

Year	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1914=100)			Per cent of employees whose average full-time hours per week were—						
					Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	60	Over 60, under 72	72	Over 72, under 84	84
1914	15	475	55.2	\$0.241	\$13.25	100	100	100	2	98				
1915	9	456	52.8	.224	11.78	96	93	89	2	98			5	
1919	9	190	50.6	.695	35.17	92	288	265	33	67				
1920	9	209	49.4	.859	42.37	89	356	320	30	70				
1922	11	153	48.7	.421	20.59	88	175	155	37	63				
1924	8	200	53.2	.590	31.28	96	245	236	4	96				
1926	8	191	51.7	.517	27.61	97	215	208	2	99				
1929	8	191	51.7	.519	26.83	94	215	202	12	88				
<b>Heaters:</b>														
1914	9	25	51.0	.709	35.28	100	100	100	48	44			8	
1915	9	27	50.9	.730	36.37	100	103	103	44	48			8	
1919	1	2	55.0	1.165	64.08	108	164	182		100				
1920	1	4	61.8	1.426	88.13	121	201	250					100	
1922	2	8	53.8	.915	48.38	105	129	137	50	50				
1924	4	11	52.8	1.349	72.36	104	190	205	9	91				
1926	4	12	54.2	1.236	66.99	106	174	190		100				
1929	3	5	50.8	1.374	69.80	100	194	198		100				
<b>Heaters' helpers:</b>														
1914	8	48	52.3	.811	15.63	100	100	100	50	29			13	8
1915	8	52	52.3	.808	15.63	100	99	99	46	35			12	8
1919	1	2	55.0	.877	31.74	105	186	203		100				
1920	1	18	57.0	.846	31.12	109	176	199		100				
1922	2	25	54.7	.450	23.99	105	145	153		100				
1924	4	20	54.3	.583	31.59	104	188	202	5	95				
1926	4	14	54.3	.695	32.31	104	191	207		92	7			
1929	2	4	52.9	.611	32.32	101	196	207		100				
<b>Bloom boys:</b>														
1914	25	77	54.3	.201	10.79	100	100	100	16	73	5	6		
1915	25	68	53.9	.199	10.62	99	99	98	18	68	3	12		
1919	11	26	52.9	.656	34.70	97	326	322	27	54			19	
1920	13	38	53.2	.656	34.78	98	326	322	34	53	8	5		
1922	10	32	51.0	.365	18.20	94	182	169	41	28	16	16		
1924	14	36	51.7	.525	26.34	95	261	244	22	67	8	3		
1926	9	20	51.2	.531	27.19	94	264	252	25	70	5	3		
1929	10	21	51.3	.479	24.57	94	238	228	33	62	5			
<b>Roll engineers:</b>														
1914	23	47	66.9	.239	15.92	100	100	100		9	11	45	32	4
1915	23	45	66.9	.242	16.14	100	101	101		9	11	40	36	4
1919	12	25	65.2	.535	34.88	97	224	219	12	16	4	32	12	16
1920	12	24	72.5	.674	48.79	108	282	306		4	4	29	38	8
1922	13	28	65.4	.425	27.87	98	178	175	14	7	4	54	7	14
1924	14	31	64.7	.531	34.45	97	222	216	19	6	6	35	13	13
1926	10	20	62.3	.574	35.76	93	236	225	30	10	25	15	10	6
1929	9	16	62.1	.540	33.53	93	226	211	31	6	25	13		13
<b>Rollers:</b>														
1914	24	66	53.1	.573	29.38	100	100	100	23	68	3	6		
1915	24	64	52.4	.583	29.89	99	102	102	25	63	3	9		
1919	12	38	47.0	1.843	86.62	89	322	295	53	47				
1920	12	31	50.8	2.197	108.15	96	383	368	29	68	3			
1922	12	33	48.4	.899	42.95	91	157	146	52	42	6	5		
1924	16	42	51.2	1.252	63.66	96	218	217	29	62	5	5		
1926	11	24	50.9	1.200	61.08	96	209	208	33	63	4			
1929	9	20	51.7	1.235	63.85	97	216	217	25	70	5			
<b>Roughers:</b>														
1914	20	71	51.9	.436	22.17	100	100	100	39	44	3	14		
1915	20	69	51.8	.426	21.69	100	98	98	41	45	3	12		
1919	8	25	45.2	1.298	58.67	87	298	265	64	36				
1920	10	33	49.7	1.407	68.75	96	323	310	39	48	12			
1922	10	43	47.2	.587	27.69	91	135	125	47	47	7			
1924	12	45	50.4	.877	43.35	97	201	196	24	64	4	7		
1926	9	32	48.7	.748	36.43	92	172	164	41	53	6			
1929	8	23	48.1	.753	36.22	93	173	163	48	43	9			

TABLE A.—Average customary full-time hours per week, and index numbers thereon—Puddling Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1914=100)			wks.		60	Q. 72	
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60.			
<b>Catchers:</b>													
1914	27	91	53.4	90.362	\$18.99	100	100	100	21	89	4		
1915	27	88	52.8	.863	18.89	99	100	99	22	88	5		
1919	12	34	48.2	1.269	61.17	90	351	322	47	53			
1920	13	42	50.7	1.291	64.07	95	357	337	53	62	5		
1922	13	55	47.9	.872	27.28	90	188	144	45	51	4		
1924	16	69	50.9	.856	42.75	95	236	235	23	67	3		
1926	11	41	50.9	.998	35.53	95	193	187	24	73	2		
1929	11	30	50.4	.806	40.63	94	228	214	33	63	3		
<b>Hook-ups:</b>													
1914	27	97	54.4	.251	13.58	100	100	100	19	80	4	18	
1915	27	94	53.8	.233	12.40	99	93	91	19	61	4	16	
1919	12	34	51.8	.862	44.65	95	343	329	52	50	5	18	
1920	13	37	55.5	.868	49.64	104	346	366	8	59	5	27	
1922	12	50	48.0	.457	21.57	85	182	159	78	18	4		
1924	16	54	51.9	.638	33.02	95	254	243	19	72	4	6	
1926	12	43	50.1	.539	27.60	91	215	199	30	67	2		
1929	10	28	52.3	.541	28.29	95	216	208	14	79	7		
<b>Roll hands, other:</b>													
1914	8	17	51.9	.286	14.75	100	100	100	18	82			
1915	8	14	53.6	.295	15.86	103	108	106	21	64		14	
1919	3	11	50.7	.624	31.64	98	218	215	45	55			
1920	3	15	51.5	.945	48.94	99	331	332	27	73			
1922	5	15	51.6	.469	24.00	99	184	163	53	40	4	27	
1924	5	15	53.9	.559	30.12	104	195	204	203	73	27		
1926	4	6	51.9	.439	22.78	100	154	154	33	33	33		
1929	3	5	55.3	.479	26.49	107	167	180	40	40	20		
<b>Hotbed men:</b>													
1914	26	117	54.2	.245	13.10	100	100	100	21	59	3	16	
1915	26	112	54.2	.243	12.98	100	99	99	22	54	4	21	
1919	11	55	52.0	.655	34.06	96	267	260	27	57	7	16	
1920	13	61	57.0	.666	38.21	105	372	392	99	4	27		
1922	12	67	50.3	.416	20.91	93	179	160	60	30	3	7	
1924	15	84	52.5	.571	30.01	97	283	239	19	74	2	5	
1926	10	65	51.2	.539	27.60	94	220	211	23	71	6		
1929	9	45	5.09	.572	29.11	94	233	222	24	73	2		
<b>Shearmen:</b>													
1914	19	43	57.3	.239	13.70	100	100	100		60	21	19	
1915	19	39	57.8	.247	14.49	101	108	105		56	18	26	
1919	11	28	57.6	.528	30.41	101	221	222	7	87	18	18	
1920	13	45	55.2	.662	36.73	96	277	268	2	71	18	9	
1922	13	38	52.4	.455	23.75	91	190	173	42	39	5	11	
1924	16	36	52.6	.570	29.80	92	238	218	28	60	6	17	
1926	12	23	52.8	.638	33.59	92	267	246	31	51	17		
1929	10	16	54.1	.573	31.00	94	240	225	13	69	19		
<b>Shearmen's helpers:</b>													
1914	20	110	58.0	.192	11.23	100	100	100		60	9	31	
1915	20	109	58.1	.196	11.80	100	102	102		58	9	33	
1919	9	57	57.6	.473	27.24	99	245	243	12	63		35	
1920	10	70	60.9	.527	32.24	105	274	287	30	14	54	1	
1922	13	84	55.1	.385	21.09	95	201	188	24	42	6	29	
1924	16	96	50.5	.513	25.77	87	267	229	48	35	4	13	
1926	13	54	50.6	.588	29.75	87	306	265	52	36	13		
1929	10	28	54.0	.464	25.06	93	242	223	7	75	14	4	
<b>Laborers:</b>													
1914	24	322	59.5	.173	10.25	100	100	100		36	42	21	1
1915	24	303	57.5	.167	9.65	97	97	98		49	35	16	
1919	12	236	64.1	.436	27.95	108	282	270	3	22	14	56	6
1920	15	440	65.3	.457	30.41	110	364	394		9	33	22	35
1922	12	382	59.2	.305	18.44	99	176	178		31	35	34	
1924	17	341	59.5	.355	21.31	100	205	205		44	30	26	
1926	12	151	57.1	.367	20.38	95	205	195	3	50	44	1	2
1929	9	78	54.5	.399	21.20	92	225	205		72	26		3

PUDDLING MILLS

TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by year—Puddling Mills

Year	Number of plants	Number of employees	Number of employees whose customary turns per week were—						Per cent of employees whose customary turns per week were—					
			5	5, 5, and 6 in rotation	5 and 6 alternately	6	6 and 7 alternately	7	5	5, 5, and 6 in rotation	5 and 6 alternately	6	6 and 7 alternately	7
1914	29	4,606	600	365	2,889	661	26	45	13	8	63	15	1	1
1915	29	4,472	1,093	497	2,238	595	24	25	24	11	50	13	1	1
1920	15	3,363	16	480	2,015	865	2	35	(1)	13	60	26	(1)	1
1922	18	2,859	480	425	1,337	552	9	56	17	15	47	19	(1)	2
1924	17	3,428	278	67	2,127	884	16	56	8	2	62	26	(1)	2
1926	13	2,488	138	-----	1,674	668	16	52	5	-----	67	24	1	2
1929	11	1,800	662	-----	700	418	8	18	37	-----	39	23	(1)	1

<sup>1</sup> Less than 1 per cent.

TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation—Puddling Mills

Occupation	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
Stockers.....	11	83	5.6	9.1	51.1	86	92.6	\$48.55	\$0.524	\$26.78	95.9	\$49.91	\$0.521
Puddlers.....	7	148	5.5	9.5	52.1	169	80.9	63.39	.784	40.85	84.4	65.29	.774
Puddlers, level-handed.....	9	593	5.3	8.8	46.3	702	76.5	67.34	.880	40.74	77.6	68.15	.878
Puddlers' helpers.....	8	166	5.5	9.4	51.7	191	76.4	39.68	.519	26.83	77.6	40.34	.520
Heaters.....	3	5	5.6	9.1	50.8	5	77.0	105.80	1.374	69.80	77.0	105.80	1.374
Heaters' helpers.....	2	4	5.6	9.4	52.9	4	58.9	35.95	.611	32.32	68.7	39.88	.581
Bloom boys.....	10	19	5.4	9.5	51.3	21	92.3	44.23	.479	24.57	97.6	45.67	.468
Roll engineers.....	9	16	6.1	10.1	62.1	16	123.7	66.80	.540	33.53	124.8	67.92	.544
Rollers.....	9	19	5.4	9.5	51.7	20	96.8	119.54	1.235	63.85	98.9	120.74	1.221
Roughers.....	8	22	5.3	9.2	48.1	23	87.8	66.09	.753	36.22	80.3	66.71	.747
Catchers.....	11	30	5.4	9.4	50.4	30	93.6	75.47	.805	40.62	95.4	76.55	.802
Hook-ups.....	10	27	5.4	9.6	52.2	28	93.1	50.36	.541	28.29	94.9	51.17	.540
Roll hands, other.....	3	4	5.5	10.1	55.3	5	82.8	39.69	.479	26.49	84.8	41.32	.487
Hotbed men.....	9	40	5.4	9.4	50.9	45	87.7	50.22	.572	29.11	90.2	51.28	.569
Shearmen.....	10	16	5.7	9.6	54.1	16	104.9	60.11	.573	31.00	107.1	61.17	.571
Laborers.....	9	66	5.7	9.5	54.5	78	88.8	34.54	.389	21.20	93.5	37.19	.398
Shearmen's helpers.....	10	28	5.6	9.7	54.0	28	102.2	47.43	.464	25.06	103.1	47.75	.463



TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929—Puddling Mills—Continued

## ALL EMPLOYEES—Continued

Customary turns and hours worked										Average hours per week	Number of employees who worked each specified combination of customary turns and hours
Day turns					Night turns						
Turns per week	Hours				Turns per week	Hours					
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week		
<b>PUDDLERS, LEVEL HANDED, ONLY</b>											
6	10	8		58						58	26
6	10	6		56	5	10				53	21
6	9	8		53						53	20
6	9	7½		52½						52½	24
5	10			50						50	17
5	9	9		54	5	9				49½	205
5	8½			42½	5	8½				42½	387
5	6			30	5	6				30	2
Total											702

TABLE E.—Average and classified full-time hours per week in five specified occupations, 1929—Puddling Mills

Occupation	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—						
				Under 40	40, under 44	44, under 48	Over 48, under 56	Over 56, under 60	60	72
				Puddlers.....	7	169	52.1	11		
Puddlers, level-handed.....	9	702	46.3	2	387		287	28		
Puddlers' helpers.....	8	191	51.7	16	6		181	8		
Rollers.....	9	20	51.7		4	1	10	4	1	
Laborers.....	9	78	54.5				53	3	20	2

**TABLE F.—Average and classified earnings per hour in five specified occupations, 1929—Puddling Mills**

Occupation	Number of employees	Average earnings per hour	Number of employees whose earnings in cents per hour were—																								
			Under 25	25, under 30	30, under 35	35, under 40	40, under 45	45, under 50	50, under 55	55, under 60	60, under 65	65, under 70	70, under 75	75, under 80	80, under 85	85, under 90	90, under 95	95, under 100	100, under 110	110, under 120	120, under 130	130, under 140	170, under 180	180, under 190	200, under 225	225, under 250	
Puddlers.....	169	\$0.784							2		1	1	38	100	5	3	9	8	1	1							
Puddlers, level-handed.....	702	.880							1	16	45	29	30	55	47	168	148	107	38	13	4	1					
Puddlers' helpers.....	191	.519	1	2	3	4	9	11	136	13	7		3	2													
Rollers.....	20	1.235											4	3						3							
Laborers.....	78	.389		6	2	21	48	1														1	4	1	1	1	

**TABLE G.—Average and classified hours actually worked by employees in five specified occupations in pay period covered, 1929—Puddling Mills**

Occupation	Number of employees	Average hours worked	Number of employees who during the pay period worked hours specified																						
			Under 32	32, under 40	40, under 48	48, under 56	56, under 64	64, under 72	72, under 80	80	Over 80, under 88	88	Over 88, under 96	96	Over 96, under 104	104	Over 104, under 112	Over 112, under 120	120	Over 120, under 132	Over 132, under 144	144	Over 144, under 156	Over 156, under 168	
Puddlers.....	169	84.4	8	2	4	16	28	7	9	14	8	6	6	8	25	3	23	2							
Puddlers, level-handed.....	702	77.6	64	35	25	37	44	29	44	8	85	5	204	2	100	4	16								
Puddlers, helpers.....	191	77.6	27	5	8	14	19	16	6	11	6	11	14	6	21	5	18	1				3			
Rollers.....	20	98.9	1	1			2		1				5				4	4							
Laborers.....	78	93.5	9	1	5	3	2	2	3	2	3		1	2	11		11	4	8	4	4	1	1	1	

PUDDLING MILLS





## BLOOMING MILLS

Data for 1929 were collected from pay rolls of 30 blooming-mill establishments located in 9 States and cover 6,266 employees in all occupations. Of this number, 1,686 were in the principal occupations, for which separate figures are shown. While the 1929 study includes 3 more establishments than were covered in 1926, the total number of employees in all occupations was increased by only 78 and in the principal occupations by only 16. Comparable data for this department were first obtained in 1910, the 1910 to 1914 figures obtained being for principal occupations only, while 1914 and all subsequent years include all employees in all occupations.<sup>1</sup> Comparable data are presented in Table A for employees in the principal occupations from 1910 to 1929.

While the hours of labor of blooming-mill employees have decreased materially in recent years, there was a slight increase in 1929 over 1926 for the department as a whole. Average hours per week were 54.2 in 1926, the lowest figure shown for any year, as compared with 55 in 1929, which shows a considerable decrease in full-time hours from 70.5 in 1914. Until the summer of 1923 this department, while showing a gradual decrease from earlier years in working time of employees, was still largely on a 12-hour basis, with some of the employees working 7 days per week. There was a general reduction in the daily hours of labor in the latter part of 1923, a large number of the plants having adopted the 8-hour day, which brought full-time weekly hours down to 54.6 in 1924. Average full-time hours per week, earnings per hour, and full-time earnings per week for the department as a whole from 1913 to 1929 are shown in Table 1, page 4.

A comparison of full-time hours per week for employees in the various principal occupations may be made from Table A. In 1914 the average full-time hours per week for all employees in the principal occupations combined were 67.9 as compared with 70.5 for all employees in all occupations. In 1929, when the average for all employees in all occupations was 55 hours per week, the average for all employees in the principal occupations combined was 55.2 hours. When attention is turned to the various occupations, it will be observed that 11 out of the 12 principal occupations had an increase in average full-time hours per week in 1929 over similar figures for 1926, these increases ranging from 0.1 hour for bottom makers to 2.7 hours for shearmen's helpers. The occupation of bottom makers' helpers was the only one to show a decrease in average hours per week, the average for 1926 being 54.4 as compared with 53.7 for 1929. The average of 57 hours for laborers was the highest, while that of 53.4 for rollers was the lowest.

While hours per day and per week were less in the years 1924, 1926, and 1929 than in 1922 and earlier years, there has been a tendency toward an increase in 7-day week work. Most plants do not operate on a 7-day week basis, but "light up" and repair work furnishes a 7-day week for a part of the force. Table B shows that in 1914 there

<sup>1</sup> Data were not obtained in 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

were only 11 per cent of all employees working on a 7-day week basis, while 74 per cent worked 6 days per week regularly and 10 per cent of the employees alternated or rotated from 6 to 7 days per week. These percentages did not change to any great extent until 1920, when 15 per cent of all employees regularly worked a week of 7 days and the number of 6-day workers decreased to 67 per cent. In 1922 there was a further increase in 7-day workers to 18 per cent and a decrease in 6-day workers to 56 per cent, while 21 per cent alternated or rotated from 6 to 7 days. After the adoption of the 8-hour day in 1923 weekly turns had increased until 21 per cent in 1924 were working 7 days a week regularly and 35 per cent alternated or rotated from 6 to 7 days, while only 38 per cent worked a 6-day week regularly. Seven-day work decreased somewhat in 1926. Comparing 1929 with 1926, the per cent of 6-day workers remained the same for both years, 46, while the per cent of 7-day workers increased from 20 in 1926 to 31 in 1929 and the number who alternated or rotated from 6 to 7 days remained unchanged. The increase in per cent of 7-day workers in 1929 is due in part to changes in working time in some plants covered in both years and to the inclusion in the 1929 survey of plants not covered in earlier years, in which most employees were on a 7-day week basis.

From Table D a good idea of the working time of employees may be obtained. By grouping the employees according to the hours per day, it may be seen that in 1929, of the 6,266 employees covered, 4,399 had working time of 8 hours or less per day, of which 1,887 regularly worked a 6-day week and 1,433 a 7-day week. Only 180 worked as many as 12 hours per day regularly or its equivalent—that is, 11 hours one week and 13 the next—or 10½ one week and 13½ the next, etc. The figures presented in Table D cover many miscellaneous employees who are not directly connected with production, and in order to show conditions as they apply to the producing crew separate figures are given for the occupation of rollers. Of the 87 employees who worked as rollers during the pay period, 69 worked 8 hours per day, while only 4 had a day of 12 hours; 33 employees had a working week of less than 50 hours, 40 a week of over 50 and under 60 hours, and the remaining 14 one of 60 hours or over.

Table E shows the distribution of employees in six principal occupations according of their average full-time hours per week. From this table it is seen that 249 of these employees had an average week of 48 hours and 25 an average of 84 and over, while 569 had an average of between 48 and 60 hours. While hours of labor in blooming mills showed little change from 1924 to 1929, the trend in hourly earnings has been decidedly upward. In 1914 the average hourly earnings for all employees was 26.9 cents, which increased to 65.9 cents in 1920 and then dropped to 47.2 cents in 1922, the lowest figure shown by any survey since the war period. Average earnings then steadily increased to 61.3 cents in 1924, to 62.7 cents in 1926, and to 66.6 cents in 1929, which is the highest average shown for any year, being an increase of 148 per cent over 1914, or practically two and one-half times the earnings in 1914. The hourly earnings for the various principal occupations are shown in Table A.

The hourly earnings of rollers may be taken as example of the increases that have taken place since 1910, the first year for which figures were obtained. In 1910 rollers earned an average of 60.5

cents per hour as compared with 70.1 cents in 1913. In 1914 and 1915 hourly earnings decreased slightly, but increased to 91.2 cents in 1917. In 1920, when hourly earnings for the industry as a whole reached their highest point, rollers received an average of \$1.473 per hour. Earnings fell, however, to \$1.175 in 1922, but increased again to \$1.400 in 1924, to \$1.498 in 1926, and to \$1.542 in 1929, which is higher than the average for any other year.

A distribution by average hourly earnings of the employees in six of the principal occupations in 1929 is shown in Table F. From this table may be seen the number receiving the various rates per hour. Hourly earnings for the other occupations of similar skill would show the same general spread as the distribution shown for these occupations.

Average full-time weekly earnings in 1929 show a large increase over 1914 and 1915, and were higher than in any previous year, with the exception of 1920, when they reached their highest point. In 1914 the average full-time weekly earnings for all employees were \$18.96, in 1915 the figure stood at \$19.03, and in 1920 the average had risen to \$44.48, but in 1922 had decreased to \$32.10. Between 1922 and 1926 there was an increase from \$32.10 to \$33.98 and another increase in 1929 to \$36.63. Weekly earnings for the various principal occupations show like increases. Again using rollers as an example, it will be seen that they earned \$40 in 1910, \$44.98 in 1913, \$84.73 in 1920, and \$71.31 in 1922. Between 1922 and 1924 there was a material reduction in the full-time hours per week, but the increase in hourly earnings during the same period more than compensated for this decrease in hours and full-time weekly earnings in 1924 were higher than in 1922, being \$72.99 and \$71.31, respectively. In 1926 the average was \$77.90, or \$4.44 less than the 1929 average of \$82.34, the highest point since 1920.

The 1,686 employees in the principal occupations worked an average of 106.1 hours during the 15-day period covered by the 1929 survey and received an average of \$87.92. During the same period the 6,266 employees in all occupations worked an average of 107.4 hours and earned an average of \$71.54. The hours and earnings of employees in the principal occupations include all of the hours worked and the earnings received by these employees, as shown in Table C. Roll engineers worked the most time, 114.1 hours, and laborers the least, 96.9 hours. Laborers also earned the least money, \$45.08, while rollers earned the most, \$169.02.

A classification of employees in six principal occupations according to hours worked is shown in Table G. This table shows the total time worked by each employee during the pay-roll period scheduled. Rollers worked from 40 and under 48 to 156 hours, while there were 67 laborers who worked less than 32 hours during the pay period and 1 who worked 192 hours and over.

In Table H a classification by earnings is made for the same six occupations. A considerable variation in earnings in the different occupations is shown. There were 40 laborers who earned less than \$5 and 1 who earned between \$90 and \$95 for the period, while the earnings of rollers ranged from \$70 and under \$75 to \$250 and over, 15 having earned \$200 and under \$250.

102 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Blooming Mills

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—							
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48, under 60	Over 48, under 60	Over 60, under 72	Over 72, under 84	84			
<b>Pit cranemen:</b>																
1910.....	18	99	69.6	\$0.315	\$21.41	100	85	84	---	18	---	11	51	4	16	
1911.....	18	95	68.8	.309	21.01	99	84	83	---	19	---	15	49	6	11	
1912.....	18	97	68.7	.328	22.33	99	89	88	---	19	---	19	46	6	10	
1913.....	19	115	69.3	.369	25.39	100	100	100	---	16	---	12	52	16	4	
1914.....	23	124	66.6	.357	23.29	96	97	92	5	17	3	11	44	16	3	
1915.....	23	119	66.7	.375	24.44	96	102	96	5	20	3	5	44	22	1	
1917.....	12	71	66.0	.546	35.02	95	148	138	21	9	---	---	56	14	---	
1919.....	19	138	67.2	.816	54.84	97	221	216	6	24	---	---	46	17	---	
1920.....	20	138	62.4	.871	54.07	90	236	213	12	36	---	---	33	14	---	
1922.....	24	156	68.6	.611	42.00	99	166	165	---	25	3	6	18	37	---	
1924.....	25	189	54.8	.803	43.89	79	218	173	22	55	5	12	1	3	6	
1926.....	27	201	53.4	.855	46.43	78	232	183	24	59	---	12	1	2	2	
1929.....	30	217	55.4	.919	50.91	80	249	201	13	70	---	13	1	---	2	
<b>Heaters:</b>																
1910.....	19	51	73.4	.521	37.88	103	88	90	---	6	---	4	61	8	22	
1911.....	19	49	73.3	.512	37.50	103	86	90	---	6	2	8	51	12	20	
1912.....	19	55	72.9	.552	40.14	102	93	96	---	5	2	7	60	7	18	
1913.....	19	79	71.2	.594	41.86	100	100	100	---	19	---	5	38	23	15	
1914.....	23	89	69.3	.542	37.03	97	91	88	---	24	2	1	46	16	11	
1915.....	23	84	69.9	.584	40.06	98	98	96	---	21	2	1	42	24	10	
1917.....	12	47	65.7	.756	49.85	92	127	119	19	13	---	---	55	9	4	
1919.....	18	94	68.7	1.191	81.82	96	201	195	11	15	---	---	49	15	11	
1920.....	20	106	64.8	1.271	81.92	91	214	196	7	29	1	---	33	23	2	
1922.....	24	115	68.9	.904	62.18	97	152	149	---	23	---	12	32	28	5	
1924.....	25	139	55.2	1.192	65.66	78	201	157	7	78	---	---	8	1	1	
1926.....	27	122	54.4	1.244	67.67	76	209	162	11	76	---	10	1	1	1	
1929.....	30	151	54.9	1.358	74.55	77	229	178	13	75	---	8	1	---	2	
<b>Heaters' helpers:</b>																
1910.....	11	34	73.4	.344	24.62	114	96	108	---	9	---	12	35	26	18	
1911.....	11	34	73.5	.363	26.71	114	101	117	---	9	---	12	35	18	26	
1912.....	11	50	67.9	.352	23.63	105	98	104	---	30	---	8	32	12	18	
1913.....	10	52	64.6	.359	22.76	100	100	100	---	40	---	8	19	31	2	
1914.....	10	43	64.0	.337	20.95	99	94	92	7	35	9	---	14	33	2	
1915.....	10	39	62.1	.369	22.48	96	103	99	---	46	10	---	26	15	3	
1917.....	3	15	59.2	.611	37.66	92	170	165	60	---	---	---	13	27	---	
1919.....	13	62	64.1	.818	52.43	99	228	230	5	37	---	---	5	40	6	
1920.....	14	77	60.3	.828	49.37	93	231	217	5	51	---	---	8	10	26	
1922.....	17	90	65.6	.654	43.51	102	182	191	---	42	2	4	17	29	6	
1924.....	17	108	55.2	.827	45.76	85	230	201	9	76	4	5	---	6	---	
1926.....	18	81	54.9	.864	47.43	85	241	208	7	78	2	7	---	5	---	
1929.....	18	79	56.4	.853	48.11	87	238	211	9	75	---	9	---	---	8	
<b>Bottom makers:</b>																
1910.....	16	60	70.5	.335	23.26	96	91	88	---	10	---	3	80	---	7	
1911.....	16	55	70.8	.331	23.24	98	90	88	---	11	---	5	67	9	7	
1912.....	16	58	70.9	.347	24.44	99	95	93	---	10	---	5	69	9	7	
1913.....	15	62	71.9	.367	26.32	100	100	100	---	19	---	6	48	26	10	
1914.....	20	79	68.6	.370	24.68	95	101	94	4	10	---	5	39	28	5	
1915.....	20	76	68.5	.389	25.77	95	106	98	4	20	---	5	38	33	3	
1917.....	11	38	70.8	.497	34.59	98	135	131	---	16	---	---	53	26	5	
1919.....	16	104	69.4	.833	57.81	97	227	220	8	10	---	---	2	63	14	
1920.....	17	122	63.2	.890	56.50	88	243	215	16	25	---	16	25	20	---	
1922.....	21	119	66.6	.602	40.22	93	164	153	7	24	2	11	29	18	922	
1924.....	23	162	53.3	.769	40.99	74	210	156	28	55	3	10	---	3	---	
1926.....	25	128	53.9	.791	42.63	75	216	162	26	54	---	15	---	5	---	
1929.....	29	136	64.0	.860	46.44	76	234	176	18	65	1	10	1	---	---	



104 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—**Blowing Mills**—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—						
						Full time hours per week	Earnings per hour	Full-time earnings per week	48, under	Over 48, under 60	60, under 72	Over 72, under 84	84		
<b>Shearmen:</b>															
1910.....	19	48	70.0	\$0.303	\$20.85	104	82	86	6	6	8	58	13	8	
1911.....	19	46	69.4	.306	20.96	103	83	87	7	7	13	61	9	4	
1912.....	19	52	69.8	.319	21.93	104	86	91	6	6	12	65	8	4	
1913.....	19	56	67.2	.370	24.23	100	100	100	16	5	11	50	18	.....	
1914.....	23	65	65.0	.345	21.84	97	93	90	14	14	3	8	62	.....	
1915.....	23	62	65.9	.362	23.09	98	98	95	10	15	3	6	66	.....	
1917.....	12	30	65.9	.523	33.41	98	141	138	20	10	.....	57	13	.....	
1919.....	19	59	64.9	.816	52.96	97	221	219	24	10	3	53	7	3	
1920.....	20	78	59.4	.813	48.27	88	220	199	31	21	3	5	28	3	
1922.....	24	90	62.8	.599	37.89	93	162	156	13	23	4	14	29	16	
1924.....	24	96	51.7	.777	40.23	77	210	166	36	48	10	3	2	.....	
1926.....	26	84	51.5	.812	41.82	77	219	173	36	49	14	1	1	.....	
1929.....	29	91	53.5	.864	46.22	80	234	191	35	51	7	4	1	2	
<b>Shearmen's helpers:</b>															
1920.....	18	100	70.9	.218	15.15	102	82	83	3	9	8	56	10	14	
1911.....	18	96	69.5	.217	14.90	100	81	82	3	9	15	58	13	10	
1912.....	18	99	70.2	.230	15.93	101	86	88	9	9	14	65	10	10	
1913.....	18	111	69.5	.267	18.17	106	100	100	5	8	9	56	22	.....	
1914.....	20	113	68.4	.256	17.23	98	96	95	3	11	5	2	80	.....	
1915.....	20	114	68.5	.258	17.35	99	97	95	3	11	5	2	78	2	
1917.....	10	29	68.1	.412	27.60	98	154	152	10	10	.....	66	14	.....	
1919.....	19	159	68.8	.610	41.97	99	228	231	8	10	7	65	6	1	
1920.....	19	168	62.7	.619	38.95	90	232	214	16	18	2	7	48	8	
1922.....	23	218	64.6	.459	29.76	93	172	164	2	26	4	20	30	18	
1924.....	23	254	52.5	.590	30.57	76	221	168	43	37	10	8	2	.....	
1926.....	23	168	52.2	.601	31.37	75	225	173	37	39	19	2	3	.....	
1929.....	25	134	54.9	.622	34.15	79	233	188	28	47	14	4	2	4	
<b>Laborers:</b>															
1910.....	19	449	74.1	.162	11.97	101	88	88	.....	1	2	13	54	6	24
1911.....	19	363	73.7	.163	12.02	100	89	89	.....	1	4	9	59	9	18
1912.....	19	396	73.8	.164	12.13	101	89	90	.....	1	3	10	57	11	18
1913.....	19	352	73.4	.184	13.53	100	100	100	.....	1	3	16	54	12	14
1914.....	22	267	71.7	.187	13.39	98	102	999	(1)	.....	4	17	69	5	4
1915.....	22	290	72.3	.187	13.49	99	102	100	(1)	.....	2	16	66	13	3
1917.....	11	388	74.3	.287	21.28	101	156	157	.....	5	.....	66	28	1	
1919.....	10	440	70.0	.469	32.83	95	255	243	13	3	1	14	43	16	11
1920.....	18	439	71.1	.511	36.43	97	278	269	12	(1)	3	10	38	22	15
1922.....	23	682	70.7	.350	24.84	96	190	184	1	10	14	5	35	34	1
1924.....	24	742	57.4	.462	26.51	78	251	196	30	22	27	19	2	.....	
1926.....	22	420	56.3	.451	25.39	77	245	188	39	16	27	14	4	.....	
1929.....	28	423	57.0	.463	26.39	78	252	195	32	33	20	12	.....	.....	

<sup>1</sup> Less than 1 per cent.

TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by district and year—Bloomington Mills

District and year	Number of plants	Number of employees	Number of employees whose customary turns per week were—							Per cent of employees whose customary turns per week were—								
			5	5 and 6 alternately	5, 6, and 6 in rotation	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	5	5 and 6 alternately	5, 6, and 6 in rotation	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7
<b>Eastern:</b>																		
1914.....	3	248	42	50	-----	128	-----	10	-----	18	17	20	-----	52	-----	4	-----	7
1915.....	3	330	52	38	-----	118	-----	11	-----	20	22	18	-----	40	-----	5	-----	8
1920.....	3	248	40	8	-----	155	-----	29	-----	16	16	3	-----	63	-----	12	-----	6
1923.....	5	630	1	41	-----	346	-----	156	-----	86	( <sup>1</sup> )	7	-----	58	-----	25	-----	14
1924.....	5	603	-----	48	-----	289	-----	126	29	112	-----	8	-----	48	-----	21	5	19
1926.....	5	743	-----	36	6	351	-----	230	-----	130	-----	5	1	47	-----	30	-----	17
1929.....	5	639	-----	35	7	288	-----	113	-----	196	-----	5	1	45	-----	18	-----	31
<b>Pittsburgh:</b>																		
1914.....	10	1,216	-----	-----	-----	879	69	189	3	136	-----	-----	-----	72	6	11	( <sup>1</sup> )	11
1915.....	10	1,364	-----	-----	-----	966	69	192	3	123	-----	-----	-----	71	5	14	( <sup>1</sup> )	10
1920.....	8	1,750	1	9	-----	1,154	21	397	-----	168	( <sup>1</sup> )	1	-----	66	1	29	-----	10
1923.....	8	1,716	3	184	-----	683	78	267	9	272	( <sup>1</sup> )	11	-----	51	5	17	-----	16
1924.....	8	2,650	-----	309	-----	1,133	643	28	61	476	-----	12	-----	43	24	1	-----	18
1926.....	9	2,788	3	-----	660	1,375	285	133	64	288	( <sup>1</sup> )	-----	24	49	10	5	-----	10
1929.....	10	3,024	-----	-----	-----	1,772	148	17	294	793	-----	-----	-----	59	5	1	10	26
<b>Great Lakes and Middle West:</b>																		
1914.....	7	744	-----	-----	-----	652	6	28	7	51	-----	-----	-----	68	1	4	-----	7
1915.....	7	792	-----	-----	-----	672	12	34	18	50	-----	-----	-----	85	2	4	-----	7
1920.....	6	1,266	-----	-----	-----	811	27	81	19	328	-----	-----	-----	64	2	6	-----	26
1923.....	8	1,610	-----	-----	-----	870	70	264	86	360	-----	-----	-----	54	4	16	-----	22
1924.....	9	1,959	-----	-----	-----	630	419	37	467	406	-----	-----	-----	32	21	3	24	21
1926.....	9	2,058	-----	-----	-----	838	200	41	319	658	-----	-----	-----	41	10	2	16	32
1929.....	11	2,123	-----	-----	-----	644	361	45	266	812	-----	-----	-----	30	17	2	13	38
<b>Southern:</b>																		
1914.....	3	268	-----	-----	-----	184	-----	5	-----	79	-----	-----	-----	69	-----	2	-----	29
1915.....	3	264	-----	-----	-----	174	-----	5	-----	85	-----	-----	-----	66	-----	2	-----	32
1920.....	3	388	-----	-----	-----	333	16	8	-----	31	-----	-----	-----	86	4	2	-----	8
1923.....	3	456	-----	-----	-----	354	-----	43	-----	58	-----	-----	-----	78	-----	0	-----	12
1924.....	3	437	-----	-----	-----	122	-----	37	108	170	-----	-----	-----	28	-----	8	25	39
1926.....	4	601	-----	-----	-----	262	-----	19	106	191	-----	-----	-----	47	-----	3	18	32
1929.....	4	475	-----	-----	-----	172	-----	7	172	124	-----	-----	-----	36	-----	1	36	26
<b>Total:</b>																		
1914.....	23	2,476	42	50	-----	1,943	75	172	10	284	2	2	-----	74	3	7	( <sup>1</sup> )	11
1915.....	23	2,659	52	38	-----	1,930	81	243	21	294	2	1	-----	73	3	9	-----	11
1920.....	20	3,662	41	17	-----	2,453	64	515	19	543	1	-----	-----	67	2	14	-----	15
1923.....	24	4,411	4	225	-----	2,453	148	740	65	776	( <sup>1</sup> )	-----	-----	56	3	17	-----	18
1924.....	26	5,649	-----	357	-----	2,174	1,062	227	665	1,164	-----	-----	-----	38	19	4	12	21
1926.....	27	6,188	3	36	666	2,846	465	413	492	1,267	( <sup>1</sup> )	-----	11	46	8	7	-----	20
1929.....	30	6,266	-----	35	7	2,876	509	182	732	1,926	-----	-----	( <sup>1</sup> )	46	8	3	12	31

<sup>1</sup> Less than 1 per cent.

TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—**Blooming Mills**

Occupations and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)								
		Number	Average customary full-time of employees in the position			Number	Averages for specified occupation only—				Averages for specified and any other occupations			
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Average per hour	
<b>Pit cranemen:</b>														
Eastern.....	5	35	6.5	10.2	66.4	35	131.4	\$103.69	\$0.789	\$52.39	134.3	\$105.40	\$0.785	
Pittsburgh.....	10	70	6.4	8.1	51.5	72	108.2	101.39	.937	48.26	109.8	102.37	.932	
Great Lakes and Middle West.....	11	81	6.6	8.0	53.4	87	103.1	104.00	1.009	53.88	104.3	104.89	1.005	
Southern.....	4	23	6.7	8.5	57.0	23	119.3	94.62	.793	45.20	119.3	94.62	.793	
<b>Total.....</b>	<b>30</b>	<b>209</b>	<b>6.5</b>	<b>8.5</b>	<b>55.4</b>	<b>217</b>	<b>111.1</b>	<b>102.09</b>	<b>.919</b>	<b>50.91</b>	<b>112.6</b>	<b>103.05</b>	<b>.915</b>	
<b>Heaters:</b>														
Eastern.....	5	16	6.4	10.4	66.8	17	124.0	156.94	1.266	84.57	128.1	158.69	1.239	
Pittsburgh.....	10	58	6.5	8.0	51.8	63	96.5	139.49	1.446	74.90	97.2	140.20	1.442	
Great Lakes and Middle West.....	11	59	6.7	8.0	54.0	60	111.5	150.49	1.349	72.85	113.5	152.31	1.342	
Southern.....	4	11	6.7	8.7	58.2	11	118.5	135.32	1.142	66.46	118.5	135.32	1.142	
<b>Total.....</b>	<b>30</b>	<b>144</b>	<b>6.6</b>	<b>8.3</b>	<b>54.9</b>	<b>151</b>	<b>107.2</b>	<b>145.52</b>	<b>1.358</b>	<b>74.55</b>	<b>108.7</b>	<b>146.74</b>	<b>1.350</b>	
<b>Heaters' helpers:</b>														
Eastern.....	5	18	6.4	10.5	68.1	19	117.4	77.62	.661	45.01	126.2	85.88	.686	
Pittsburgh.....	3	16	6.4	8.0	50.6	19	94.6	79.04	.836	42.30	95.5	79.58	.834	
Great Lakes and Middle West.....	7	27	6.6	8.0	52.8	30	97.0	95.07	.981	51.80	106.6	104.71	.982	
Southern.....	3	11	6.8	8.0	54.5	11	116.0	107.14	.923	50.30	124.6	116.44	.935	
<b>Total.....</b>	<b>18</b>	<b>72</b>	<b>6.5</b>	<b>8.6</b>	<b>56.4</b>	<b>79</b>	<b>104.0</b>	<b>88.70</b>	<b>.853</b>	<b>48.11</b>	<b>111.2</b>	<b>95.77</b>	<b>.862</b>	
<b>Bottom makers:</b>														
Eastern.....	4	18	6.7	9.7	64.3	20	109.2	65.08	.596	38.32	112.7	68.57	.591	
Pittsburgh.....	10	50	6.4	8.0	51.4	57	91.2	93.14	1.021	52.48	100.3	99.69	.994	
Great Lakes and Middle West.....	11	44	6.5	8.0	51.8	46	104.2	91.57	.879	45.53	107.5	94.98	.884	
Southern.....	4	13	6.7	8.6	57.2	13	114.9	72.21	.629	35.98	121.8	78.08	.641	
<b>Total.....</b>	<b>29</b>	<b>125</b>	<b>6.5</b>	<b>8.3</b>	<b>54.0</b>	<b>136</b>	<b>100.5</b>	<b>86.48</b>	<b>.860</b>	<b>46.44</b>	<b>106.6</b>	<b>91.16</b>	<b>.855</b>	



<b>Bottom makers' helpers:</b>													
Eastern.....	2	24	6.0	10.0	60.4	26	108.5	68.10	.628	37.93	115.2	71.36	.619
Pittsburgh.....	9	51	6.3	8.0	50.3	54	95.8	67.20	.702	35.31	103.9	74.92	.721
Great Lakes and Middle West.....	10	56	6.4	8.0	51.5	61	98.8	72.38	.732	37.70	104.8	76.76	.732
Southern.....	4	22	6.6	9.1	59.6	23	118.2	65.51	.470	28.01	130.1	61.77	.475
Total.....	25	153	6.3	8.5	53.7	164	102.1	67.63	.663	35.60	109.7	73.20	.667
<b>Roll engineers:</b>													
Eastern.....	4	10	6.4	10.2	65.7	10	125.1	113.93	.911	59.85	127.5	115.45	.905
Pittsburgh.....	8	23	6.7	8.2	54.4	25	105.1	107.95	1.027	55.87	105.5	109.30	1.026
Great Lakes and Middle West.....	7	22	6.6	8.2	54.0	23	107.5	119.85	1.115	60.21	107.5	119.85	1.115
Southern.....	3	7	6.6	8.9	58.9	7	146.8	118.69	.808	47.59	146.8	118.69	.808
Total.....	22	62	6.6	8.6	56.6	65	113.5	114.24	1.006	56.94	114.1	114.61	1.005
<b>Rollers:</b>													
Eastern.....	5	12	6.1	10.2	62.4	12	118.4	171.56	1.449	90.42	118.4	171.56	1.449
Pittsburgh.....	10	29	6.3	8.1	51.2	30	101.7	165.39	1.626	83.25	101.7	165.39	1.626
Great Lakes and Middle West.....	11	35	6.4	8.0	51.1	36	103.9	166.31	1.601	81.81	107.0	171.89	1.607
Southern.....	4	9	6.2	9.3	57.8	9	132.6	166.22	1.254	72.48	132.6	166.22	1.254
Total.....	30	85	6.3	8.5	53.4	87	108.1	166.71	1.542	82.34	109.4	169.02	1.545
<b>Manipulators:</b>													
Eastern.....	5	19	6.2	10.4	65.3	20	110.8	90.69	.819	53.48	116.1	95.40	.822
Pittsburgh.....	10	29	6.3	8.1	51.2	30	99.9	110.78	1.109	56.78	103.5	113.70	1.099
Great Lakes and Middle West.....	11	34	6.4	8.0	50.9	34	106.0	112.60	1.073	54.62	107.7	115.46	1.072
Southern.....	3	7	6.3	8.6	53.7	7	124.7	112.70	.904	48.54	127.9	116.82	.913
Total.....	29	89	6.3	8.6	54.3	91	106.1	107.19	1.010	54.84	109.7	110.58	1.006
<b>Table men:</b>													
Eastern.....	2	6	6.5	11.2	73.8	8	101.4	42.24	.417	30.77	118.6	48.60	.409
Pittsburgh.....	4	15	6.4	8.0	51.3	15	86.8	72.29	.833	42.73	92.1	75.42	.819
Great Lakes and Middle West.....	6	15	6.3	8.0	50.2	17	82.6	57.88	.701	35.19	86.9	60.96	.702
Southern.....	3	7	6.3	9.1	57.1	8	108.4	58.59	.541	30.89	111.7	60.77	.544
Total.....	15	43	6.3	8.6	55.0	48	91.3	59.89	.656	36.08	98.0	63.37	.647
<b>Shearmen:</b>													
Eastern.....	5	12	6.1	10.2	62.4	12	119.1	92.54	.777	48.48	122.7	96.18	.784
Pittsburgh.....	10	34	6.4	8.2	52.7	35	102.2	91.62	.897	47.27	103.8	93.06	.897
Great Lakes and Middle West.....	11	38	6.4	8.0	51.2	38	106.6	95.96	.900	46.06	111.9	99.07	.886
Southern.....	3	6	6.3	8.7	54.7	6	108.2	71.08	.657	35.94	115.2	74.36	.646
Total.....	29	90	6.3	8.4	53.5	91	106.7	92.20	.864	46.22	110.4	94.75	.858

**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Blooming Mills—Continued**

Occupations and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the position			Number	Averages for specified occupation only—				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Average per hour
<b>Shearmens' helpers:</b>													
Eastern.....	5	38	6.1	10.0	60.9	40	108.9	\$65.95	\$0.606	\$36.91	111.3	\$67.69	\$0.608
Pittsburgh.....	9	42	6.3	8.3	52.6	47	95.1	60.02	.631	33.19	100.0	63.67	.636
Great Lakes and Middle West.....	8	32	6.3	8.0	50.6	34	104.0	70.76	.680	34.41	111.9	75.66	.676
Southern.....	3	10	6.3	8.8	55.5	13	79.0	35.23	.446	24.75	91.1	41.38	.454
<b>Total.....</b>	<b>25</b>	<b>122</b>	<b>6.2</b>	<b>8.8</b>	<b>54.9</b>	<b>134</b>	<b>99.9</b>	<b>62.11</b>	<b>.622</b>	<b>34.15</b>	<b>105.5</b>	<b>65.71</b>	<b>.623</b>
<b>Laborers:</b>													
Eastern.....	5	25	6.1	10.2	62.5	27	104.3	39.57	.379	23.69	107.2	41.06	.383
Pittsburgh.....	10	175	6.3	8.9	56.0	236	85.5	39.95	.467	26.15	89.1	41.92	.470
Great Lakes and Middle West.....	9	107	6.6	8.6	56.5	121	99.5	51.69	.519	29.32	108.7	55.55	.521
Southern.....	4	33	6.3	9.5	59.7	39	96.6	31.62	.327	19.62	106.8	34.48	.323
<b>Total.....</b>	<b>28</b>	<b>340</b>	<b>6.4</b>	<b>8.9</b>	<b>57.0</b>	<b>423</b>	<b>91.7</b>	<b>42.52</b>	<b>.463</b>	<b>26.39</b>	<b>96.9</b>	<b>45.06</b>	<b>.465</b>

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bloomington Mills

Customary turns and hours worked									Number of employees who worked each specified combination of customary turns and hours, by district				
Day turns				Night turns				Average hours per week	Eastern	Pittsburgh	Great Lakes and Middle West	Southern	Total
Turns per week	Hours			Turns per week	Hours								
	Monday to Friday	Saturday	Sunday		Monday to Friday	Saturday	Sunday						
7	12	12	12	84				84	5			1	6
7	11	11	11½	77½				77½	1				1
7	11	11	11	77				77		1			1
7	11	10	9	74				74	1				1
6	12	12	12	72				72				1	1
7	11	9	6	70				70					1
7	10	10	10	70				70	11	80	48	11	150
7	10	10	9½	69½				69½		2			2
6	11½	11½		69				69				2	2
7	10	9	10	69				69			5		5
7	10	10	8	68				68	21				21
7	9½	9½	9½	66½				66½			2		2
6	11	11		66				66				12	12
8	10	10		60				65	2				2
7	10	10	10	70				63			1		1
7	9	9	9	63				61½	1				1
6	10½	10½		61½				60			70		77
6	10	10	10	60				60	37	49	46	12	144
6	10	10	10	60				60		1			1
6	10	9		59				59			1		1
6	10	7		57				57		6			6
6	10	9½		57				57	1				1
7	8	8	8	56				56		19	61	1	81
6	10	5½		55½				55½	45				45
6	10	5		55				55				6	6
6	9	9	9	54				54			7		7
6	9	9		54				54		4			4
7	8	8	8	56				52		2			2
6	8	8		48				52			1		1
6	8	8	8	48				51	2				2
7	8½	8½		51				48		43	78	3	124
6	8	8		48				44½		1			1
6	8	4½		44½				44		3			3
6	8	4		44									
Total									128	212	319	56	716

Group B.—Night turn only

					7	12	12	12	84	84	4	6		1	11
					7	11½	11½	11½	80½	80½		1			1
					6	12	12	12	72	72				1	1
					7	10	10	10	70	70	1		1	1	3
					6	10	10	10	60	60			1	1	1
					6	10	10	10	60	60	1	4	1	2	8
					7	8	8	8	56	56		3	9		12
					6	8	8	8	48	48		3			3
Total											6	17	12	5	40

Group C.—Weekly changes from one shift to another

7	11	11	12	78	7	13	13	13	91	84½					2
7	12	12	12	84	7	12	12	12	84	84	66			1	67
7	10½	10½	10½	73½	7	13½	13½	13½	94½	84				8	8
7	10	10	10	70	7	14	14	14	98	84		4			4
7	11	11	10	76	7	13	13	13	91	83½	2				2

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Blooming Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Mid-dle West	South-ern	Total
Turns per week	Hours				Turns per week	Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						

Group C.—Weekly changes from one shift to another—Continued

7	12	12	6	78	7	12	12	6	78	2	78					2
7	11	11	12	78	6	13	13	13	78	78	3					3
7	11	11	11	77	6	13	13	13	78	77½	14					14
6	11	11	11	66	7	12½	12½	12½	87½	76½	1					1
7	11	10	9	74	6	13	13	13	78	76	4					4
6	12	12	12	72	6	12	12	12	72	72	2					2
6	12	12	12	72	6	12	12	12	72	72	2				65	65
6	11	11	11	66	6	13	13	13	78	72	2				8	10
6	11	11	11	66	6	13	13	13	78	72	1					1
7	10	10	10	70	7	12½	10	12½	75	70½	50	97	15	1		163
7	11	11	11	77	6	13	13	13	78	70						
7	9½	9½	8	65	6	9½	9½	9½	57	69½	4					4
6	11½	11½	8	69	6	11½	11½	11½	69	69					1	1
7	9½	9½	8	65	7	9½	13	9½	70	67½	2					2
6	11	11	11	77	6	13	13	13	78	67½	4					4
6	9½	9½	9½	57	6	9½	9½	9½	57	67½						
7	10	10	10	70	6	10	10	10	60	66½					34	34
6	11	11	11	66	6	11	11	11	66	66					3	3
6	10	10	10	70	6	10	10	10	60	65						
7	10	10	10	70	6	10	10	10	60	65	75					79
6	10	10	10	70	6	10	10	10	60	65		4				3
6	10	10	10	60	7	10	10	10	70	65		1				3
6	10	10	10	70	6	10	10	10	60	65	2					
6	10	10	10	60	7	10	10	10	70	65			1		5	10
6	10	10	10	60	6	11½	11½	11½	69	64½	4					2
6	10½	10½	63	63	6	10½	10½	10½	63	63						4
7	9	9	9	63	7	9	9	9	63	63					4	4
7	10	10	10	70	6	10	10	10	60	62½	7					7
6	10	10	10	60	6	10	10	10	60	62						
7	9½	9½	10	67	6	9½	9½	9½	57	62	2					2
7	9	9	8	62	7	9	9	8	62	62			4			4
7	9½	9½	2½	50½	7	9½	6	9½	63	61½	9					9
6	10	5½	55½	55½	6	10½	14	66½	61	61	2					2
7	9½	9½	8	65	6	9½	9½	9½	57	61						2
6	10	5½	55½	55½	6	10½	13½	64½	60½	60½	2					2
6	10	10	10	60	6	10	10	10	60	60		25				25
6	10	10	10	60	6	10	10	10	60	60			4			4
6	10	10	10	60	6	10	10	10	60	60	129	258		20		407
6	10	9	59	59	6	10	10	10	60	59½			24			24
6	9	9	54	54	7	9	9	9	63	58½			2			2
6	9½	9½	57	57	6	9½	9½	9½	57	57	40					40
6	10	5½	55½	55½	6	10½	6	57½	56½	56½	6					6
7	8	8	8	56	7	8	8	8	56	56			17			17
7	8	8	8	56	7	8	8	8	56	56	20	523	630	93		1,266
7	8	8	8	56	7	8	8	8	56	56						
7	8	8	4	52	7	8	8	12	60	56		50				50
7	8	8	8	56	7	8	8	8	56	56						
6	10	8	58	58	5	10½	8½	8½	53½	55½	2					2
7	8½	8½	50½	50½	6	8½	8½	8½	51	55½					2	2
7	8	8	4	52	7	8	8	12	60	54½		7				7
6	8	8	48	48	7	8	8	8	56	54½			6			6
6	9	9	54	54	6	9	9	9	54	54		4			2	6
6	9	9	54	54	6	9	9	9	54	54			20			20
7	8	8	8	56	7	8	8	8	56	54			19			19
6	8	8	48	48	7	8	8	8	56	54					4	4
6	8	8	48	48	6	10	10	10	60	54						
6	8	8	48	48	7	8	8	12	60	54		2				2
6	8	8	48	48	7	8	8	8	56	54		6				6
7	8	8	8	56	7	8	8	8	56	53½		7	6			13

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Blooming Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	Eastern	Pittsburgh	Great Lakes and Middle West	Southern	Total
Turns per week	Hours				Turns per week	Hours									
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week						

Group C.—Weekly changes from one shift to another—Continued

7	8	8	8	56	6	8	8	8	48	53½		84	85	32	201
7	8	8	8	56	6	8	8	8	48	53½		23	49		72
6	8	8	8	48	7	8	8	8	56	53½			3		3
6	8	12		52	7	8	12	8	60	53½		8			8
6	8	8		48	6	8	8	8	48	53½			162	123	106
6	10	5½		55½	5	10½	8	8	56	53½	33				33
7	8	8	8	56	7	8	8	7	55	53½		6			6
7	8	8	8	56	6	8	8	8	48	53		4			4
6	8	8	8	48	7	8	8	8	56	52			1		1
6	8	8	8	48	7	8	8	8	56	52			34		34
6	8	8	8	48	6	8	8	8	48	52			176		176
7	8	8	8	56	7	8	8	10	58	51½					
7	8	8	8	56	6	8	8	8	48	50½			1		1
7	8	8	8	56	6	8	8	8	48	50½		19	28		47
7	8	8	8	56	6	8	8	8	48	50½			39		39
7	8	8	8	56	6	8	8	8	48	50½		32	3		35
6	8	8		48	6	8	8	8	48	50½		3	3		6
6	8	8		48	6	8	8	8	56	50½			104		104
6	8	8		48	6	8	8	8	48	50½				1	1
6	8	8	8	48	6	8	8	7	55	50½		2			2
6	8	8	8	48	6	8	8	8	48	50½		84			84
6	8	12		52	6	8	8	8	48	49½		10			10
7	8	8	3	51	6	8	8	8	48	49			6		6
6	8	9		49	6	8	8	8	48	48½			20		20
6	8	8	8	48	6	8	8	8	48	48		7			7
6	8	8	8	48	6	8	8	8	48	48			1		1
6	8	8		48	6	8	8	8	48	48		6			6
6	8	8	8	48	6	8	8	8	48	48			2		2
6	8	8		48	6	8	8	8	48	48			132		132
6	8	8		48	6	8	8	8	48	48		11	175		186
6	8	8		48	6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	48	1,099	61			1,160
6	8	8		48	6	8	8	8	48	48		2			2
6	8	8		48	6	8	8	8	48	48		202			202
6	8	8		48	6	8	8	8	48	48			1	23	24
6	8		8	48	6	8	8	8	48	48		34			34
6	8	6		46	5	8	8	8	40	44½	7				7
Total											505	2,795	1,797	414	5,511

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bloomington Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	Eastern	Pittsburgh	Great Lakes and Middle West	Southern	Total
Turns per week	Hours				Turns per week	Hours									
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week						

ROLLERS ONLY

7	12	12	12	84						84	1				1
6	12	12		72	7	12	12	12	84	84	1				1
					7	10	10	10	72	72				1	1
7	10	10	10	70	6	12	12	10	70	70		2		1	2
6	10	10		60	6	10	10	10	60	60	6			2	8
6	9½	9½		57	6	9½	9½	9½	57	57	2				2
7	8	8	8	56	7	8	8	8	56	56		3			3
					7	8	8	8	56	56			1		1
7	8	8	8	56	7	8	8	8	56	56			2		2
6	8	8		48	7	8	8	8	56	54½		3			3
					7	8	11	8	59	59					
7	8	8	8	56	6	8	8	8	48	53½			3		3
					7	8	8	8	56	56					
6	8	8		48	7	8	8	8	56	53½			7	3	10
					7	8	8	8	56	56					
6	10	5½		55½	5	10½			51½	53½	2				2
6	8	8		48	7	8	8	8	56	52			2		2
6	8	8		48	6	8	8	8	48	51½			3		3
					7	8	8	10	58	58					
7	8	8	8	56	6	8	8	8	48	50½			3		3
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	50½			3		3
					7	8	8	8	56	56					
6	8	8		48	7	8	8	7	55	50½		3			3
					6	8	8	8	48	48					
6	8	9		49	6	8	8	8	48	48½			3		3
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	48		4			4
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	48			6		6
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	48		15			15
					6	8	8	8	48	48				2	2
6	8	8		48	6	8	8	8	48	48				2	2
6	8	8		48	6	8	8	8	48	48				1	1
					6	8	8	8	48	48					
Total											12	30	36	9	87

BLOOMING MILLS

TABLE E.—Average and classified full-time hours per week in six specified occupations, 1929, by district—Blooming Mills

Occupation and district	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—									
				48	Over 48, under 56	56	Over 56, under 60	60	Over 60, under 66	66, under 72	72	Over 72, under 84	84 and over
<b>Pit cranemen:</b>													
Eastern.....	5	35	66.4				4		23	4			4
Pittsburgh.....	10	72	51.5	25	31	14				2			
Great Lakes and Middle West.....	11	87	53.4	4	55	28							
Southern.....	4	23	57.0		9	11					3		
<b>Total.....</b>	<b>30</b>	<b>217</b>	<b>55.4</b>	<b>29</b>	<b>95</b>	<b>53</b>	<b>4</b>	<b>23</b>	<b>6</b>	<b>3</b>			<b>4</b>
<b>Heaters:</b>													
Eastern.....	5	17	66.8				2		8	4			3
Pittsburgh.....	10	63	51.8	18	33	12							
Great Lakes and Middle West.....	11	60	54.0	2	33	25							
Southern.....	4	11	58.2		3	6					2		
<b>Total.....</b>	<b>30</b>	<b>151</b>	<b>54.9</b>	<b>20</b>	<b>69</b>	<b>43</b>	<b>2</b>	<b>8</b>	<b>4</b>	<b>2</b>			<b>3</b>
<b>Bottom makers:</b>													
Eastern.....	4	20	64.3					2	14				4
Pittsburgh.....	10	57	51.4	16	28	13							
Great Lakes and Middle West.....	11	46	51.8	9	28	9							
Southern.....	4	13	57.2		6	5					2		
<b>Total.....</b>	<b>29</b>	<b>136</b>	<b>54.0</b>	<b>25</b>	<b>62</b>	<b>27</b>	<b>2</b>	<b>14</b>	<b>2</b>	<b>2</b>			<b>4</b>
<b>Roll engineers:</b>													
Eastern.....	4	10	65.7		2				6				2
Pittsburgh.....	8	25	54.4	3	9	10				3			
Great Lakes and Middle West.....	7	23	54.0	3	7	9	2		2				
Southern.....	3	7	58.9	2	3							2	
<b>Total.....</b>	<b>22</b>	<b>65</b>	<b>56.6</b>	<b>8</b>	<b>21</b>	<b>19</b>	<b>2</b>	<b>8</b>	<b>3</b>	<b>2</b>			<b>2</b>
<b>Rollers:</b>													
Eastern.....	5	12	62.4		2		2	6					2
Pittsburgh.....	10	30	51.2	19	6	3				2			
Great Lakes and Middle West.....	11	38	51.1	9	24	3					2		
Southern.....	4	9	57.8	2	3			2					
<b>Total.....</b>	<b>30</b>	<b>87</b>	<b>53.4</b>	<b>30</b>	<b>35</b>	<b>6</b>	<b>2</b>	<b>8</b>	<b>2</b>	<b>2</b>			<b>2</b>
<b>Laborers:</b>													
Eastern.....	5	27	62.5		2			20					5
Pittsburgh.....	10	236	56.0	133	23			43		33			4
Great Lakes and Middle West.....	9	121	56.5	1	35	58		21		6			
Southern.....	4	39	59.7	3	12	9		2		12			1
<b>Total.....</b>	<b>28</b>	<b>423</b>	<b>57.0</b>	<b>137</b>	<b>72</b>	<b>67</b>		<b>86</b>		<b>51</b>			<b>10</b>





TABLE G.—Average and classified hours actually worked by employees in six specified occupations in pay period covered, 1929, by district—**Blooming Mills**<sup>1</sup>

Occupation and district	Number of employees	Average hours worked	Number of employees who during the pay period worked hours specified																																							
			Under 32	32, under 40	40, under 48	48, under 56	56, under 64	64, under 72	72, under 80	80	Over 80, under 88	88	Over 88, under 96	96	Over 96, under 104	104	Over 104, under 112	112	Over 112, under 120	120	Over 120, under 132	132	Over 132, under 144	144	Over 144, under 166	166	Over 166, under 180	180	Over 180, under 192	192 and over												
<b>Pit cranemen:</b>																																										
Eastern.....	35	134.3												1		7		5		5		5	1	9			2															
Pittsburgh.....	72	109.8		1					1		3	3	4	6	7	9	6	10	6	9		3	3																			
G. L. and M. W.....	87	104.3	5	1	1							3	10	6	4	8	13	11	6				4																			
Southern.....	18	117.6				1		1	2		2		1		4	3	3	1	1								1		1													
Total.....	212	112.3	5	1	1	1		1	2	2	1	5	6	15	13	12	28	22	29	18	21		12	1	12			3	1													
<b>Heaters:</b>																																										
Eastern.....	17	128.1										1	3	2	5	5	12	2	13	3	2		2		1	2																
Pittsburgh.....	63	97.2				5	3		1		1	3	2	5	5	12	2	13	3	2																						
G. L. and M. W.....	60	113.5							1		2	2	2	2	3	9	5	13	11	8	1																					
Southern.....	8	118.0							1		1				1	1	2					1												1								
Total.....	148	108.5				5	3	1	8		3	2	5	5	7	10	27	9	27	15	13	1	2	1	1	2						1										
<b>Bottom makers:</b>																																										
Eastern.....	20	112.7	1									1	4	4	10	8	4	12	3	1	1					2																
Pittsburgh.....	57	100.3			1		2		2		2		3	10	1	10	4	10	4	2	3	1																				
G. L. and M. W.....	46	107.5				1	1		4			2	3	1	4	10	8	4	5	3																						
Southern.....	11	118.5										1				3																		1		1						
Total.....	134	106.1	2		1	3	1		6		2	1	8	6	16	8	31	12	18	9	5	1							2		1	1										
<b>Roll engineers:</b>																																										
Eastern.....	10	127.5												2		2						4																				
Pittsburgh.....	25	105.5		1			2		2					3	2	4	4	2	4																							
G. L. and M. W.....	23	107.5	1				4							1		3	1	2	3	4																						
Southern.....	5	144.0														1		1																								
Total.....	63	112.8	1	1			6		2					1	5	3	6	5	7	5	13								3		2		1									
<b>Rollers:</b>																																										
Eastern.....	12	118.4									1	1		1		2					3	1																				
Pittsburgh.....	30	101.7			1	2	1	1				2	1	2	1	8			6		2																					
G. L. and M. W.....	36	107.0					2	1						3	3	2	11	8	2	4																						
Southern.....	7	131.6												1	2																											
Total.....	85	108.8			1	2	3	2				2		3	5	8	3	21	8	10	4									2	2											
<b>Laborers:</b>																																										
Eastern.....	27	107.2	1	1	1			2				1		4			2	4	2	6	1	1	1																			
Pittsburgh.....	236	89.1	55	2	4	6	4	5	3	1	2	3	2	9	16	8	15	12	16	16																						
G. L. and M. W.....	121	106.7	8		2	3		2						6	2	8	5	17	9	8	16	17																				
Southern.....	34	110.9	3			1	2				1	2	1	2		3		1		4																						
Total.....	418	97.2	67	3	7	10	6	9	8	4	5	4	11	11	28	20	32	24	23	34	46	1								5	5		23		5	1	8	1	1	1		

<sup>1</sup> The figures for 1 plant, which cover a 20-day period, have not been included in this table.



## PLATE MILLS

Data for this department include both sheared and universal plate mills and cover 20 mills in 17 establishments located in 6 States. Fourteen of these mills, which range in size from 72 to 152 inches, are sheared plate mills, where the edges are not rolled but must be sheared off, while the remaining 6 are universal mills, which range from 48 to 60 inches, where the edges are rolled, and only the ends need be cut. During the pay-roll period covered these establishments employed 4,024 wage earners in all occupations, and 1,487 of these were in the 16 principal occupations, for which separate figures are given. A study of wages and hours of labor for this department was first made in 1910. From 1910 to 1914 employees in the principal occupations only were included, but all employees in all occupations were included in the years 1914 to 1929.<sup>1</sup> Table A gives comparable figures for employees in the principal occupations from 1910 to 1929.

Hours of labor changed very little in this department over the period 1914 to 1920. In 1914 average full-time hours per week were 69, as compared with 68.8 in 1920, and in 1922 were 66.2, or 4 per cent less than in 1914. Following the adoption of the 8-hour day in 1923, hours per week had been so far reduced that they were 57.2 in 1924 and by 1926 had fallen to 55.8, the lowest for any year shown and 19 per cent below the figure for 1914. The demand for plates during the year of 1928, and which continued into 1929, caused many plants in the eastern part of the country to change their regular working time both as to length of day (turn) and number of turns per week. For example, one plant which was working 6 days and 5 nights per week in 1926 had changed over to a regular operation of 6 days and 6 nights per week. Another plant changed from 7 days and 6 nights of 10 hours each to 7 days and 6 nights of 12 hours each, and still another changed its regular working time from 10 hours to 11 hours per day. Small increases in working time also took place in other localities. The effect of these changes is reflected in the full-time hours per week for 1929 which are 58, or 4 per cent above 1926. Table 1, page 4, shows average full-time hours per week, earnings per hour, and full-time weekly earnings for the department as a whole for the years 1914 to 1929.

Comparison of 1929 averages in the principal occupations with those for earlier years may be made from Table A. In 1910 average hours ranged from 71.6 for charging crane and charging machine operators to 66.8 for laborers. In 1924, after the adoption of the 8-hour day by many plants, hours had been reduced until the average of 63.3 for roll engineers was the highest and 54.7 for screw men, sheared plate mills, was the lowest. In 1929 screw men, sheared plate mills, whose average was 63 hours, had the longest week and screw men, main rolls, universal mills, had the shortest—55.4 hours. Laborers had an average week of 59.3 hours in 1929, as compared with 66.8 in 1910.

The increase in average hours per week for most of the occupations is reflected to some extent in the per cent of employees working 6 days per week regularly or alternating or rotating from 6 to 7 days per week. Table B shows that 10 per cent of the workers in 1929 had a

<sup>1</sup> Data were not obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

regular 7-day week, 8 per cent worked 7 days per week for two weeks and 6 days the third week, 6 per cent worked 7 days every second week, and 7 per cent worked 7 days every third week. A 6-day week was worked regularly by 51 per cent of all employees in 1929 as compared with 49 per cent in 1926. The eastern district, with 68 per cent, had the greatest number of 6-day workers, followed by the Pittsburgh district with 49 per cent and the Great Lakes and Middle West district with 37 per cent. The eastern district also led in 7-day workers, having 16 per cent as compared to 3 per cent for the Pittsburgh and 11 per cent for the Great Lakes and Middle West districts. The number of 7-day workers was lowest in 1914, when only 3 per cent worked 7 days per week regularly.

In order that the prevailing hours per day and per week in this department may be more fully shown, Table D is presented. This table shows that out of a total of 4,024 employees covered, 537 worked day turns only, 38 worked night turns only, and 3,449 alternated or rotated from day to night shift; 1,710 worked regularly an average of 8 hours per day, 162 of these working 7 days each week. There were 396 who worked an average of 12 hours per day, 109 of whom worked 7 days regularly; but only 4 employees who worked an average of more than 12 hours per day. This table includes all employees in all occupations, many of whom are not on direct producing crews. That a better idea of working time of members of the producing crews may be given, separate figures are shown for the occupation of screw men, sheared plate mills. Of the 39 employees, 6 worked regularly 8 hours per day and 6 worked 8 hours a day except every third Saturday, when they worked 13 hours. Only 4 employees had a working week of 76 hours or over.

Table E shows the distribution by average full-time hours per week of employees in six principal occupations. Out of the total of 1,093 employees in these 6 occupations, 193 had a week of 48 hours or less, 309 a week of 60 hours, and 35 a week of over 72 and under 84 hours.

Although there was an increase in average hours per week in 1929 over similar figures for 1924 and 1926, the general trend of hours had been downward over the period 1914 to 1929. The general trend of hourly earnings, however, has been upward during this same period. In 1914 average hourly earnings for employees in this department were 25.8 cents and in 1915 increased to 27 cents. Between 1915 and 1920 conditions had so changed that earnings had advanced to 67.1 cents in 1920, which is an increase of 160 per cent over 1914. The effect of the 1921 depression in the industry is reflected in the 1922 average, which dropped to 47.6 cents per hour. After the adoption of the 8-hour day in 1923 earnings again increased, bringing the average in 1924 to 56.2 cents per hour. Earnings continued to increase, and in 1926 the average hourly rate was 60.6 cents. The increased demand for plates in 1928 and 1929, previously mentioned, coupled with new improvements recently installed by some of the plants covered in the study, led to an average hourly earning of 63.9 cents in 1929, which is slightly over 3 cents more than the average for this department in 1926.

The greatest change in hourly earnings in the principal occupations as between 1926 to 1929 is found in the occupation of rollers, sheared plate mills, whose earnings were \$1.364 in 1926 as compared with \$1.595 in 1929, and the smallest change in that for screw men, side rolls, universal mills, whose rate was 70.9 cents in 1926 and 70.4

cents in 1929. The occupation of shear-men may be taken as an example of the changes in hourly earnings of employees in the principal occupations. Their average hourly earnings were 37.8 cents in 1910 and increased to 41.5 cents in 1913. There was a slight decrease in earnings to 40.6 cents per hour in 1914, but in 1915 this loss had more than been made up, earnings having increased to 43.6 cents. The increased demand for plate-mill tonnage between 1915 and 1917 is reflected in the average for the latter year, when earnings were 97.7 cents, or 135 per cent more than in 1913. Earnings increased again in 1920 to \$1.016, which is the high point of earnings in this occupation as well as for the department as a whole. There was a lessened demand for plates soon after the close of the war, which adversely affected hourly earnings of employees of this department, those of shear-men dropping to 66.6 cents in 1922. However, after the adoption of the 8-hour day in 1923 there was a partial recovery, and in 1924 earnings increased to 79.3 cents, and each of the subsequent studies shows increased earnings, the average for 1929 of 86.3 cents being 3 per cent more than the 1926 average of 83.6 cents.

A distribution according to hourly earnings for employees in six of the principal occupations is given in Table F. This shows in a general way the spread of employees in other occupations of similar skill for which no distribution tables are given.

Average full-time earnings per week were more than twice as much in 1929 as in 1914, the 1914 average for all employees being \$17.80 as compared with \$37.06 in 1929. In 1920 weekly earnings were \$46.16, the highest figure for any year shown. There was a decided drop in 1922, when the average fell to \$31.51, but increases are shown for each year since 1922. Changes in earnings for the various occupations are shown in the example of shear-men, who had average earnings of \$50.05 per full-time week in 1929 as compared with \$25.69 in 1910. Earnings of \$27.97 in 1914 increased to \$69.17 in 1919, and 1920 weekly earnings were \$69.44, the highest of any year shown and 141 per cent greater than in 1913. There was a decrease in 1922 followed by a slight increase in 1924, when earnings were \$43.15; slight increases in 1926 and in 1929, earnings for the latter year being 74 per cent greater than in 1913.

The 1,487 employees in the principal occupations worked an average of 109.5 hours in a 15-day pay period for which they received an average of \$79.81, as against an average of 107.4 hours and \$68.69 for all employees in all occupations. The hours and earnings given above include all the hours worked and earnings received by employees shown in Table C. Rollers, sheared plate mills, worked the most hours, 126.9, and had the highest earnings, \$200.29, while laborers worked the least hours, 85, and earned the lowest amount, \$35.31.

A classification of employees in six principal occupations according to hours actually worked is shown in Table G. This table shows that 40 of the 225 laborers worked less than 32 hours per pay period, while only 1 worked as much as 180 hours. In the highly skilled occupation of rollers only 1 employee worked less than 88 hours.

A like classification of earnings is made in Table H. Considerable variation is shown in the earnings of employees in different occupations in this table. Laborers earned from under \$5 to \$80 and under \$85; the largest group, 31, earned \$40 and under \$45. Rollers show only 1 employee earning less than \$100, while 1 earned \$250 and over; the largest group, 17, earned \$200 and under \$250.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Plate Mills

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—									
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84					
<b>Charging-crane and charging-machine operators:</b>																		
1910.....	9	41	71.6	\$0.303	\$21.85	101	89	91				34	56					10
1911.....	9	39	69.4	.283	19.70	98	83	82		3	5	33	56					2
1912.....	10	42	69.6	.315	21.98	98	93	91			5	33	33	29				
1913.....	10	46	70.7	.339	24.07	100	100	100				35	39	26				
1914.....	12	52	70.2	.306	21.69	99	90	90				42	31	27				
1915.....	12	54	70.3	.329	23.39	99	97	97				41	30	30				
1917.....	7	30	70.4	.480	33.85	100	142	141				20	80					
1919.....	11	71	71.5	.799	57.13	101	236	237				18	76	6				
1920.....	10	63	70.0	.798	56.18	99	235	233			6	38	19	37				
1922.....	12	72	66.9	.563	37.88	95	166	157		19	17	32	3	29				
1924.....	13	87	67.1	.679	37.79	81	200	157		44	14	43						
1926.....	16	88	56.4	.711	40.10	80	210	167		23	26	17	34					
1929.....	17	91	59.6	.756	45.06	84	223	187		20	26	5	21	4	23			
<b>Heaters:</b>																		
1910.....	11	56	71.0	.508	36.35	99	90	90				39	54					7
1911.....	11	55	69.1	.468	32.46	96	83	80		2	4	38	55					2
1912.....	11	55	69.9	.513	36.02	97	91	89			4	36	33	27				
1913.....	11	54	71.7	.562	40.59	100	100	100				39	26	35				
1914.....	13	64	70.5	.529	37.63	98	94	93				48	23	22	6			
1915.....	13	61	70.6	.557	39.73	98	99	98				49	21	23	7			
1917.....	7	30	70.4	.771	54.35	98	137	134				20	80					
1919.....	11	66	70.7	1.202	84.98	98	214	209				27	70	3				
1920.....	11	84	68.5	1.189	81.55	96	212	201			4	60	26	11				
1922.....	12	75	67.6	.852	57.03	94	152	141		5		55	15	25				
1924.....	13	90	56.5	.961	52.52	79	171	129				66	34					
1926.....	17	85	55.5	1.103	61.22	77	196	151		14	54	4	28					
1929.....	17	72	57.9	1.220	70.64	81	217	174		17	47		15	3	18			
<b>Heaters' helpers:</b>																		
1910.....	10	111	69.5	.243	16.98	101	96	97				67	28					5
1911.....	10	108	67.3	.227	15.31	98	90	87				4	66					1
1912.....	10	113	68.7	.243	16.74	100	96	96			3	61	25	8	4			
1913.....	10	107	68.7	.252	17.50	100	100	100				64	23	12				
1914.....	12	112	67.7	.247	16.68	99	98	95				76	9	15				
1915.....	12	109	67.6	.264	18.04	98	105	103				76	8	16				
1917.....	6	36	67.4	.469	31.67	98	186	181				56	44					
1919.....	10	129	71.1	.601	42.73	103	238	244				23	74	3				
1920.....	10	140	68.9	.620	42.74	100	246	244			1	73	17	9				
1922.....	11	132	67.3	.503	34.36	98	200	196			7	6	52					6
1924.....	12	126	61.6	.538	32.84	90	213	188		2	37	6	46					
1926.....	15	118	62.4	.580	36.19	91	230	207		3	25	29	26					
1929.....	14	92	62.4	.671	41.87	91	266	239		38	10	24	23	5				
<b>Roll engineers:</b>																		
1910.....	11	36	71.5	.300	21.45	98	97	95				28	61	11				
1911.....	11	35	70.8	.290	20.55	97	94	91				6	34	37	17			6
1912.....	11	37	72.5	.287	20.93	100	93	92				5	32	27	22	14		
1913.....	11	36	72.8	.309	22.63	100	100	100				5	33	31	22	14		
1914.....	13	38	70.2	.307	21.55	96	99	95				45	34	16	5			
1915.....	13	39	69.7	.309	21.58	96	100	95				51	28	15	5			
1917.....	7	20	70.9	.444	31.63	97	144	140				30	60					10
1919.....	11	43	72.7	.744	54.09	100	241	239				19	67					14
1920.....	11	39	71.6	.774	55.98	98	250	247				31	38	23	13			
1922.....	12	46	69.6	.538	37.74	96	174	167				26	26	13	17			17
1924.....	12	46	63.3	.614	38.99	87	199	172				37	13	41				9
1926.....	14	35	63.0	.661	41.01	87	211	181		9	17	23	37					14
1929.....	11	31	62.2	.675	41.99	85	218	186		32	10		32	13	13			

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Plate Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—													
						Full-time hours per week	Earnings per hour	Full-time earnings per week	49 and under	Over 49, under 60	60	Over 60, under 72	72	Over 72, under 84	84							
<b>Rollers, sheared-plate mills:</b>																						
1910	9	28	68.4	\$0.712	\$48.16	100	99	98					71	29								
1911	9	28	68.1	.607	41.46	99	85	84		4			64	43								
1912	9	27	68.7	.711	48.93	100	99	99					48	52								
1913	9	26	68.5	.718	49.21	100	100	100					60	50								
1914	11	28	68.0	.703	47.94	99	98	97					57	43								
1915	11	28	67.9	.734	49.89	99	102	101					57	43								
1917	7	18	69.4	1.011	70.32	101	141	143					33	67								
1919	9	30	70.8	1.530	108.32	103	213	220					23	77								
1920	10	35	68.1	1.558	106.60	99	217	217			6		51	34				9				
1922	10	33	66.5	1.126	74.43	97	157	151		21	6		39	15				18				
1924	10	34	56.5	1.300	71.62	82	181	146		21	24	21	35	50								
1926	13	30	57.0	1.364	77.75	83	190	158		30	10	10	50	50								
1929	12	29	61.0	1.595	97.30	89	222	198		21	21	7	31						21			
<b>Screw men, sheared-plate mills:</b>																						
1910	9	28	68.6	.421	28.75	99	87	86					64	36								
1911	9	28	68.6	.393	26.95	99	82	81		4			46	50								
1912	9	29	69.0	.435	30.00	100	90	90		3			41	55								
1913	9	29	69.0	.482	33.36	100	100	100					45	55								
1914	10	28	68.7	.434	30.06	100	90	90					50	50								
1915	10	26	68.3	.474	32.61	99	98	98					54	46								
1917	7	22	69.9	.702	49.15	101	146	147					27	73								
1919	9	32	71.3	1.117	79.64	103	232	239					16	84								
1920	9	39	68.4	1.115	76.23	99	231	229				5	51	44								
1922	8	29	66.2	.863	56.42	96	179	169			28		31	21				21				
1924	8	33	54.7	1.052	56.78	79	218	170		33	15	18	33	42								
1926	10	26	55.0	1.088	59.84	80	226	179		46	12		42	32								
1929	11	39	63.0	1.023	64.45	91	212	193		15	28		26						31			
<b>Table operators, sheared-plate mills:</b>																						
1910	9	26	68.4	.318	21.64	100	88	87					69	31								
1911	9	28	68.1	.300	20.44	100	83	82					57	43								
1912	9	30	68.3	.334	22.85	100	92	92					53	47								
1913	9	31	68.2	.363	24.87	100	100	100					55	45								
1914	11	31	67.6	.317	21.73	99	87	87					61	39								
1915	11	32	67.5	.332	22.63	99	91	91					63	38								
1917	6	20	68.5	.510	35.02	100	140	141					40	60								
1919	9	45	70.6	.825	58.25	104	227	234					20	71								
1920	10	42	67.6	.870	58.80	99	240	236				5	55	40								
1922	10	36	65.6	.635	42.25	98	175	170			22	8	31	28				11				
1924	10	40	56.5	.730	39.48	83	201	159		28	20	25	28									
1926	12	32	56.1	.804	45.10	82	221	181		38	16	6	41									
1929	12	38	60.0	.873	52.88	88	240	211		16	34	5	26						8			
<b>Hook men, sheared-plate mills:</b>																						
1910	9	73	68.3	.262	17.88	100	84	83					68	32								
1911	9	72	68.1	.246	16.81	100	79	78					58	42								
1912	9	72	68.5	.276	18.90	100	88	88					53	47								
1913	9	76	68.4	.313	21.55	100	100	100					57	43								
1914	11	74	68.2	.294	20.27	100	94	94					57	43								
1915	11	76	68.0	.314	21.57	99	100	100					58	42								
1917	6	49	69.6	.476	33.25	102	152	154					29	71								
1919	9	89	71.0	.780	55.38	104	249	257					22	77								
1920	10	100	67.6	.813	65.62	99	260	255				8	55	38								
1922	10	80	65.8	.586	38.20	96	167	177				20	9	30								
1924	10	105	56.0	.644	35.05	82	206	163		30	13	27	30	30					6			
1926	12	83	56.1	.693	38.88	82	221	180		36	12	11	41									
1929	12	76	60.2	.776	46.72	88	248	217		16	37	11	16						21			

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Plate Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—					
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	80	
<b>Roll hands, other, sheared-plate mills:</b>														
1910	6	14	68.0	\$0.263	\$17.71	98	99	97			71	29		
1911	6	14	68.9	.242	16.64	100	91	91			43	57		
1912	6	16	69.3	.269	18.54	100	102	101			38	63		
1913	7	20	69.1	.265	18.28	100	100	100			50	50		
1914	9	24	67.4	.257	17.42	98	97	95			67	33		
1915	9	24	67.4	.268	18.12	98	101	99			58	42		
1917	5	16	69.1	.401	27.74	100	151	152			37	63		
1919	8	26	71.0	.676	48.00	103	255	263			21	79		
1920	8	33	68.3	.668	45.76	99	252	250		6	64	30		
1922	10	56	65.5	.460	31.70	95	181	173		16	9	43	32	
1924	10	61	58.4	.555	31.08	85	209	170		15	15	36	34	
1926	10	36	55.5	.725	40.24	80	274	220		33	6	25	36	
1929	11	44	60.7	.821	49.83	88	310	273		20	20	11	39	
<b>Rollers, universal mills:</b>														
1910	4	8	69.5	.636	44.22	100	95	92			50	50		
1911	4	7	68.4	.584	40.31	98	87	84		14	29	57		
1912	4	6	67.8	.581	39.78	97	86	83		17	33	50		
1913	4	6	69.8	.672	47.81	100	100	100			33	67		
1914	5	8	68.8	.590	41.08	99	88	86			50	50		
1915	5	8	68.8	.676	47.10	99	101	99			50	50		
1919	5	9	70.7	1.371	96.93	101	204	203			22	78		
1920	4	9	70.0	1.372	98.32	100	204	206			56	22	22	
1922	5	11	64.8	1.187	75.26	93	177	157		18	18	36	27	
1924	6	13	56.4	1.251	70.34	81	186	147		15	23	31	31	
1926	5	13	56.3	1.383	77.86	81	206	163		31	23	15	31	
1929	6	15	56.7	1.323	75.01	81	197	157		20	40	13	13	
<b>Screw men, main rolls, universal mills:</b>														
1910	4	8	69.5	.470	32.75	99	102	100			50	50		
1911	4	7	66.6	.421	28.23	95	92	86			29	29	43	
1912	4	7	66.6	.407	27.38	95	88	84			29	29	43	
1913	4	7	70.1	.460	32.66	100	100	100			29	71		
1914	5	9	69.2	.386	26.96	99	84	83			44	56		
1915	5	9	69.2	.451	31.51	99	98	96			44	56		
1919	5	11	70.9	1.015	71.96	101	221	220			18	82		
1920	4	9	69.4	1.174	83.35	99	255	255			22	78		
1922	5	11	64.0	.813	50.80	91	177	156		18	27	36	18	
1924	6	15	56.0	.841	48.45	80	183	148		13	20	40	27	
1926	6	17	57.1	.937	53.50	81	204	164		18	18	41	24	
1929	6	17	55.4	.917	50.80	79	199	156		35	35	6	12	
<b>Screw men, side rolls, universal mills:</b>														
1910	4	10	69.2	.314	21.77	101	107	106			60	40		
1911	4	9	66.3	.296	19.80	97	101	96			22	44	33	
1912	4	9	66.3	.271	18.21	97	92	88			22	44	33	
1913	4	8	68.6	.294	20.56	100	100	100			60	50		
1914	5	10	68.1	.271	18.69	99	92	91			60	40		
1915	5	10	68.1	.332	22.83	99	113	111			60	40		
1919	5	10	70.8	.713	50.48	103	243	246			20	80		
1920	4	13	69.6	.738	57.38	101	251	279			46	54		
1922	5	12	65.3	.606	39.04	95	206	190		17	17	50	17	
1924	6	17	56.6	.642	37.31	83	218	181		12	18	29	41	
1926	6	18	57.5	.709	40.77	84	241	198		22	17	28	33	
1929	6	15	61.2	.704	43.08	89	239	210		20	20	20	27	



PLATE MILLS

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers thereof, 1910 to 1929, by occupation—Plate Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—								
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	80				
<b>Roll hands, other, universal mills:</b>																	
1910.....	2	6	70.0	\$0.299	\$20.93	100	115	113									
1911.....	2	4	72.0	.299	21.55	102	115	116									
1912.....	3	5	69.6	.277	19.41	99	106	105			20						
1913.....	3	8	70.3	.261	18.50	100	100	100							25	75	
1914.....	5	10	69.5	.266	18.48	99	102	100							40	60	
1915.....	5	9	69.2	.310	21.46	98	119	116							44	56	
1919.....	5	19	71.4	.605	43.20	102	232	234							11	89	
1920.....	4	10	60.5	.687	48.41	99	263	262							40	60	
1922.....	5	17	65.5	.502	32.18	93	192	174			12	24	24	41			
1924.....	6	19	64.7	.555	32.27	81	213	174			11	16	33	21			
1926.....	5	20	58.2	.601	34.98	83	230	189			15	15	60	25			
1929.....	4	12	58.9	.583	34.34	84	223	186			42	25		17			17
<b>Shearmen:</b>																	
1910.....	11	70	67.5	.378	25.69	98	91	89					3	64	33		
1911.....	11	66	68.0	.354	24.45	99	86	85					6	42	52		
1912.....	11	69	68.3	.384	26.48	99	93	92					7	38	55		
1913.....	11	69	68.8	.415	28.81	100	100	100					1	39	59		
1914.....	13	73	68.4	.406	27.97	99	98	97					1	45	53		
1915.....	13	73	68.2	.436	29.68	99	105	103					1	3	44	52	
1917.....	7	42	69.7	.638	44.74	101	154	155					24	10	67		
1919.....	11	97	70.8	.977	69.17	103	235	240					1	21	76		
1920.....	11	92	68.0	1.016	69.44	99	245	241					1	8	45	47	
1922.....	12	106	64.1	.666	43.10	93	160	150					27	10	29	33	
1924.....	13	108	55.8	.793	43.15	81	191	150			35	18	30	18			
1926.....	17	101	56.3	.836	47.07	82	201	163			29	22	40	10			
1929.....	17	123	58.0	.863	50.05	84	208	174			20	28	24	15			14
<b>Shearmen's helpers:</b>																	
1910.....	11	460	68.4	.215	14.71	100	86	85					2	57	42		
1911.....	11	429	68.4	.206	14.20	100	82	82					4	41	56		
1912.....	11	432	68.6	.223	15.42	100	89	89					3	39	58		
1913.....	11	425	68.7	.250	17.25	100	100	100			(1)			42	57		
1914.....	13	408	68.2	.243	16.71	99	97	97					(1)	48	52		
1915.....	13	406	68.4	.260	17.89	100	104	104					1	46	50	2	
1917.....	7	248	69.0	.400	27.60	100	160	160					20	10	70		
1919.....	11	630	71.1	.630	44.79	103	252	260						20	80	(1)	
1920.....	11	623	68.2	.665	45.56	99	296	264			(1)	3	44	52			
1922.....	12	678	64.9	.455	29.73	94	182	172					23	7	25	45	
1924.....	13	767	55.5	.529	28.85	81	212	167			34	20	32	15			
1926.....	17	674	55.1	.579	31.90	80	232	185			32	18	44	7			
1929.....	17	568	57.3	.630	36.10	83	252	209			21	26	29	16			7
<b>Laborers:</b>																	
1910.....	11	355	66.8	.159	10.68	96	88	85					25	58	10	1	6
1911.....	11	274	66.2	.158	10.51	96	87	83						26	52	18	3
1912.....	11	339	68.9	.161	11.17	99	89	89						22	36	31	6
1913.....	11	349	69.3	.181	12.62	100	100	100						22	36	32	3
1914.....	12	216	67.6	.174	11.85	98	96	94					6	21	30	27	13
1915.....	12	208	66.7	.174	11.66	96	96	92					17	19	29	19	3
1917.....	5	197	70.3	.294	20.67	101	162	164					3	10			87
1919.....	10	587	69.5	.450	31.28	100	249	248					12	2	21	62	1
1920.....	8	348	67.9	.498	34.66	98	275	275					8	12	4	66	10
1922.....	10	493	64.0	.336	21.65	92	186	172					20	43	4	29	3
1924.....	11	640	56.8	.432	24.20	82	239	192			35	23	32	10			
1926.....	16	304	56.1	.425	23.84	81	235	189			41	14	28	16	2		
1929.....	15	225	59.3	.409	24.25	86	226	192			7	21	46	24	(1)		1

<sup>1</sup> Less than 1 per cent.

<sup>2</sup> Including 3 per cent whose full-time hours per week were 91.

TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by district and year—Plate Mills

District and year	Number of plants	Number of employees	Number of employees whose customary turns per week were—							Per cent of employees whose customary turns per week were—											
			5	5 and alternately	5, 6, and 6 in rotation	5 and 7 alternately	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	5	5 and alternately	5, 6, and 6 in rotation	5 and 7 alternately	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	
<b>Eastern:</b>																					
1914	3	707		475			184			2	46			67			26			(1)	7
1915	3	699	3	516			131			2	47	(1)		74			19			(1)	7
1920	3	937		278			591				68			30			63				7
1922	4	1,218		344			680		44		150			28			56				12
1924	4	1,130		371			531		68		160			33			47		4		14
1926	6	1,094		229			615		94		156			21			56		6		14
1929	6	1,230					841	3	166	18	202						68	(1)	13	1	16
<b>Pittsburgh:</b>																					
1914	6	1,139		172			817		71		79			15			72		7		7
1915	6	1,121		174			807		59		81			16			72		5		7
1920	5	1,572		128			1,397		18		29			8			89		1		2
1922	4	1,498		576			778		33		111			38			52		2		7
1924	5	2,118					1,625		149	97	247						77		7	5	12
1926	6	1,845		2	879		707	43	102	6	106			(1)		48	38		2	6	6
1929	6	1,543			599		755	85	47	17	40				39		49		6	3	3
<b>Great Lakes and Middle West:</b>																					
1914	4	455		130			306		10	3	6			29			67		2	1	1
1915	4	425		106			294		18	3	4			25			69		4	1	1
1920	3	721		180			537				4			25			74				1
1922	4	1,050	1	148			799		18		84	(1)		14			76		2		8
1924	4	986	1	148			623		106	39	69	(1)		15			63		11	4	7
1926	5	1,263		135			749	68	73	231	7			11			59		5	6	18
1929	5	1,251	4	113			458	213	13	305	141	(1)		9		(1)	37		17	1	24
<b>Total:</b>																					
1914	13	2,301		777			1,307		81	5	131			34			57		3	(1)	3
1915	13	2,245	3	796			1,232		77	5	132	(1)		35			55		3	(1)	9
1920	11	3,230		586			2,525		18		101			18			78		1		6
1922	12	3,766	1	1,068			2,257		95		345	(1)		28			60		3		9
1924	13	4,284	1	519			2,779		323	136	476	(1)		12			66		8	3	11
1926	17	4,202		366	879		2,071	111	269	237	269			9	21		49		3	6	6
1929	17	4,024	4	113	599		2,054	301	226	340	383	(1)		3	15	(1)	51		7	6	10

<sup>1</sup> Less than 1 per cent.

**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Plate Mills**

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
<b>Charging-crane and charging machine operators:</b>													
Eastern.....	6	33	6.5	11.0	70.6	34	144.0	\$92.55	\$0.643	\$45.40	145.2	\$93.08	\$0.641
Pittsburgh.....	6	28	5.9	8.7	51.9	28	110.1	99.80	.906	47.02	112.0	100.88	.900
Great Lakes and Middle West.....	5	26	6.5	8.4	54.0	20	96.4	76.03	.789	42.61	99.1	77.43	.781
<b>Total.....</b>	<b>17</b>	<b>87</b>	<b>6.3</b>	<b>8.5</b>	<b>59.6</b>	<b>91</b>	<b>118.4</b>	<b>89.52</b>	<b>.756</b>	<b>45.06</b>	<b>120.3</b>	<b>90.49</b>	<b>.752</b>
<b>Heaters:</b>													
Eastern.....	6	22	6.3	11.2	70.6	22	134.3	139.41	1.038	73.28	135.1	139.87	1.035
Pittsburgh.....	6	27	6.1	8.3	59.6	27	106.2	153.16	1.442	72.97	106.2	153.16	1.442
Great Lakes and Middle West.....	5	23	6.4	8.4	54.2	23	98.6	116.18	1.178	63.85	99.5	116.92	1.175
<b>Total.....</b>	<b>17</b>	<b>72</b>	<b>6.3</b>	<b>9.2</b>	<b>57.9</b>	<b>72</b>	<b>112.4</b>	<b>137.14</b>	<b>1.220</b>	<b>70.64</b>	<b>112.9</b>	<b>137.52</b>	<b>1.218</b>
<b>Heaters' helpers:</b>													
Eastern.....	5	33	6.2	11.5	71.3	37	125.1	70.74	.566	40.36	138.0	77.46	.561
Pittsburgh.....	6	26	6.3	8.7	54.7	29	97.5	78.70	.807	44.14	103.5	82.33	.795
Great Lakes and Middle West.....	3	21	6.5	9.1	58.0	26	85.2	61.23	.717	41.59	90.1	63.62	.706
<b>Total.....</b>	<b>14</b>	<b>80</b>	<b>6.3</b>	<b>10.0</b>	<b>62.4</b>	<b>92</b>	<b>105.2</b>	<b>70.56</b>	<b>.671</b>	<b>41.87</b>	<b>113.6</b>	<b>75.08</b>	<b>.661</b>
<b>Roll engineers:</b>													
Eastern.....	4	10	6.3	11.7	73.6	10	162.8	95.27	.585	43.06	168.2	97.28	.578
Pittsburgh.....	5	11	6.3	9.1	57.2	12	118.4	85.45	.721	41.24	118.4	85.45	.721
Great Lakes and Middle West.....	2	7	6.0	9.0	53.9	9	78.8	62.28	.790	42.58	78.8	62.28	.790
<b>Total.....</b>	<b>11</b>	<b>28</b>	<b>6.2</b>	<b>10.0</b>	<b>62.2</b>	<b>31</b>	<b>121.2</b>	<b>81.89</b>	<b>.675</b>	<b>41.99</b>	<b>123.0</b>	<b>82.54</b>	<b>.671</b>
<b>Rollers, sheared-plate mills:</b>													
Eastern.....	5	12	6.3	11.1	70.4	13	134.9	182.79	1.355	95.39	140.0	186.21	1.330
Pittsburgh.....	5	11	5.9	9.0	53.5	11	116.5	214.47	1.840	98.44	116.5	214.47	1.840
Great Lakes and Middle West.....	2	5	6.2	9.0	55.0	5	115.4	205.72	1.783	98.07	115.4	205.72	1.783
<b>Total.....</b>	<b>12</b>	<b>28</b>	<b>6.1</b>	<b>9.9</b>	<b>61.0</b>	<b>29</b>	<b>124.6</b>	<b>198.76</b>	<b>1.595</b>	<b>97.30</b>	<b>126.9</b>	<b>200.29</b>	<b>1.579</b>

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TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Plate Mills—Continued

Occupation and district	Number of plants	Positions			Employees working in scheduled pay period (15 days)									
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations			
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour	
<b>Screw mor, sheared-plate mills:</b>														
Eastern.....	4	18	6.4	11.4	72.6	18	144.8	\$106.38	\$0.735	\$53.36	146.1	\$107.89	\$0.738	
Pittsburgh.....	5	11	5.9	9.0	53.5	12	106.5	142.72	1.340	71.69	109.6	147.00	1.341	
Great Lakes and Middle West..	2	8	6.4	8.6	54.4	9	105.6	146.43	1.387	75.45	108.0	148.13	1.372	
<b>Total.....</b>	<b>11</b>	<b>37</b>	<b>6.2</b>	<b>10.1</b>	<b>63.0</b>	<b>39</b>	<b>124.0</b>	<b>126.80</b>	<b>1.023</b>	<b>64.45</b>	<b>126.1</b>	<b>129.21</b>	<b>1.025</b>	
<b>Table operators, sheared-plate mills:</b>														
Eastern.....	5	14	6.2	11.1	69.1	15	125.0	86.55	.693	47.89	130.0	88.89	.684	
Pittsburgh.....	5	11	5.9	9.0	53.5	11	115.9	120.74	1.042	55.75	116.5	121.78	1.045	
Great Lakes and Middle West..	2	11	6.2	8.9	54.8	12	103.7	100.71	.971	53.21	108.7	106.90	.984	
<b>Total.....</b>	<b>12</b>	<b>36</b>	<b>6.1</b>	<b>9.8</b>	<b>60.0</b>	<b>38</b>	<b>115.6</b>	<b>100.92</b>	<b>.873</b>	<b>52.38</b>	<b>119.4</b>	<b>104.10</b>	<b>.872</b>	
<b>Hook men, sheared-plate mills:</b>														
Eastern.....	5	26	6.3	11.1	70.8	28	131.1	81.40	.621	43.97	140.3	86.72	.618	
Pittsburgh.....	5	23	5.8	9.1	53.2	25	107.9	93.15	.863	45.91	109.6	94.63	.863	
Great Lakes and Middle West..	2	21	6.3	8.8	54.7	23	110.2	99.95	.907	49.61	112.6	101.40	.901	
<b>Total.....</b>	<b>12</b>	<b>70</b>	<b>6.2</b>	<b>9.8</b>	<b>60.2</b>	<b>76</b>	<b>117.1</b>	<b>90.88</b>	<b>.776</b>	<b>46.72</b>	<b>121.8</b>	<b>93.76</b>	<b>.770</b>	
<b>Roll hands, other, sheared-plate mills:</b>														
Eastern.....	5	21	6.2	10.9	67.0	21	107.6	71.47	.664	44.49	120.4	77.77	.646	
Pittsburgh.....	4	10	5.8	9.0	52.5	14	81.3	63.00	.775	40.69	85.9	67.27	.784	
Great Lakes and Middle West..	2	8	6.4	8.6	54.4	9	105.2	131.62	1.251	68.05	106.3	132.59	1.247	
<b>Total.....</b>	<b>11</b>	<b>39</b>	<b>6.1</b>	<b>9.9</b>	<b>60.7</b>	<b>44</b>	<b>98.7</b>	<b>81.08</b>	<b>.821</b>	<b>49.83</b>	<b>106.5</b>	<b>85.64</b>	<b>.804</b>	
<b>Rollers, universal mills:</b>														
Eastern.....	2	4	6.4	11.3	71.9	4	153.6	154.45	1.005	72.26	153.6	154.45	1.005	
Pittsburgh.....	1	3	6.0	8.2	49.0	3	100.7	179.12	1.779	87.17	100.7	179.12	1.779	
Great Lakes and Middle West..	3	8	6.1	8.5	52.0	8	96.1	134.34	1.398	72.70	99.9	138.31	1.385	
<b>Total.....</b>	<b>6</b>	<b>15</b>	<b>6.2</b>	<b>9.2</b>	<b>56.7</b>	<b>15</b>	<b>112.4</b>	<b>148.66</b>	<b>1.323</b>	<b>75.01</b>	<b>114.4</b>	<b>150.77</b>	<b>1.318</b>	

<b>Screw men, main rolls, universal mills:</b>													
Eastern.....	2	4	6.4	11.3	71.9	4	153.6	104.15	.678	48.75	153.6	104.15	.678
Pittsburgh.....	1	3	6.0	8.2	49.0	3	91.3	109.92	1.203	58.95	94.0	111.85	1.190
Great Lakes and Middle West.....	3	9	6.1	8.2	50.2	10	76.2	76.76	1.007	50.55	79.2	79.17	1.000
Total.....	6	16	6.2	9.0	55.4	17	97.1	89.05	.917	50.80	99.3	90.92	.914
<b>Screw men, side rolls, universal mills:</b>													
Eastern.....	2	6	6.4	11.1	71.2	6	151.9	93.16	.613	43.65	153.8	95.45	.620
Pittsburgh.....	1	3	6.0	8.2	49.0	3	90.0	82.76	.825	43.40	88.3	72.87	.825
Great Lakes and Middle West.....	3	7	6.1	8.6	52.6	9	76.1	76.1					
Total.....	5	13	6.3	9.7	61.2	15	106.4	74.92	.704	43.08	114.5	81.90	.715
<b>Roll hands, other, universal mills:</b>													
Eastern.....	2	4	6.4	11.3	71.9	4	150.9	85.21	.565	40.62	150.9	85.21	.565
Pittsburgh.....	1	3	6.0	8.2	49.0	3	90.0	56.80	.631	30.92	103.3	69.07	.668
Great Lakes and Middle West.....	1	2	6.0	8.0	48.0	5	38.4	22.10	.575	27.60	40.0	23.40	.585
Total.....	4	9	6.2	9.5	58.9	12	88.8	51.81	.593	34.34	92.8	55.42	.597
<b>Shearmen:</b>													
Eastern.....	0	41	6.0	11.2	67.4	41	133.3	83.34	.625	42.13	135.5	84.34	.622
Pittsburgh.....	6	38	5.8	8.8	51.7	41	102.8	123.75	1.203	62.20	105.5	125.65	1.191
Great Lakes and Middle West.....	5	40	6.2	8.7	54.2	41	108.7	90.56	.833	45.15	114.2	94.20	.825
Total.....	17	119	6.0	9.6	58.0	123	114.9	99.21	.863	50.05	118.4	101.40	.856
<b>Shearmen's helpers:</b>													
Eastern.....	6	147	6.0	11.0	66.2	162	124.6	63.69	.511	33.83	129.6	66.20	.511
Pittsburgh.....	6	199	5.8	8.9	52.0	218	99.0	73.74	.745	38.74	103.5	76.54	.739
Great Lakes and Middle West.....	5	155	6.1	9.2	55.6	188	94.1	58.97	.626	34.81	100.7	63.05	.626
Total.....	17	501	6.0	9.6	57.3	568	104.7	65.99	.630	36.10	110.0	69.13	.629
<b>Laborers:</b>													
Eastern.....	6	62	6.2	10.2	63.3	75	97.1	33.89	.349	22.09	106.8	38.29	.358
Pittsburgh.....	5	60	6.2	8.9	54.8	96	61.8	28.45	.460	25.21	65.3	30.51	.468
Great Lakes and Middle West.....	4	40	6.0	10.0	59.8	54	83.8	36.83	.439	26.25	89.8	39.72	.442
Total.....	15	162	6.2	9.6	59.3	225	78.8	82.27	.409	24.25	85.0	35.31	.415

128 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE D.—Customary full-time turns per week and hours per turn and per week 1929, by district—Plate Mills

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district				
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	Total
Turns per week	Hours				Turns per week	Hours								
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week					
7	12	12	12	84					84	47			47	
7	12	12	8	80					80	1			1	
7	11½	11½	10	79					79	2			2	
7	11½	11½	8	77					77	3			3	
7	11	11	11	77					77	3		1	4	
6	12	12		72					72	3		1	4	
7	10	10	12	72					72	3			3	
7	11	11	5½	71½					71½	1			1	
7	10½	9½	9½	71½					71½		1		1	
7	10	10	10	70					70	29	2	12	43	
6	11½	11½		69					69	2		1	3	
7	10	9	10	69					69		4		4	
7	10½	10½	5	68					68	1			1	
6	11	11		66					66	10			10	
6	11	10		65					65	3			3	
7	10½	10½	2	65					65	1			1	
7	10	10	5	65					65	20			20	
6	10	10	10	60					65		1		1	
7	10	10	10	70					65					
6	10½	10½		63					63	8			8	
6	10½	9½		62					62		2		2	
6	11	6		61					61	5			5	
6	10	10	10	60					60			1	1	
6	10	10	10	60					60					
6	10		10	60					60	32	27	126	185	
6	10½	8½		59½					60			9	9	
6	10	9		59					59	1			1	
6	10	8½		58½					58½		68		68	
7	8	8	8	56					56	4			4	
6	10	8		55					55	1	1	3	5	
6	10	9		54					55	38			38	
6	9	9		54					54		2		2	
6	9½	4½		52					52	1			1	
6	8	10		50					50		11		11	
6	8	8		48					48		44	1	45	
Total										219	163	155	537	

Group B.—Night turn only

					7	13	13	13	81	91	1			1
					7	12½	12½	12½	87½	87½	2			2
					7	12	12	12	84	84	1			1
					7	11	11	11	77	77	2			2
					6	12		12	72	72	10			10
					7	10	10	10	70	70			1	1
					6	11	11		66	66	3			3
					6	11		11	66	66	1			1
					5	12½			62½	62½			1	1
					6	10	10	10	60	60			1	1
					6	10	10		60	60			6	6
					6	10		10	60	60	1	1		2
					5	11			55	55			2	2
					5	10½			52½	52½			1	1
					6	8	8	8	48	48		2		2
					6	8	8		48	48		2		2
Total											21	5	12	38

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Plate Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district				
Turns per week	Day turns				Turns per week	Night turns				Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	Total
	Hours					Hours								
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week					

Group C.—Weekly changes from one shift to another

14	12	12	12	84	7	12	12	12	84	84	11			11
7	11½	11½	11½	80½	7	12½	12½	12½	81½	84	6			6
7	11	11	11	77	7	13	13	13	91	84	44			44
7	11	11	11	77	7	12	12	12	84	80½	1			1
7	11½	11½	13½	82½	6	12½		12½	75	78½	12			12
7	12	12	12	84	6	12		12	72	78	2		1	3
7	11½	11½	11½	80½	6	12½		12½	75	77½	4			4
7	11	11	11	77	6	13		13	78	77½	17			17
7	12	12	10½	82½	6	12		12	72	77½	17			17
7	12	12	10	82	6	12		12	72	77	6			6
7	11½	11½	10	79	6	12½		12½	75	77	6			6
7	11	11	8½	74½	6	13		13	78	76½	2			2
7	11½	11½	8	77	6	12½		12½	75	76	14			14
7	11	11	7½	73½	6	13		13	78	75½	4			4
7	11½	11½	6¾	75¾	6	12½		12½	78	75½	18			18
7	11	11	5½	71½	6	13		13	78	74½	4			4
6	11	11		66	6	13		13	78	74¾	4			4
7	11	11	11	77	6	13		13	78	74¾	4			4
6	11½	11½		69	6	12½		12½	75					
7	11½	11½	8	77	6	12½		12½	75	74	13			13
7	11½	11½	3½	72½	6	12½		12½	75	73½	5			5
6	11	11		66	6	13		13	78	73½	4			4
7	11	11	5	71	6	13		13	78	73½	4			4
7	11½	11½	2	72	6	12½		12½	75					
7	11	11	10	76	6	12	3	12½	73	72½	8			8
6	12	12		72	6	12		12	72	72	52			52
6	10½	10½		69	6	12½		12½	72	72	200			200
6	10½	10½		63	6	13½		13½	81	72	18			18
6	10	10		69	6	12		12	72	70½	2			2
7	10	10	10	70	7	10	10	10	70	70	14			14
7	11	11	7½	73½	6	11		11	66	69¾	12			12
7	11	11	7	73	6	11		11	66	69¾	19			19
7	10½	10½	10	73	6	11		11	66	69½	4			4
7	11	11	6	72	6	11		11	66	69	12			12
6	11	11		66	6	12		12	72	69	2			2
7	11	11	6	72	5	13			65	68½			4	4
7	11	11	3¾	69¾	6	11		11	66	67½	4			4
6	11	11		66	6	11½		11½	69	67½	4			4
6	11	11		66	6	11		11	66	66	107	2		109
7	10	10	5	65	6	11		11	66	65½			12	12
7	10	10	10	70	6	10	10	10	60	65		21		21
6	10	10		60	7	10	10	10	70	65	2			2
6	10	10		60	7	10	10	10	70	65				
7	10	10	10	70	6	10	10	10	60	65		19		19
6	10½	10½		63	6	11		11	66	64½	158			158
7	10	10	10	70	6	10	10	10	60	62½		8		8
6	10	10		60	6	10	10	10	60	62½				
6	10	10		60	7	10	10	10	70	62½			13	13
7	10	10	4	64	6	10	10	10	60	62				6
6	10	13		63	6	10	10	10	60	61½		6		6
6	10	10		60	6	10	10	10	60	60¾		4		4
6	10	13		63	6	10	10	10	60					
6	10½	10½		63	5	11½			57½	60¾			2	2
6	10	10		60	6	10	10		60	60	155		218	373
6	10	10		60	6	10	10	10	60	60		300		300
6	10	9		59	6	10	10	10	60	59½		3		3
6	10	11½		61½	5	11			55	58¾			11	11
6	10	10		60	5	11			55	57½			100	100
7	8	8	12	60	6	8	8	8	48	56	18			18
7	8	8	8	56	7	8	8	8	56	56			1	1
7	8	8	8	56	7	8	8	8	56	56				
7	8	8	8	56	7	8	8	8	56	56		33	123	156
7	8	8	8	56	6	8	8	8	48	53½			9	9

WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Plate Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district				
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	Total
Turns per week	Hours				Turns per week	Hours								
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week					

Group C.—Weekly changes from one shift to another—Continued

7	8	8	8	56	6	8	8	8	48	53½		14		14
6	8	8		48	7	8	8	8	56	53½		3	206	299
7	8	10	8	56	6	8	8	8	48	51½		7		7
7	8	8	8	56	6	8	8	8	48	50½		3		3
7	8	8	8	56	6	8	8	8	48	50%		3	6	9
6	8	8		48	6	8	8	8	48	50%	3	55	191	249
6	8	8		48	7	8	8	8	56	50%		17	12	29
7	8	8	5	56	6	8	8	8	48	49%			4	4
6	8	8		53	6	8	8	8	48	49%		6		6
6	8	10		50	6	8	8	9	49	49		12		12
6	8	8		48	6	8	8	8	48	48		2		2
6	8	8		48	6	8	8	8	48	48		14		14
6	8	8		48	6	8	8	8	48	48			4	4
6	8	8		48	6	8	8	8	48	48		6		6
6	8	8		48	6	8	8	8	48	48		11		11
6	8	8		48	6	8	8	8	48	48		1		1
6	8	8		48	6	8	8	8	48	48			4	4
6	8	8		48	6	8	8	8	48	48		6		6
6	8	8		48	6	8	8	8	48	48		11		11
6	8	8		48	6	8	8	8	48	48		1		1
6	8	8		48	6	8	8	8	48	48		218	77	295
6	8	13		53	6	8	8	8	40	47		39		39
6	8	8		48	6	8	8	8	40	46		6		6
6	8	8		48	6	8	8	10	50	46		6		6
6	8	8		48	6	8	8	8	40	45½		554		554
Total											990	1,375	1,064	3,449

SCREW MEN (SHEARED-PLATE MILLS ONLY)

7	12	12	10½	82½	6	12	12	72	77½	2				2
7	11½	11½	8	77	6	12½	12½	75	76	2				2
7	11½	11½	6½	75½	6	12½	12½	75	75½	8				8
7	11	11	7	73	6	11	11	66	69½	2				2
6	10½	10½		63	6	11	11	66	64½	4				4
7	10	10	4	64	6	10	10	60	62		2			2
6	10	13		63	6	10	10	60	61½		2			2
6	10	9		59					59		2			2
6	10	10		60	5	11		55	57½			3		3
6	8	8		48	7	8	8	56	52			6		6
6	8	13		53	5	8	8	40	47			6		6
6					6	8	8	48						6
Total										18	12	9		39



PLATE MILLS

TABLE E.—Average and classified full-time hours per week in six specified occupations, 1929, by district—Plate Mills

Occupation and district	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—										
				44, under 48	48	Over 48, under 56	Over 56, under 60	60	Over 60, under 66	66, under 72	72	Over 72, under 84	84, and over	
<b>Heaters:</b>														
Eastern	6	22	70.6			3				4	2	13		
Pittsburgh	6	27	59.6		12	12	1		2					
Great Lakes and Middle West	5	23	54.2			18			5					
Total	17	72	57.9		12	33	1		7	4	2	13		
<b>Rollers, sheared-plate mills:</b>														
Eastern	5	13	70.4					2	2	3			6	
Pittsburgh	5	11	53.5	6			1		4					
Great Lakes and Middle West	2	5	55.0			3	2							
Total	12	29	61.0	6		3	3	2	6	3			6	
<b>Hook men, sheared-plate mills:</b>														
Eastern	5	28	70.8					4	4	4				16
Pittsburgh	5	25	53.2	12			5	4	4					
Great Lakes and Middle West	2	23	54.7			16	7							
Total	12	76	60.2	12		16	12	8	8	4				16
<b>Shearmen:</b>														
Eastern	6	41	67.4					6	7	11	17			
Pittsburgh	6	41	51.7	18	4		3	16						
Great Lakes and Middle West	5	41	54.2		3	24	7	7						
Total	17	123	58.0	18	7	24	10	29	7	11	17			
<b>Shearmen's helpers:</b>														
Eastern	6	162	66.2					30	32	58	42			
Pittsburgh	6	218	52.0	103	15		20	80						
Great Lakes and Middle West	5	188	55.6		4	80	47	57						
Total	17	568	57.3	103	19	80	67	167	32	58	42			
<b>Laborers:</b>														
Eastern	6	75	63.3			1		30	38	2	1			3
Pittsburgh	5	96	54.8	6	10	45		21	14					
Great Lakes and Middle West	4	54	59.8			2		52						
Total	15	225	59.3	6	10	48		103	52	2	1			3



TABLE G.—Average and classified hours actually worked by employees in six specified occupations in pay period covered, 1929, by district—  
Plate Mills

Occupation and district	Number of employees	Average hours worked	Number of employees who during the pay period worked hours specified—																												
			Under 32	32, under 40	40, under 48	48, under 56	56, under 64	64, under 72	72, under 80	80	Over 80, under 88	88	Over 88, under 96	96	Over 96, under 104	104	Over 104, under 112	112	Over 112, under 120	120	Over 120, under 132	132	Over 132, under 144	144	Over 144, under 156	156	Over 156, under 168	168	Over 168, under 180	180	
<b>Heaters:</b>																															
Eastern.....	22	135.1								2		1		1				2													
Pittsburgh.....	27	108.2									1	2	1	6	6	2	1		4		3										
G. L. and M. W.....	23	99.5							1	3		1	4	2				6	2		2										
Total.....	72	112.9							1	5		3	6	3	6	7	4	3		6	6	5		5	3	6		1	1	1	
<b>Rollers, sheared plate:</b>																															
Eastern.....	13	140.0							1						2								4			2		3		1	
Pittsburgh.....	11	116.5													1										1						
G. L. and M. W.....	5	115.4														1	2					2									
Total.....	29	126.9							1						3		2					3			6		3		3	1	
<b>Hook men:</b>																															
Eastern.....	28	140.3							1						4										7	1	6		6		
Pittsburgh.....	25	109.6	2											4					1		3		6								
G. L. and M. W.....	23	112.6	1													7			2		6	1	9		1						
Total.....	76	121.8	3						1					8		4	1	8	2	7	1	14		14	1	6		6			
<b>Shearmen:</b>																															
Eastern.....	41	135.5				1			1		1			5		4			2		1	2	6	5	1	1	7		3		
Pittsburgh.....	41	105.5					1			1			7	3	6	3	1		2		2		6								
G. L. and M. W.....	41	114.2		1					1	2		1	2		1	2				2	6	8	12		6		2	1			
Total.....	123	118.4		1		2	1		3	3	2	9	4	7	10	1	6	2	10	8	20	2	12	5	3	1	8		3		
<b>Shearmen's helpers:</b>																															
Eastern.....	162	129.6	1	2	3	2	2	1	3			5		9		12			4	1	11		19	9	25	8	17		16	2	10
Pittsburgh.....	218	103.5	5	2	1	2	3	3	3	4	4	31	1	46	23	2	5	1	5	4	24		49		6						
G. L. and M. W.....	188	100.7	13	2	3	19	3	3	1	1	2	5	2	5	6	4	5	3	22	10	67		6		5				1		
Total.....	568	110.0	19	6	7	23	8	7	7	5	11	36	12	51	41	6	14	5	38	14	110	9	80	8	22		16	3	10		
<b>Laborers:</b>																															
Eastern.....	75	106.8		4	3			4	3	4			3		3	1	6		6	2	13		9		3		1			1	
Pittsburgh.....	96	65.3	31	4	1	5	2	4	1	4	1	6	1	5	5	4	6	3	5	1	5		2								
G. L. and M. W.....	54	89.8	5	2	3	3	4	1		3			6		3		2		3	5	9		5								
Total.....	225	85.0	40	9	4	8	10	8	5	7	4	6	10	6	14	4	14	5	21	6	23		16		3		1			1	

TABLE H.—Average and classified earnings actually received by employees in six specified occupations in pay period covered, 1929, by district—  
Plate Mills

Occupation and district	Number of employees	Average earnings per pay period	Number of employees whose earnings during the pay period were—																																		
			Under \$5	\$5, under \$10	\$10, under \$15	\$15, under \$20	\$20, under \$25	\$25, under \$30	\$30, under \$35	\$35, under \$40	\$40, under \$45	\$45, under \$50	\$50, under \$55	\$55, under \$60	\$60, under \$65	\$65, under \$70	\$70, under \$75	\$75, under \$80	\$80, under \$85	\$85, under \$90	\$90, under \$95	\$95, under \$100	\$100, under \$110	\$110, under \$120	\$120, under \$130	\$130, under \$140	\$140, under \$150	\$150, under \$160	\$160, under \$180	\$180, under \$200	\$200, under \$250	\$250 and over					
Heaters:																																					
Eastern	22	\$139.87														1					1		1	6	2	3	2	2	2	2	2						
Pittsburgh	27	153.16																						6	5	3	5	3	4		1						
G. L. and M.																																					
W	23	116.92															1				2	4	4	3		1	4	3	1								
Total	72	137.52														1		1			3	4	5	9		8	9	9	10	6	6	1					
Rollers, sheared plate:																																					
Eastern	13	186.21																				1					3										
Pittsburgh	11	214.47																															1	2	7	1	
G. L. and M.																																					
W	6	205.72																																	4		
Total	29	200.29																				1					3				2	5	17	1			
Hook men:																																					
Eastern	28	86.72									1				1	3	5	7	5	2	1	2	1														
Pittsburgh	25	94.63			1	1									1		1		1		8	4	8														
G. L. and M.																																					
W	23	101.40			1										1		1	1	2	3	1	2	7	2	2												
Total	76	93.76			2	1					1				3	3	7	8	8	5	10	8	16	2	2												
Shearmen:																																					
Eastern	41	84.34									1		2		3	3	8	4	2	2	2	1	3	4	6												
Pittsburgh	41	125.65									1						1	1			4	1	1	2	8	5	3	5	2	6	1						
G. L. and M.																																					
W	41	94.20									1		2		4	2	4	1	2	4		2	7	3	3	4	2										
Total	123	101.40									2		3	2	3	7	10	9	4	4	10	2	6	13	17	8	7	7	2	6	1						



## STANDARD RAIL MILLS

Data for this department cover seven establishments located in six States. This is practically a complete census of employees and plants engaged in the production of heavy rails. During the payroll period covered by this survey a total of 2,816 wage earners were employed, 1,518 of these being found in the 21 principal occupations for which separate figures are shown. Data for this department were first obtained in 1910, and from 1910 to 1914 figures are for employees in the principal occupations only; figures for all employees in all occupations cover the years 1914 to 1929.<sup>1</sup>

Since the majority of the plants covered in the 1926 and 1929 studies were not included in the surveys previous to 1924, comparable figures for the principal occupations can not be given for all the earlier years, therefore averages for 1926 and 1929 only are presented in Table A. No attempt was made to group the plants by districts in 1926 and 1929, all figures shown for the department being for the country as a whole.

Figures for all employees are comparable from year to year as explained in footnote 4, page 1, and are presented for all years covered, from 1913 to 1929, in Table 1, page 4. Full-time weekly hours of labor of employees in 1929 show a slight increase over 1926. The 1929 average is, however, the lowest shown for any year with the exception of 1926. There was practically no change in hours during the years 1914 and 1915, being 70.1 in 1914 and 70.9 in 1915. Hours decreased to 61.2 in 1920, and were practically the same in 1922, but from 1922 to 1924 again decreased from 61.5 to 57.4. Since 1924 the change in average hours has not been great, dropping to 55.5 in 1926 and rising to 56 in 1929.

Comparison of full-time hours per week of employees in the principal occupations in 1926 and 1929, which may be made from Table A, shows the average for the principal occupations combined to be 55.4 in 1929 as compared to 54.9 in 1926. This is an increase of 0.5 hour, the same as shown for all employees in all occupations combined. Thus it is seen that changes in hours of the principal occupations may be taken as an indicator of changes in other occupations, for which separate data are not shown.

When the principal occupations are considered separately, it is seen that 11 had a decrease, 9 an increase, and 1 no change in full-time hours in 1929 as compared with 1926. The largest increase was from 56.6 to 59.8 hours for laborers, and the largest decrease from 57.4 to 49.8 hours for roll engineers. Tablemen with an average of 60.1 had the longest hours, while roll engineers with 49.8 had the shortest hours per week in 1929. Table 2, page 7, shows there was little change in the per cent of employees working less than 60 hours per week. In 1929 there were 16 per cent working 60 hours per week as compared with 26 per cent in 1926. However, the per cent who worked over 60 and under 72 had increased from 13 in 1926 to 21 in 1929. Less than 1 per cent worked over 72 and under 84 hours, this being the longest time worked by any employee in 1929.

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<sup>1</sup> Data were not obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

Table B shows customary turns per week for all employees from 1914 to 1929. In 1914, 88 per cent of the employees regularly worked 6 days per week and 7 per cent worked 5 days one week and 6 the next, while only 4 per cent worked 7 days per week regularly. In 1920 the number working 6 days per week regularly had risen to 92 per cent, while 8 per cent worked 7 days per week either regularly or as often as every 3 weeks. The figures did not vary greatly in 1922, but in 1924, after the adoption of the 8-hour day, the turns per week were increased until only 44 per cent were working 6 days per week regularly and 56 per cent were working 7 days per week either all or part of the time, of which 10 per cent worked 7 days each week, 29 per cent twice in 3 weeks, and 17 per cent once in 2 weeks. In 1926 the per cent of employees working 7 days each week decreased to 6 per cent, while the per cent of employees working 6 days each week increased to 51 per cent. Due to a change in customary working time in 1 large plant from a week of 6 days, 7 days, and 7 days in rotation in 1926 to a straight 7-day week in 1929, the number of 7-day workers increased from 6 to 20 per cent, and 6-day workers decreased from 51 to 42 per cent.

In order that a clearer idea of the working time of employees in this department may be obtained, Table D is presented. This table shows that out of the 2,816 employees covered in the 1929 study, 416 worked day turns only, 88 worked night turns only, and 2,312 alternated or rotated from day to night turns. A grouping by the number of hours worked per day shows that 1,758 worked regularly a day of 8 hours, of which 406 had a regular 7-day week and 706 a regular 6-day week; 1,038 had a 10-hour day, of which 115 had a regular 7-day week and 457 a regular 6-day week. Only 3 employees had a day of more than 10 hours. This table includes those employees engaged in miscellaneous occupations as well as those of producing crews. In order that a better idea may be obtained of working conditions existing in the producing crews, separate figures are given for the occupation of table levermen. Out of the 70 employees reported working as table levermen, 59 had a day of 8 hours and 11 a day of 10 hours; 32 of the 70 employees had a regular 6-day week and 9 a regular 7-day week.

Table E shows the distribution of employees in five principal occupations according to their full-time hours per week. This table shows that 195 employees in these occupations had a customary week of 48 hours, which is the largest number found in any single group. There were 31 laborers who had a week of 66 and under 72 hours, the only occupation in which any employee had a week of as many as 66 hours.

The general trend of earnings has been upward during the period 1914 to 1929. In 1914 average hourly earnings for employees in this department were 25.2 cents, but decreased to 24.6 cents in 1915. In 1920 the average had risen to  $2\frac{1}{2}$  times as much as it was in 1914, or to 63.2 cents—the highest point in earnings of any year shown. The effect of the 1921 depression is reflected in the 1922 average—47.0 cents. After the 8-hour day was generally adopted, earnings per hour increased to 57.3 cents in 1924, and in 1926 to 59.5 cents, which is 3 cents an hour less than the 1929 average of 62.8 cents. Average hourly earnings of employees in the various principal occupations are shown in Table A.

Average hourly earnings for employees in the principal occupations combined were 69.8 cents in 1929 as compared with 67.2 cents in 1926, an increase of approximately 4 per cent as compared with about 5½ per cent for all employees in all occupations during the same period. Earnings per hour for employees in the principal occupations in 1929 range from \$1.676 for the skilled occupations of rollers to 40 cents for laborers. When the principal occupations are compared separately, 12 occupations show increases and 9 decreases in 1929 as compared with 1926. The greatest change as to increase in hourly earnings is found in the occupation of hotbed men whose earnings were 51.8 cents in 1926 and 57.1 cents in 1929. Rollers show the greatest change as to decrease, their average falling from \$1.888 in 1926 to \$1.676 in 1929. A distribution of employees according to average hourly earnings in five principal occupations in 1929 is shown in Table F.

Average full-time weekly earnings for all employees in all occupations as shown by Table 1, page 3, were almost twice as great in 1929 as in 1914. In the latter year the average earnings for all employees were \$17.67, but in 1915 there was a slight decrease, bringing the average to \$17.44. In 1920 weekly earnings of \$38.68 were more than twice the amount shown for any preceding year. Weekly earnings dropped in 1922 to \$28.91 but advanced to \$33.02 in 1926.

Due to a small increase in average weekly hours and an increase in average hourly earnings, average full-time weekly earnings in 1929 increased to \$35.17, which is \$2.15 more than the 1926 average. Rollers had the highest average weekly earnings of any occupation, \$89.67. Laborers, with an average full-time earning of \$23.92 in 1929, had the lowest occupational average.

The 1,518 employees in the principal occupations worked an average of 99.2 hours in a 15-day pay period, for which they received an average of \$67.94. This compares with 104.8 hours and \$65.84 for all employees in all occupations. The hours and earnings shown above include all the hours worked and earnings received by employees as shown in Table C. Tablemen worked the most time, 137.4 hours, and cold-saw helpers the least, 88.4 hours. Laborers earned the least money, \$37.07, while rollers—a highly skilled occupation—earned the most, \$193.81.

A classification of employees, by hours actually worked in 1929, in five principal occupations is made in Table G. This table shows that the occupation of laborers had 37 employees out of 245 who worked less than 40 hours, but that the largest group, 36, came under the heading "Over 120 and under 132." In the skilled occupation of guide setters no employee worked less than 72 hours.

A like classification of earnings is made in Table H. Considerable variation in earnings is shown in this table, due to the various hours worked by the employees for the same occupations as shown in Table G. Eight laborers earned less than \$5 and one earned between \$90 and \$95. However, 115, or almost half of the laborers, earned less than \$40 for the 15-day period.



STANDARD RAIL MILLS

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TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, 1926 and 1929, by occupation—Standard Rail Mills

Occupation	Year	Number of plants	Number of employ-ees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Per cent of employees whose average full-time hours per week were—			
							48 and under	Over 48, under 60	60	Over 60, under 72
Charging-machine operators.....	1926	2	20	54.8	\$0.713	\$39.07	75			25
	1929	3	13	54.5	.718	39.13	46			31
Reheaters.....	1926	3	9	53.1	1.034	54.91	44			22
	1929	4	13	51.3	1.073	55.04	31			69
Reheaters' helpers.....	1926	3	14	53.6	.627	33.61	50		7	7
	1929	4	15	54.9	.651	35.74	27		13	13
Roll engineers.....	1926	5	19	57.4	.757	43.45	32		26	42
	1929	2	9	49.8	.705	35.11	67		33	
Rollers.....	1926	5	11	54.2	1.888	102.33	27		45	9
	1929	6	15	53.5	1.676	89.67	33		40	13
Assistant rollers.....	1926	6	14	55.3	1.015	56.13	29		35	21
	1929	6	16	54.6	.993	54.22	19		56	13
Table lever men.....	1926	7	66	53.5	.747	39.96	33		42	15
	1929	7	70	52.7	.770	40.58	41		43	10
Tablemen.....	1926	3	21	58.3	.687	40.05	14		38	
	1929	2	14	60.1	.670	40.27	29			71
Guide setters.....	1926	7	31	56.9	.836	47.57	10		45	26
	1929	7	34	55.0	.835	45.93	15		56	12
Hot-saw men.....	1926	7	22	54.5	.696	37.93	27		37	27
	1929	7	21	53.3	.681	36.30	24		57	10
Hot-saw helpers.....	1926	6	56	56.6	.509	28.81	11		38	30
	1929	6	34	56.0	.519	29.06	15		59	26
Hotbed lever men.....	1926	7	51	54.1	.564	30.51	29		43	16
	1929	7	58	53.3	.601	32.03	28		59	3
Hotbed men.....	1926	6	78	54.1	.518	28.02	15		64	14
	1929	6	87	53.9	.571	30.78	14		82	5
Straighteners, gag press.....	1926	7	138	53.0	1.233	65.35	28		55	17
	1929	7	146	54.1	1.229	66.49	31		49	8
Straighteners' helpers.....	1926	7	214	53.7	.590	31.68	38		40	13
	1929	7	183	54.1	.625	33.81	37		38	5
Chippers.....	1926	7	145	55.3	.695	38.43	25		37	25
	1929	6	121	56.2	.741	41.64	26		40	8
Drillers and punchers.....	1926	7	233	55.4	.675	37.40	22		40	25
	1929	7	231	55.7	.717	39.94	29		29	12
Cold-saw men.....	1926	7	20	53.2	.540	28.73	65			25
	1929	7	21	54.1	.532	28.78	57			19
Cold-saw helpers.....	1926	6	122	54.6	.447	24.41	56		1	32
	1929	6	70	54.6	.481	26.26	44			46
Inspectors.....	1926	7	85	55.2	.591	32.62	15		49	26
	1929	7	102	56.0	.617	34.55	23		40	18
Laborers.....	1926	6	234	56.6	.421	23.83	34		(1)	55
	1929	6	245	59.8	.400	23.92	20			44

<sup>1</sup> Less than 1 per cent.

TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by year—Standard Rail Mills

Year	Number of plants	Number of employ-ees	Number of employees whose customary turns per week were—							Per cent of employees whose customary turns per week were—						
			5 and 6 al-ternate-ly	5, 6, and 6 in rota-tion	6	6, 6, and 7 in rota-tion	6 and 7 al-ternate-ly	6, 7, and 7 in rota-tion	7	5 and 6 al-ternate-ly	5, 6, and 6 in rota-tion	6	6, 6, and 7 in rota-tion	6 and 7 al-ternate-ly	6, 7, and 7 in rota-tion	7
1914.....	7	1,725	117	9	1,519		14		66	7	1	88		1		4
1915.....	7	1,945	89	18	1,714		22		102	5	1	88		1		5
1920.....	4	1,349			1,247	7	35		92			88	1	3		4
1922.....	4	1,308			1,120	9	30		149			86	1	2		11
1924.....	7	3,382			1,496	2	569	991	334			44	(1)	17	29	10
1926.....	7	3,280			1,682		390	1,001	207			51		12	31	6
1929.....	7	2,816			1,172	168	424	493	559			42	6	15	18	20

<sup>1</sup> Less than 1 per cent.

**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation—Standard Rail Mills**

Occupations	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupations only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
Charging-machine operators.....	3	13	6.3	8.6	54.5	13	118.9	\$85.32	\$0.718	\$39.13	118.9	\$85.32	\$0.718
Reheaters.....	4	12	6.4	8.0	51.3	13	102.0	109.49	1.073	55.04	102.0	109.49	1.073
Reheaters' helpers.....	4	13	6.4	8.6	54.9	15	93.1	60.62	.651	35.74	95.5	62.30	.652
Roll engineers.....	2	9	6.2	8.0	49.8	9	109.6	77.28	.705	35.11	109.6	77.28	.705
Rollers.....	6	15	6.3	8.5	53.5	15	116.6	193.81	1.676	89.67	115.6	193.81	1.676
Assistant rollers.....	6	16	6.4	8.5	54.6	16	116.0	115.25	.993	54.22	116.0	115.25	.993
Table lever men.....	7	64	6.3	8.3	52.7	70	105.0	80.82	.770	40.58	107.7	82.73	.768
Tablemen.....	2	14	6.4	9.4	60.1	14	133.6	89.53	.670	40.27	137.4	92.42	.673
Guide setters.....	7	34	6.4	8.6	55.0	34	121.0	101.04	.835	45.93	121.8	101.81	.836
Hot-saw men.....	7	20	6.4	8.4	53.3	21	106.0	72.23	.681	36.30	107.1	72.81	.680
Hot-saw helpers.....	6	33	6.6	8.5	56.0	34	102.2	53.06	.519	29.06	109.9	57.45	.523
Hotbed lever men.....	7	56	6.4	8.3	53.3	58	105.1	63.19	.601	32.03	108.4	65.00	.600
Hotbed men.....	6	76	6.7	8.1	53.9	87	93.2	53.25	.571	30.78	102.9	58.31	.567
Straighteners, gag press.....	7	127	6.5	8.4	54.1	146	85.3	104.83	1.229	66.49	93.1	109.78	1.179
Straighteners' helpers.....	7	158	6.4	8.5	54.1	183	83.5	52.24	.625	33.81	94.6	59.66	.630
Chippers.....	6	107	6.5	8.7	56.2	121	86.2	63.84	.741	41.64	99.3	71.23	.717
Drillers and punchers.....	7	196	6.4	8.7	55.7	231	85.7	61.49	.717	39.04	96.8	67.21	.695
Cold-saw men.....	7	19	6.1	8.8	54.1	21	83.7	44.51	.532	28.78	104.7	55.56	.540
Cold-saw helpers.....	6	53	6.0	9.0	54.6	70	73.8	35.53	.481	26.26	88.4	42.52	.481
Inspectors.....	7	96	6.4	8.7	56.0	102	106.9	66.01	.617	34.55	112.5	69.02	.614
Laborers.....	6	173	6.2	9.6	59.8	245	76.6	30.21	.400	23.92	88.8	37.07	.417

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929—Standard Rail Mills

Customary turns and hours worked										Average hours per week	Number of employees who worked each specified combination of customary turns and hours
Day turns					Night turns						
Turns per week	Hours				Turns per week	Hours					
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week		
<b>Group A.—Day turn only</b>											
7	10	10	10	70						70	48
7	10	10	8	68						68	1
6	10	10	10	60						60	14
6	10	10		60						60	263
7	8		8	56						56	57
6	9½	5		52½						52½	1
6	8	8		48						48	32
Total											416
<b>Group B.—Night turn only</b>											
					7	10	10	10	70	70	34
					6	10	10	10	60	60	3
					6	10	10		60	60	7
					6	10		10	60	60	2
					7	8	8	8	56	56	34
					6	8	8		48	48	8
Total											88
<b>Group C.—Weekly changes from one shift to another</b>											
7	12	12	3	75	7	12	12	12	84	79½	3
7	10	10	10	70	7	10	10	10	70	70	33
7	10	10	10	70	6	10	10	10	60	66½	43
6	10	10		60	7	10	10	10	70	65	419
6	10	10		60	7	10	10	10	70	65	4
6	10	10	10	70	6	10		10	60	60	166
6	10	10		60	6	10	10		60	60	2
7			8	56	7	8	8	8	56	56	331
7	8	8	8	56	7	8	8	8	56	56	18
7	8	8	11	59	6	8	8	12	48	56	12
7					7	8	8	8	61		
7	8	8	8	56	6	8	8	8	48	53½	31
6	8	8	8	48	7	8	8	8	56	53½	3
6	8	8		48	7	8	8	8	56	53½	404
7	8	8	8	56	6	8	8		48	52	1
6	8	8		48	6	8	8		48	50½	165
7	8	10	5	55	7	8	8	8	56		
6	8				6	8		8	48	50½	3
6	8	8		48	6	8	8		48	48	196
6	8	8		48	6	8		8	48	48	478
Total											2,312

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TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929—Standard Rail Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours	
Day turns					Night turns						
Turns per week	Hours				Turns per week	Hours					Average hours per week
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week		
6	10	10	-----	80	7	10	10	10	70	65	4
6	10	10	-----	60	6	10	-----	10	60	60	
7	8	8	8	56	7	8	8	8	56	56	9
6	8	8	-----	48	7	8	8	8	56		
6	8	8	-----	48	6	8	8	-----	48	50½	9
6	8	8	-----	48	7	8	8	8	56		
6	8	8	-----	48	6	8	8	8	48	48	25
6	8	8	-----	48	6	8	-----	8	48		
Total	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

TABLE LEVERMEN ONLY

TABLE E.—Average and classified full-time hours per week in five specified occupations, 1929—Standard Rail Mills

Occupation	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—					
				48	Over 48, under 56	56	60	Over 60, under 66	66, under 72
Table lever men.....	7	70	52.7	29	21	9	7	4	-----
Guide setters.....	7	34	55.0	5	15	4	4	6	-----
Straighteners, jag press.....	7	146	54.1	45	43	28	11	19	-----
Drillers and punchers.....	7	231	55.7	66	41	27	27	70	-----
Laborers.....	6	245	59.8	50	-----	-----	107	57	31

TABLE F.—Average and classified earnings per hour in five specified occupations, 1929—Standard Rail Mills

Occupation	Number of employees	Average earnings per hour	Number of employees whose earnings in cents per hour were—																												
			30, under 35	35, under 40	40, under 45	45, under 50	50, under 55	55, under 60	60, under 65	65, under 70	70, under 75	75, under 80	80, under 85	85, under 90	90, under 95	95, under 100	100, under 110	110, under 120	120, under 130	130, under 140	140, under 150	150, under 160	160, under 170	170, under 180	180, under 190	190, under 200	200, under 225	225, under 250	275, under 300		
Table lever men.....	70	\$0.770	---	---	1	1	7	4	6	8	9	8	10	8	1	2	1	2	2	---	---	---	---	---	---	---	---	---	---	---	1
Guide setters.....	34	.835	---	---	---	---	2	1	4	8	---	7	4	1	4	1	1	1	---	---	---	---	---	---	---	---	---	---	---	---	
Straighteners, gag press.....	146	1.229	---	---	---	2	2	6	6	5	2	9	17	11	9	4	10	17	17	6	3	4	2	1	3	4	---	---	---		
Drillers and punchers.....	231	.717	---	2	48	17	22	8	10	10	9	23	22	25	22	3	8	1	1	---	---	---	---	---	---	---	---	---	---	---	
Laborers.....	245	.400	6	99	89	3	48	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	

TABLE G.—Average and classified hours actually worked by employees in five specified occupations in pay period covered, 1929—Standard Rail Mills

Occupation	Number of employees	Average hours worked	Number of employees who during the pay period worked hours specified—																							
			Under 32	32, under 40	40, under 48	48, under 56	56, under 64	64, under 72	72, under 80	80	Over 80, under 88	88	Over 88, under 96	96	Over 96, under 104	104	Over 104, under 112	112	Over 112, under 120	120	Over 120, under 132	132, under 144	144, under 156	156, under 168	168 and over	
Table lever men.....	70	107.7	4	---	1	---	1	---	---	---	2	---	6	---	6	1	8	---	15	---	13	10	3	---	---	---
Guide setters.....	34	121.8	---	---	---	---	---	1	1	1	2	---	3	---	2	---	8	---	13	---	4	6	7	---	---	---
Straighteners, gag press.....	146	93.1	---	2	2	6	5	19	11	3	9	1	2	12	3	19	3	12	7	16	5	5	---	---	---	---
Drillers and punchers.....	231	96.8	8	---	4	4	7	15	6	1	25	2	2	10	9	39	7	20	4	12	4	34	9	9	---	---
Laborers.....	245	88.8	26	11	11	9	15	17	10	4	8	3	4	1	20	6	9	2	14	4	36	18	15	1	1	---



## BAR MILLS

The 1929 study of this department includes data for continuous, semi-continuous, and hand-operated bar mills, ranging in size from 8 to 18 inches. In all studies prior to 1929 only hand-operated bar mills were included. The continuous and semicontinuous types of bar mills have been gradually increasing in use and are now of sufficient importance to be included in any bar-mill study. A continuous bar mill consists of a number of stands of two high nonreversing rolls set one behind the other, which are driven at progressively increasing speeds. In mills of this type the piece which is being rolled is carried by a mechanical conveyor from one roll stand to another; thus the piece passes in a line through the entire mill without being handled. Hand bar mills consist of a number of stands of rolls set end to end in a straight line. These stands are of either the two or the three high nonreversing type. In the strictly continuous mill, guides are so placed in front of each roll stand, except the first, that the piece being rolled is turned or twisted before it enters each pass. In some so-called continuous mills guides have not been placed in front of the roll stands and it is necessary to have men in front of the stands, who catch the piece with tongs, enter it in the right position, and if necessary hold it to prevent the piece from turning. In a strictly hand-operated mill the piece which is being rolled is passed back and forth through the different stands of rolls until the piece has been reduced in cross section and elongated. The roll train in hand-operated bar mills consists of roughing, stranding, and finishing rolls. A semicontinuous mill is one where the roughing and possibly the stranding rolls are set in tandem and operated as a continuous mill, the last or finishing stands being hand operated.

Separate averages are not shown for continuous and semicontinuous mills, as the work of stockers, heaters, heaters' helpers, chargers and helpers, roll engineers, rollers, finishers, hotbed men, shearers, shearers' helpers, and laborers is essentially the same as in hand-operated mills. The continuous and semicontinuous mills included in this study are located in the Pittsburgh, the Great Lakes and Middle West, and the southern districts of the United States. No continuous or semicontinuous mills are included in the data for the eastern district. The addition of plants operating the continuous type of mill does not influence, except to a slight extent, the figures presented for the country as a whole.

Comparison of hourly earnings in hand-operated mills and in both hand-operated and continuous mills, as given below, shows to what extent the earnings in certain occupations were influenced by the addition of the continuous type of mill. These averages for these occupations are based on the hours and earnings of employees in the three districts specified as having both hand and continuous mills.

Occupation	Earnings per hour	
	Hand-operated mills only	All mills, both hand and continuous
Stockers.....	\$0.524	\$0.539
Heaters.....	1.046	1.123
Heaters' helpers.....	.683	.701
Chargers and helpers.....	.532	.555
Roll engineers.....	.597	.597
Rollers.....	1.882	1.892
Finishers.....	.974	.986
Hotbed men.....	.602	.614
Shearmen.....	.747	.777
Shearmen's helpers.....	.537	.543
Laborers.....	.399	.408

Data for 1929 were obtained from the pay rolls of 39 bar mill establishments located in 11 States, of which 31 were hand-operated mills employing 5,745 employees in all occupations and 8 were continuous and semicontinuous mills having a total of 1,730 employees in all occupations. There were 7,475 employees in all mills, and 4,521 of these were in the principal occupations for which separate figures are given. Comparable data were first obtained for this department in 1907, and from that year until 1914 employees in the principal occupations only were covered, while all employees in all occupations were included in the figures for the period 1914 to 1929.<sup>1</sup> Comparable figures are presented for all employees in the principal occupations from 1907 to 1929.

Hours of labor in bar mills have decreased 10 per cent over the period 1914 to 1929. There was practically no change in the average full-time hours per week for all employees in this department of 61.7 in 1914 until 1924, when the average was 55.6 as compared with 61.2 in 1922. This change was brought about by the adoption of the 8-hour workday in many plants in 1923. In 1926 the average hours for employees had decreased to 54.7, which is the lowest of any year shown and 0.9 hour less than the 1929 average of 55.6 hours. Average full-time hours per week, earnings per hour, and full-time earnings per week, 1913 to 1929 are shown in Table 1, page 4, for the department as a whole.

Comparisons of the full-time hours per week of employees in the various principal occupations, which may be made from Table A, show similar reductions in customary working time. In 1913 the average full-time hours per week for all employees in the principal occupations combined were 60.9 as compared with 55.1 in 1929—a reduction of 10 per cent in working time, which is the same as that for all employees in all occupations during the same period. Considering the principal occupations separately it is found that in 1913 average full-time weekly hours ranged from 69.2 for roll engineers to 58.1 for catchers, while in 1929 average weekly hours ranged from 60.1 for roll engineers to 53.3 for bundlers.

While the increase or decrease in average full-time hours per week of employees in this department from 1914 to 1926 had been caused almost entirely by changes in daily hours of labor, the increase in average full-time hours per week in 1929 over 1926 was caused by

<sup>1</sup> Data were not obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.



an increase in both the daily hours of labor and the number of turns per week. Table B shows that in 1914 there were 94 per cent of all employees working from 5 to 6 days per week, in 1920, 89 per cent, while in 1929 this percentage had been reduced to 81. There was little change in the per cent of 7-day workers between 1914 and 1926 but when 1929 is compared with 1926 there was an increase in per cent of 7-day workers from 2 to 8. This change for the country as a whole was brought about through the large increase in the number of 7-day workers in the Pittsburgh district where the percentage of such workers had increased from 1 in 1926 to 16 in 1929.

A good idea of the extent of the spread of hours in this department may be gained from Table D. This table shows that out of a total of 7,475 employees, 2,517 worked days only, 158 nights only, and 4,800 alternated or rotated from day to night turns; and that 560 worked 12 hours or an equivalent thereto each day they were on duty, and 2,589 worked a day which averaged 8 hours or less each day they were on duty. Since Table D covers all employees in all occupations whether employed on producing crews or not, separate figures are presented for one key occupation—roughers—of the producing crews. Of the 195 employees who worked as roughers, only 27 had a customary working week of over 60 hours, while 120 had less than 60 hours per week, and of these there were 35 whose daily hours of labor were regularly 8 hours or less each day they were on duty.

Table E shows a distribution of employees in six principal occupations according to their average full-time hours per week. Of the 1,955 employees in these 6 occupations, 398 worked a customary week of 48 hours or less, while 263 worked over 60 hours. There was only 1 employee in these 6 occupations that had an 84-hour week.

While average full-time hours per week decreased 10 per cent between 1914 and 1929, average earnings per hour increased 125 per cent. Average earnings per hour for all employees in this department were 27.8 cents in 1914, and there was little change until 1920, when hourly earnings were 71.3 cents, or more than two and one-half times the average in 1914. Due to the depression in the industry in 1921, earnings dropped to 48.6 cents in 1922. After the 8-hour day was generally adopted in 1923, earnings increased and by 1924 had advanced to 58.5 cents per hour, somewhat less than the 1926 average. In 1929 earnings again advanced to 62.5 cents per hour, or an increase of approximately 6 per cent over the 1926 average. Average hourly earnings of employees in the various principal occupations are shown in Table A. For example, roughers earned an average of 43.4 cents in 1907. There was a slight increase to 43.6 cents in 1913, but little change from this time until 1919 when the average was 93.3 cents. This large increase was caused by conditions brought on by the World War. In 1920 earnings per hour again advanced, and were \$1.034, which is the highest average of any year shown. By 1922 hourly earnings had dropped to 70.9 cents but again increased to 81.0 cents in 1924, and to 84.7 cents in 1926. The demand for merchant bars increased in 1928 when, according to the 1928 report of the American Iron and Steel Institute, there was 6,277,835 gross tons produced. This demand continued into 1929, and earnings increased to 88.7 cents per hour, which is 103 per cent above the 1914 average.

A distribution by average hourly earnings of employees in 6 principal occupations in 1929 is given in Table F, which shows that in the unskilled occupation of laborers there were 58 out of a total of 607 who earned less than 25 cents per hour, while in the skilled occupation of rollers no employee earned less than 90 cents per hour.

Average full-time weekly earnings for all employees in this department followed very closely the trend in average hourly earnings during the period 1914 to 1924. This was due to the very slight change in average weekly hours during that period. In 1914 average weekly earnings were \$17.15 as compared to \$44.06 in 1920, an increase of 157 per cent, which is almost identical with the increase in hourly earnings during the same period. Weekly earnings declined in 1922, but advanced again in 1924 to \$32.53, which is \$2.22 less than the 1929 average of \$34.75. In the various principal occupations weekly earnings show like increases. Roughers, for example, earned \$26.28 in 1907; weekly earnings decreased somewhat during the years 1908 to 1912, but in 1913 advanced to \$26, which was practically the average for 1907. In 1919 average hourly earnings were more than twice those of any year up to this time, and weekly earnings increased to \$56.63. A further increase in 1920 brought the average to \$59.46, which is the highest of any year shown. Earnings per week dropped in 1922 to \$40.41, but in 1924 and each subsequent year increased until weekly earnings stood at \$49.49 in 1929.

The 4,521 employees in the principal occupations worked an average of 97.9 hours during the 15-day pay period covered by the 1929 study for which they received \$67.28. All of the hours worked and earnings received by these employees, as shown in Table C, are included. Roll engineers worked the most time, 112.2 hours, and earned an average of \$62.68, while shearers' helpers, who worked the least hours, 87.5, earned \$47.17. Rollers earned the most money during the pay period, \$200.56, while laborers earned the least, \$37.63.

A classification, by hours actually worked, of employees in six principal occupations is made in Table G. In the unskilled occupation of laborers it is shown that 81 worked less than 32 hours during the pay-roll period scheduled, while in the skilled occupation of rollers only 2 of the 127 scheduled worked under 32 hours.

A like classification of earnings is made in Table H. Due to the variation of hours worked by employees as shown in Table G, this table shows a wide spread of earnings for employees in the same occupations. For example, 49 laborers out of a total of 607 earned less than \$5 per pay period, while 1 earned between \$100 and \$110; heaters, however, show the widest variation, 1 having earned less than \$5 and 2 who earned \$250 and over.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bar Mills

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—								
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84				
<b>Stockers:</b>																	
1907	8	93	64.4	\$0.178	\$11.43	107	82	89	9	9	70	9	4				
1908	8	90	64.1	.167	10.72	106	77	83	11	9	66	14					
1909	8	88	64.2	.168	10.79	107	78	84	9	9	78	3					
1910	13	170	59.0	.250	14.24	98	116	110	16	25	4	51	5				
1911	15	211	60.9	.217	12.94	101	100	100	13	19	21	34	13				
1912	15	217	60.9	.231	13.79	101	107	107	12	17	27	31	13				
1913	31	374	60.2	.216	12.89	100	100	100	4	25	34	36	1				
1914	41	603	60.4	.199	12.00	100	92	93	2	33	18	43	4				
1915	41	582	60.2	.198	11.91	100	92	92	1	46	9	39	4				
1919	15	298	63.7	.524	33.38	106	243	259	1	9	31	51	9				
1920	22	458	61.5	.612	37.69	102	283	292	7	26	7	51	8				
1922	22	352	59.2	.420	24.90	98	194	193	11	40	5	34	10				
1924	25	298	56.0	.502	28.20	93	232	219	22	41	17	18	2				
1926	28	305	54.2	.519	28.13	90	240	218	27	36	34	3					
1929	30	304	53.5	.530	28.36	89	245	220	31	44	21	5					
<b>Heaters:</b>																	
1907	15	121	63.9	.508	32.35	107	86	93	2	13	2	70	10	2			
1908	15	112	63.9	.467	29.66	107	79	85	3	18	2	61	15	2			
1909	15	112	64.0	.488	31.06	107	83	89	3	18	2	70	4	2			
1910	25	217	62.9	.507	31.73	105	86	91	8	13	7	58	10	2			
1911	26	184	62.7	.510	31.87	105	86	92	10	17	1	60	9	1			
1912	26	199	62.4	.482	29.84	105	82	86	9	22	1	57	9	1			
1913	44	295	59.7	.590	34.74	100	100	100	10	37	1	46	3	2			
1914	57	409	59.9	.548	32.49	100	93	94	9	34	1	52	2	(1)			
1915	57	392	60.1	.562	33.50	101	95	96	9	35	(1)	52	3	1			
1919	23	209	61.7	1.147	70.77	103	194	204	13	1	17	60	8				
1920	24	213	60.1	1.176	70.73	101	199	204	13	27	2	52	2	5			
1922	23	169	59.9	.759	45.50	100	129	131	9	34	---	51	4	2			
1924	28	181	55.3	.949	53.03	93	161	153	31	25	12	31					
1926	33	181	54.4	.957	52.06	91	164	150	39	14	27	20					
1929	37	174	56.1	1.064	59.69	94	180	172	31	20	13	34	2	(1)			
<b>Heaters' helpers:</b>																	
1907	14	167	65.3	.246	15.77	108	91	97	2	12	2	65	16	4			
1908	14	153	65.1	.227	14.50	108	84	89	2	16	3	56	21	3			
1909	14	151	65.0	.234	14.87	107	87	92	2	16	3	74	1	4			
1910	24	295	62.6	.273	16.77	103	101	103	16	11	8	52	11	1			
1911	25	283	62.7	.259	15.94	104	96	98	16	13	2	55	10	3			
1912	25	319	62.2	.260	16.01	103	97	99	14	23	2	50	9	1			
1913	42	467	60.5	.269	16.21	100	100	100	8	42	2	44	4	(1)			
1914	54	582	60.9	.265	16.09	101	99	99	6	36	1	52	5	(1)			
1915	54	570	60.3	.272	16.37	100	101	101	11	32	(1)	50	5	(1)			
1919	21	323	60.7	.655	39.76	100	243	245	24	1	17	46	10	1			
1920	23	435	59.5	.744	44.16	98	277	272	14	30	5	46	2	3			
1922	25	326	59.1	.517	30.56	98	192	189	6	52	---	38	3				
1924	28	312	54.7	.630	34.86	90	234	215	29	38	21	12	1				
1926	33	273	54.3	.632	34.32	90	235	212	36	29	25	10					
1929	33	198	55.8	.675	37.67	92	251	232	30	29	19	14	8				
<b>Chargers and helpers:</b>																	
1907	12	104	65.5	.173	11.34	105	77	81	---	10	5	68	15	2			
1908	12	102	65.6	.161	10.56	105	71	75	---	10	5	66	20				
1909	12	107	65.9	.161	10.60	105	71	76	---	9	4	75	7	5			
1910	18	179	65.3	.192	12.40	104	85	89	7	8	7	59	20				
1911	19	185	64.8	.184	11.90	104	81	85	6	14	3	59	18				
1912	19	182	65.0	.192	12.45	104	85	89	5	13	3	61	18				
1913	31	262	62.5	.226	14.00	100	100	100	4	27	2	63	3	1			
1914	41	346	61.9	.219	13.47	99	97	96	4	32	1	62	1	1			
1915	41	333	61.7	.222	13.56	99	98	97	9	27	(1)	62	2	1			
1919	14	189	62.4	.561	35.01	100	248	250	17	10	5	55	10	3			
1920	19	328	61.9	.636	39.45	99	281	282	5	28	2	60	5				
1922	21	293	61.2	.427	26.24	98	189	187	6	36	2	33	18				
1924	26	295	54.9	.540	29.58	88	239	211	32	22	34	12					
1926	28	234	53.5	.551	29.48	86	244	211	38	31	25	5					
1929	32	242	56.1	.554	31.08	90	245	222	24	44	16	12	5				

<sup>1</sup> Less than 1 per cent.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bar Mills—Continued

Occupation and year	Number of plants	Number of employ-ees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—														
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84										
<b>Drag-downs:</b>																							
1907	11	86	64.4	\$0.271	\$17.31	106	96	102	19	60	19	2											
1908	11	82	63.9	.246	15.58	105	87	92	24	52	23												
1909	11	83	64.0	.250	15.93	105	89	94	24	70	4	2											
1910	19	132	65.1	.269	17.44	107	95	103	18	3	57	19	3										
1911	20	127	64.7	.262	16.78	106	93	99	24	55	20	2											
1912	20	130	64.3	.253	16.12	106	90	95	25	54	19	2											
1913	33	186	60.8	.282	16.98	100	100	100	9	38	1	44	7										
1914	45	265	60.7	.277	16.58	100	98	98	6	38	49	6	1										
1915	45	256	61.1	.280	16.96	100	99	100	5	36	51	7	1										
1919	18	131	64.9	.696	45.17	107	247	266	3	11	62	21											
1920	20	205	60.6	.725	43.33	100	257	255	17	16	2	59	6										
1922	20	161	59.7	.470	27.98	98	167	165	7	52	32	8											
1924	26	187	55.2	.560	31.12	91	199	183	32	20	36	13											
1926	27	142	55.3	.593	32.79	91	210	193	30	25	42	4											
1929	24	132	55.9	.554	30.97	92	196	182	36	14	27	19	5										
<b>Roll engineers:</b>																							
1907	13	58	72.3	.226	16.29	104	91	95			53	9	31	7									
1908	13	56	71.4	.221	15.76	103	89	92			50	18	29	4									
1909	13	56	71.5	.217	15.52	103	88	91			54	11	32	4									
1910	22	99	72.0	.229	16.46	104	93	96		3	40	26	23	7									
1911	22	95	70.4	.228	16.07	102	92	94		3	57	14	24	2									
1912	22	97	70.0	.229	16.05	101	93	94		4	1	53	12	28									
1913	41	153	69.2	.247	17.06	100	100	100		7	6	45	16	4									
1914	52	183	68.8	.247	16.97	99	100	99		6	5	47	26	4									
1915	52	178	68.9	.246	16.77	99	100	98		6	4	49	27	2									
1919	21	94	70.2	.558	39.17	101	226	230	2		15	31	35	15									
1920	22	109	69.7	.657	45.65	101	266	268	3	2	3	39	12	39									
1922	22	100	69.1	.478	32.75	100	194	192	2	10		43	23	19									
1924	24	106	60.9	.569	34.55	88	230	203	13	31	3	42	8	4									
1926	25	111	58.0	.582	33.76	84	236	198	31	17	18	39											
1929	20	68	60.1	.563	33.84	87	228	198	13	37	6	31	9	1									
<b>Rollers:</b>																							
1907	13	65	65.5	1.013	66.88	110	103	114		17	17	43	18	5									
1908	13	63	65.7	.878	57.88	111	89	98		19	13	44	19	5									
1909	13	63	65.5	.917	60.40	110	93	103		19	13	52	16										
1910	22	124	62.4	.928	58.21	105	94	99	12	16	13	47	12										
1911	23	120	62.0	.873	54.85	105	89	93	13	22	8	43	15										
1912	24	128	61.6	.863	53.60	104	89	91	12	26	9	38	16										
1913	42	173	59.3	.985	58.85	100	100	100		56		43	1										
1914	56	216	59.6	.936	56.13	101	95	95		49		51											
1915	56	215	59.4	.944	56.75	100	96	96		51		49											
1919	23	108	61.3	1.821	111.62	103	185	190	22	4	21	42	8	1									
1920	25	141	59.5	1.949	116.13	100	198	197	11	26	16	37	11										
1922	25	119	58.4	1.416	82.35	98	144	140	5	61	3	25	7										
1924	30	126	53.9	1.577	85.28	91	160	145	30	42	21	7											
1926	35	134	53.2	1.699	80.39	90	172	154	40	36	21	3											
1929	39	127	55.0	1.822	100.21	93	185	170	26	42	19	12	2										
<b>Roughers:</b>																							
1907	15	252	61.5	.434	26.28	103	100	101	13	20	5	44	17										
1908	15	242	62.5	.343	21.35	105	79	82	10	23	5	40	22										
1909	15	243	62.4	.368	22.72	104	84	87	10	25	5	57	6										
1910	25	425	61.0	4.02	24.51	102	92	94	17	20	8	46	9										
1911	26	403	60.5	.377	22.68	101	86	87	18	24	3	46	9										
1912	26	406	60.2	.389	23.36	101	89	90	16	25	3	45	9										
1913	26	407	59.8	.436	26.00	100	100	100	6	46	1	43	4										
1914	57	385	58.8	.436	25.41	98	100	98	2	65		32											
1915	57	386	58.9	.438	25.76	98	100	99	2	62		36											
1919	23	202	60.7	.933	56.63	102	214	218	21	10	10	46	13										
1920	25	319	57.8	1.034	59.46	97	237	229	16	44	1	36	3										
1922	25	288	57.3	.709	40.41	96	163	155	9	58		27	6										
1924	31	263	54.7	.810	44.61	91	186	172	22	46	25	7											
1926	35	259	53.2	.847	45.06	89	194	173	30	38	31	2											
1929	31	196	55.8	.887	49.49	93	203	190	21	41	25	11	3										

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bar Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—					
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84	
<b>Catchers:</b>														
1907	11	69	62.5	\$0.442	\$27.68	108	99	108	42	1	36	20		
1908	11	70	62.0	.381	23.57	107	86	92	46		34	20		
1909	11	70	61.9	.400	24.93	107	90	97	46		54			
1910	20	115	60.2	.419	25.45	104	94	99	13	35	5	40	7	
1911	20	111	59.9	.392	23.70	103	88	92	14	39		41	7	
1912	20	110	59.7	.399	23.92	103	90	93	14	39		40	7	
1913	44	222	58.1	.445	25.73	100	100	100	3	63		33	1	
1914	57	293	58.6	.430	25.03	101	97	97	2	60		38		
1915	57	296	58.8	.432	25.35	101	97	99	2	60		38		
1919	23	187	60.6	.936	56.72	104	210	220	23	11	7	46	13	
1920	25	217	57.9	1.022	58.68	100	230	223	19	38	1	38	4	
1922	25	191	57.2	.725	41.33	98	163	161	10	59		22	9	
1924	31	215	54.8	.818	45.12	94	184	175	22	46	27	6		
1926	35	208	53.3	.865	46.10	92	194	179	33	36	30	1		
1929	31	155	55.8	.874	48.77	96	196	190	25	35	24	12	4	
<b>Stranders:</b>														
1907	13	175	59.5	.334	19.45	102	97	97	22	17	11	34	15	
1908	13	174	59.7	.277	16.25	102	80	81	22	17	11	32	17	
1909	13	174	59.7	.297	17.34	102	86	86	22	17	11	42	7	
1910	21	272	60.6	.301	17.85	104	87	89	18	16	14	40	13	
1911	22	262	59.8	.272	16.03	103	79	80	18	27	8	34	13	
1912	22	266	59.6	.283	16.62	102	82	82	18	28	8	33	13	
1913	42	491	58.3	.345	20.15	100	100	100		64		35	1	
1914	56	635	58.4	.318	18.57	100	92	92		57	11	31	(1)	
1915	56	615	58.1	.326	18.99	100	94	94		77		23	(1)	
1919	23	381	59.5	.762	45.34	102	221	225	26	13	8	44	9	
1920	25	525	57.6	.849	48.79	99	246	242	14	46	1	36	3	
1922	25	474	56.6	.577	32.31	97	167	160	9	65		20	6	
1924	29	427	53.0	.700	36.92	91	263	183	34	42	16	7		
1926	33	389	51.8	.741	38.38	89	215	190	44	35	19	1		
1929	30	307	54.3	.820	44.53	93	238	221	28	38	15	18	2	
<b>Finishers:</b>														
1907	10	65	65.9	.309	20.45	111	88	98		12	14	48	26	
1908	10	63	66.4	.279	18.53	111	80	89		13	11	49	27	
1909	10	63	66.2	.300	19.85	111	86	96		13	10	68	10	
1910	17	111	64.0	.323	20.48	107	92	99	14	7	9	55	15	
1911	19	121	62.8	.313	19.60	105	89	94	12	20	7	45	17	
1912	21	137	62.0	.328	20.29	104	94	98	11	31	7	38	13	
1913	40	182	59.6	.350	20.77	100	100	100		63		35	2	
1914	54	223	60.0	.341	20.42	101	97	98		43	1	55		
1915	54	222	59.8	.332	20.95	100	101	101		48	1	51		
1919	22	123	61.6	.766	47.19	103	219	227	16	13	13	46	11	
1920	24	177	60.0	.866	52.05	101	247	251	9	34	5	44	7	
1922	25	165	57.9	.658	36.56	97	182	176	10	56	1	25	9	
1924	30	185	54.0	.749	40.35	91	214	194	25	47	23	5		
1926	33	159	53.0	.848	44.94	89	242	216	38	38	21	2		
1929	34	147	53.9	.952	51.31	90	272	247	30	44	18	7	2	
<b>Hook-ups</b>														
1907	12	92	63.9	.268	17.30	107	92	100	10	3	9	52	26	
1908	12	84	63.3	.225	14.70	110	77	85	4	5	17	42	33	
1909	12	82	65.7	.241	15.82	110	83	91	4	5	10	57	24	
1910	20	174	63.2	.272	17.13	106	93	99	16	6	11	43	25	
1911	21	154	63.0	.250	15.66	106	86	90	14	14	6	44	23	
1912	22	177	61.9	.254	15.74	104	87	91	12	24	8	36	20	
1913	36	227	59.6	.291	17.32	100	100	100		48		48	5	
1914	47	262	59.8	.268	16.03	100	92	92		46		52		
1915	47	245	60.3	.270	16.25	101	93	94		41		59		
1919	21	156	59.6	.641	38.20	100	220	221	22	20	13	32	13	
1920	24	277	57.7	.771	43.83	97	265	253	18	35	1	37	9	
1922	25	213	59.0	.516	30.17	99	177	174	15	46		28	12	
1924	29	317	54.8	.601	33.30	92	207	192	23	41	31	4		
1926	29	207	54.8	.623	34.14	92	214	197	28	30	41	1		
1929	27	172	55.3	.650	35.95	93	223	208	31	22	31	13	2	

1 Less than 1 per cent.

152 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bar Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—					
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84	
Roll hands, other:														
1907	9	97	66.8	\$0.278	\$18.53	106	88	93	6	4	4	40	45	
1908	9	94	67.0	.255	16.97	106	81	85	6	4	4	40	45	
1909	9	94	66.8	.266	17.65	106	84	88	6	4	4	40	45	
1910	18	180	62.8	.295	18.35	99	93	92	22	10	4	44	20	
1911	18	177	62.5	.273	16.97	99	86	85	22	13	2	42	20	
1912	18	176	62.7	.287	17.97	99	91	90	20	13	2	44	20	
1913	24	199	63.2	.316	20.02	100	100	100				76		
1914	37	240	63.2	.285	17.92	100	90	90				79		
1915	37	235	62.6	.291	18.23	99	92	91				74		
1919	18	174	62.1	.684	42.48	98	216	212	17	10	2	60	11	
1920	20	352	60.7	.758	45.99	96	240	230	5	41	(1)	45	9	
1922	20	353	59.5	.545	32.36	94	172	162	13	47		30	12	
1924	24	304	53.2	.702	37.52	84	222	187	41	26		28	4	
1926	25	230	52.9	.683	36.13	84	216	180	44	23		31	2	
1929	28	320	55.1	.797	43.91	87	252	219	18	54		17	11	
Hotbed men:														
1907	15	302	63.3	.189	11.98	105	87	92	4	21	14	43	19	
1908	15	299	63.2	.174	10.93	105	80	84	4	21	19	35	21	
1909	15	286	63.3	.180	11.00	105	83	84	4	22	15	54	5	
1910	25	500	62.9	.200	12.46	104	92	95	11	16	14	43	12	
1911	26	450	61.9	.188	11.61	103	87	89	12	24	6	48	9	
1912	26	461	61.7	.192	11.80	102	88	90	12	26	5	45	11	
1913	43	600	60.3	.217	13.06	100	100	100	7	43	2	45	4	
1914	56	714	60.3	.213	12.77	100	98	98	5	42	2	47	4	
1915	56	721	60.0	.216	12.83	100	100	98	14	34		43	8	
1919	23	497	59.4	.545	32.37	99	251	248	27	15	8	41	9	
1920	24	727	58.8	.618	36.46	98	285	279	9	45	(1)	41	4	
1922	25	755	58.3	.439	25.48	97	202	195	7	56		28	8	
1924	30	679	53.8	.538	28.97	89	248	222	30	42		23	5	
1926	33	532	53.0	.556	29.47	88	256	226	39	36		21	4	
1929	36	545	54.5	.601	32.75	90	277	251	22	53		17	7	
Shearmen:														
1907	15	94	64.8	.249	16.20	108	89	97			15	16	51	18
1908	15	92	65.1	.216	14.10	108	77	84			15	18	46	21
1909	15	93	65.3	.225	14.72	108	80	88			15	18	59	3
1910	25	156	63.3	.264	16.40	105	94	98	10	16	14	46	10	
1911	25	151	62.5	.254	15.55	104	90	93	10	23	12	45	11	
1912	24	156	62.4	.251	15.40	104	89	92	10	24	10	43	12	
1913	41	218	60.2	.281	16.74	100	100	100	5	42	9	41	2	
1914	54	263	60.5	.280	16.78	100	100	100	4	39	9	46	3	
1915	54	264	60.5	.283	17.56	100	104	105	11	31	6	47	5	
1919	22	145	60.9	.634	38.61	101	226	231	15	23	8	46	8	
1920	25	216	58.2	.752	43.99	97	268	263	14	42	4	37	3	
1922	24	178	59.2	.526	30.79	96	187	184	4	58		25	10	
1924	28	181	53.4	.631	34.10	89	225	204	35	35		25	7	
1926	32	176	52.4	.616	32.28	87	219	195	44	32		22	2	
1929	35	163	54.4	.735	39.98	90	262	239	27	42		21	9	
Shearmen's helpers:														
1907	15	201	65.9	.174	11.46	105	83	88			6	10	62	20
1908	15	172	66.2	.168	11.07	106	80	85			7	13	59	17
1909	15	185	67.3	.169	11.32	107	81	87			6	14	59	4
1910	23	355	64.7	.187	12.02	103	89	93	13	3	12	45	22	
1911	23	359	63.8	.178	11.23	102	85	87	13	8	10	50	28	
1912	23	358	63.9	.184	11.74	102	88	90	13	9	10	46	18	
1913	35	418	62.7	.209	12.98	100	100	100	4	24	6	61	3	
1914	48	437	62.7	.201	12.57	100	96	97	3	24	6	63	5	
1915	48	471	62.3	.203	12.66	99	97	98	10	20	4	60	7	
1919	19	399	62.3	.513	31.96	99	245	246	17	9	6	55	12	
1920	22	507	60.8	.615	37.39	97	284	288	7	40	3	48	1	
1922	23	610	60.8	.415	25.27	97	199	195	6	47		35	10	
1924	27	509	62.9	.524	27.92	84	251	215	33	82		30	5	
1926	31	601	52.3	.522	27.30	83	250	210	42	21		34	2	
1929	34	534	54.7	.542	29.65	87	269	228	24	40		26	8	

<sup>1</sup> Less than 1 per cent.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1907 to 1929, by occupation—Bar Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—									
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84					
<b>Bundlers:</b>																		
1907.....	5	41	66.9	\$0.202	\$13.53	109	93	101				76	24					
1908.....	5	41	66.9	.174	11.68	109	80	87				76	24					
1909.....	5	41	66.8	.188	12.42	109	85	93				100						
1910.....	6	77	66.1	.207	13.69	108	95	102				100						
1911.....	7	131	62.0	.197	12.20	101	90	91				66	34					
1912.....	7	132	62.0	.193	11.94	101	89	89				65	35					
1913.....	12	178	61.4	.218	13.38	100	100	100				71	2	27				
1914.....	13	178	63.9	.203	12.97	104	98	97				43	2	55				
1915.....	13	210	64.4	.208	13.38	105	95	100				37	1	58	4			
1919.....	6	115	68.8	.529	36.40	112	243	272				2	4	37	57			
1920.....	10	151	60.9	.555	33.80	99	255	253	2			65	6	27				
1922.....	10	161	57.8	.382	22.29	94	175	167				68	1	28	3			
1924.....	11	184	45.9	.526	24.16	75	241	181	89			6	4	2				
1926.....	14	99	49.7	.552	27.43	81	253	205	61			29	9					
1929.....	19	131	53.3	.543	28.94	87	249	216	40			47	7	6				
<b>Laborers:</b>																		
1907.....	10	296	68.3	.153	10.44	109	91	98		(1)		17	47	25	8	2		
1908.....	10	227	64.8	.153	9.93	104	91	93				1	41	48	8	2		
1909.....	10	324	67.8	.150	10.17	108	89	95				1	23	42	27	4		
1910.....	15	511	67.8	.160	10.86	108	95	102				2	29	25	36	5		
1911.....	17	390	65.5	.159	10.40	105	94	98				9	27	45	18	1		
1912.....	21	536	65.0	.160	10.38	104	95	97				23	15	43	18	1		
1913.....	42	891	62.5	.169	10.66	100	100	100	(1)			26	33	33	2	5		
1914.....	54	1,039	63.3	.173	11.00	101	102	103	1			18	31	42	7	1		
1915.....	54	1,029	62.9	.173	10.91	101	102	102	1			22	27	41	8	1		
1919.....	21	1,058	66.1	.443	29.28	106	262	275	2			9	18	45	18	5		
1920.....	20	816	65.1	.506	33.12	104	299	311	6			20	11	35	27	1		
1922.....	23	806	64.5	.316	21.54	103	187	202	2			29	13	31	23	1		
1924.....	30	936	57.5	.392	23.06	92	232	216	15			37	39	5	3	1		
1926.....	34	854	55.0	.411	22.61	88	243	212	36			28	24	11				
1929.....	38	607	56.0	.399	22.34	90	236	210	11			58	22	8	(1)			

<sup>1</sup> Less than 1 per cent.

<sup>2</sup> 1 per cent whose full-time hours per week were 84½ and less than 1 per cent whose full-time hours per week were 91.

**TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by district and year—Bar Mills**

District and year	Number of plants	Number of employees	Number of employees whose customary turns per week were—							Per cent of employees whose customary turns per week were—															
			5	5, 5, and 6 in rotation	5 and 6 alternately	5, 6, and 6 in rotation	6	5 and 7 alternately	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	5	5, 5, and 6 in rotation	5 and 6 alternately	5, 6, and 6 in rotation	6	5 and 7 alternately	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7			
<b>Eastern:</b>																									
1914	15	1,851	69	---	1,207	3	554	---	---	11	---	7	4	---	65	( <sup>1</sup> )	---	---	---	---	---	( <sup>1</sup> )	1		
1915	15	1,876	70	---	1,211	---	573	---	---	12	---	10	4	---	65	---	---	---	---	---	---	---	---		
1920	6	950	133	100	425	---	287	---	---	5	---	---	14	11	45	---	---	---	---	---	---	---	---		
1922	6	908	9	112	292	---	553	---	---	---	---	2	1	12	30	---	---	---	---	---	---	---	---		
1924	5	704	6	97	262	---	339	---	---	---	---	---	1	14	37	---	---	---	---	---	---	---	---		
1926	6	1,153	462	111	---	---	540	2	---	8	---	30	40	10	---	---	---	---	---	---	( <sup>1</sup> )	---	3		
1929	6	934	456	96	4	---	351	---	---	4	---	24	49	10	( <sup>1</sup> )	---	---	---	---	---	( <sup>1</sup> )	---	---	3	
<b>Pittsburgh:</b>																									
1914	14	3,250	162	42	1,461	---	1,128	4	349	64	12	28	5	1	45	---	35	---	( <sup>1</sup> )	11	2	2	( <sup>1</sup> )	1	
1915	14	3,366	122	42	1,549	4	1,562	4	12	56	---	15	4	1	46	( <sup>1</sup> )	46	( <sup>1</sup> )	( <sup>1</sup> )	( <sup>1</sup> )	---	---	---	( <sup>1</sup> )	---
1920	7	3,167	69	---	958	---	1,458	11	460	153	38	20	2	---	30	---	46	( <sup>1</sup> )	---	15	5	5	1	1	
1922	7	2,624	22	---	1,057	---	949	---	477	75	16	28	1	---	40	---	36	---	---	18	3	3	1	1	
1924	9	2,686	89	257	506	374	1,313	14	21	76	6	30	3	10	19	14	49	1	---	1	1	3	3	1	
1926	10	2,804	82	199	65	837	1,480	---	16	54	30	41	3	7	2	30	53	---	---	1	1	2	2	1	
1929	11	2,538	4	232	286	110	1,280	5	223	137	105	466	( <sup>1</sup> )	8	10	4	45	( <sup>1</sup> )	---	8	5	5	4	16	
<b>Great Lakes and Middle West:</b>																									
1914	19	2,694	77	120	1,284	49	1,085	6	10	15	---	48	3	4	48	2	40	( <sup>1</sup> )	( <sup>1</sup> )	---	1	1	---	2	
1915	19	2,484	76	70	1,246	49	989	6	10	15	---	23	3	3	50	2	40	( <sup>1</sup> )	( <sup>1</sup> )	---	1	1	---	1	
1920	7	2,079	13	200	759	233	846	---	---	22	---	6	1	10	37	11	41	---	---	---	---	---	---	( <sup>1</sup> )	
1922	7	2,218	6	---	829	230	---	17	---	73	3	25	( <sup>1</sup> )	---	37	10	47	---	---	1	---	3	3	1	
1924	10	2,135	205	---	841	217	749	10	1	15	25	72	10	---	39	10	35	( <sup>1</sup> )	( <sup>1</sup> )	---	1	1	---	3	
1926	11	2,576	190	112	512	147	1,388	9	---	25	147	46	7	4	20	6	54	( <sup>1</sup> )	( <sup>1</sup> )	---	1	1	6	2	
1929	13	2,522	179	14	508	239	1,062	8	376	8	---	76	7	1	20	9	42	( <sup>1</sup> )	---	15	( <sup>1</sup> )	---	---	3	
<b>Southern:</b>																									
1914	9	1,007	215	---	219	---	558	---	---	---	---	15	21	---	22	---	55	---	---	---	---	---	---	1	
1915	9	1,006	229	---	172	---	591	---	---	---	---	14	23	---	17	---	59	---	---	---	---	---	---	1	
1920	5	787	21	---	147	---	606	---	---	---	---	11	3	---	19	---	77	---	---	( <sup>1</sup> )	---	---	---	1	
1922	5	907	50	---	179	---	651	---	---	---	---	9	18	6	20	---	72	---	---	---	1	---	---	2	
1924	7	1,039	207	---	47	---	758	---	---	---	---	25	20	---	5	---	73	---	---	( <sup>1</sup> )	---	---	---	2	
1926	8	1,072	288	---	53	---	701	---	---	---	---	28	27	---	5	---	65	---	---	( <sup>1</sup> )	---	---	---	3	
1929	9	1,181	136	---	---	---	1,015	---	---	3	---	27	12	---	---	---	86	---	---	( <sup>1</sup> )	---	---	---	2	
<b>All districts:</b>																									
1914	57	8,802	523	102	4,171	52	3,325	10	359	90	12	98	6	2	47	1	38	( <sup>1</sup> )	( <sup>1</sup> )	4	1	1	( <sup>1</sup> )	1	
1915	57	8,732	497	112	4,176	53	3,715	10	22	83	---	62	6	1	48	1	43	( <sup>1</sup> )	( <sup>1</sup> )	---	---	---	---	1	
1920	25	6,983	236	300	2,280	233	3,197	11	460	182	38	37	3	4	33	3	46	( <sup>1</sup> )	( <sup>1</sup> )	---	---	---	---	1	
1922	25	6,717	87	112	2,357	230	3,188	17	477	157	19	73	1	2	35	3	47	( <sup>1</sup> )	( <sup>1</sup> )	7	3	2	---	1	
1924	31	6,544	507	354	1,646	591	3,159	24	22	93	31	127	8	5	25	9	48	( <sup>1</sup> )	( <sup>1</sup> )	---	---	---	---	2	
1926	35	7,605	1,022	422	630	984	4,109	11	16	89	177	145	13	0	8	13	54	( <sup>1</sup> )	( <sup>1</sup> )	---	---	---	---	2	
1929	39	7,475	775	341	798	349	5,708	13	602	149	157	583	10	5	11	5	50	( <sup>1</sup> )	( <sup>1</sup> )	8	2	---	---	2	

<sup>1</sup> Less than 1 per cent.



**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Bar Mills**

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
<b>Stockers:</b>													
Eastern.....	4	50	5.1	10.8	55.0	54	98.1	\$47.86	\$0.488	\$26.84	104.0	\$50.45	\$0.485
Pittsburgh.....	8	70	5.9	8.3	49.4	83	83.6	48.75	.583	28.80	86.6	50.67	.584
Great Lakes and Middle West.....	10	85	5.7	9.4	53.9	104	92.7	56.98	.615	33.15	96.6	59.24	.613
Southern.....	8	59	5.8	9.7	56.7	63	100.8	38.02	.377	21.38	102.7	39.26	.382
<b>Total.....</b>	<b>30</b>	<b>264</b>	<b>5.7</b>	<b>9.4</b>	<b>53.5</b>	<b>304</b>	<b>92.8</b>	<b>49.18</b>	<b>.530</b>	<b>28.36</b>	<b>96.5</b>	<b>51.17</b>	<b>.530</b>
<b>Heaters:</b>													
Eastern.....	6	38	5.4	10.3	55.1	40	104.6	91.34	.873	48.10	108.7	93.90	.864
Pittsburgh.....	11	62	6.1	9.2	56.3	67	100.9	120.22	1.192	67.11	101.9	121.05	1.187
Great Lakes and Middle West.....	12	36	5.9	8.7	51.6	38	100.3	118.26	1.179	60.84	100.5	118.36	1.178
Southern.....	8	28	6.0	10.6	63.0	29	102.4	91.45	.893	56.26	102.4	91.35	.893
<b>Total.....</b>	<b>37</b>	<b>164</b>	<b>5.9</b>	<b>9.6</b>	<b>56.1</b>	<b>174</b>	<b>101.9</b>	<b>108.36</b>	<b>1.064</b>	<b>59.69</b>	<b>103.3</b>	<b>109.29</b>	<b>1.059</b>
<b>Heaters' helpers:</b>													
Eastern.....	6	48	5.6	10.0	55.7	50	104.0	62.43	.600	33.42	108.0	64.28	.595
Pittsburgh.....	11	79	5.9	9.2	53.9	87	95.9	68.23	.711	38.32	99.9	71.74	.718
Great Lakes and Middle West.....	10	39	6.0	9.2	54.9	41	103.2	86.60	.839	46.06	106.6	80.33	.838
Southern.....	6	19	6.0	11.0	66.1	20	113.7	45.99	.404	26.70	123.1	49.78	.404
<b>Total.....</b>	<b>33</b>	<b>185</b>	<b>5.9</b>	<b>9.6</b>	<b>55.8</b>	<b>198</b>	<b>101.3</b>	<b>68.32</b>	<b>.675</b>	<b>37.67</b>	<b>105.7</b>	<b>71.28</b>	<b>.675</b>
<b>Chargers and helpers:</b>													
Eastern.....	3	6	6.0	9.2	55.4	6	121.4	63.57	.524	29.03	121.8	63.84	.524
Pittsburgh.....	10	69	6.0	9.2	55.6	85	90.8	54.29	.598	33.25	94.8	57.03	.601
Great Lakes and Middle West.....	12	95	5.8	9.2	53.4	108	98.5	59.76	.607	32.41	103.4	62.07	.600
Southern.....	7	39	5.9	10.7	63.6	43	97.7	33.94	.347	22.07	98.3	34.10	.347
<b>Total.....</b>	<b>32</b>	<b>209</b>	<b>5.9</b>	<b>9.5</b>	<b>56.1</b>	<b>242</b>	<b>96.2</b>	<b>53.35</b>	<b>.554</b>	<b>31.08</b>	<b>100.0</b>	<b>55.38</b>	<b>.554</b>

**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Bar Mills—Continued**

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
<b>Drag-downs:</b>													
Eastern.....	5	25	5.2	10.6	55.0	28	94.3	\$52.33	\$0.555	\$30.53	101.7	\$55.84	\$0.549
Pittsburgh.....	5	32	5.7	9.0	51.9	40	75.6	48.44	.640	33.22	82.0	51.55	.628
Great Lakes and Middle West.....	6	31	5.7	9.6	54.2	34	98.3	59.75	.608	32.95	102.1	61.57	.603
Southern.....	8	26	5.9	10.8	63.8	30	90.2	35.19	.390	24.88	97.7	37.30	.382
<b>Total.....</b>	<b>24</b>	<b>114</b>	<b>5.6</b>	<b>9.9</b>	<b>55.9</b>	<b>132</b>	<b>88.8</b>	<b>40.17</b>	<b>.554</b>	<b>30.97</b>	<b>94.9</b>	<b>51.80</b>	<b>.546</b>
<b>Roll engineers:</b>													
Eastern.....	5	14	5.7	11.7	66.6	14	133.7	61.60	.401	30.70	133.7	61.60	.461
Pittsburgh.....	6	28	6.1	9.4	56.9	36	94.5	58.03	.614	34.94	94.8	58.28	.615
Great Lakes and Middle West.....	5	12	5.9	9.7	56.9	12	125.1	86.62	.693	39.43	125.1	86.62	.693
Southern.....	4	6	6.0	11.2	66.8	6	129.2	43.62	.338	22.58	129.2	43.62	.338
<b>Total.....</b>	<b>20</b>	<b>60</b>	<b>6.0</b>	<b>10.2</b>	<b>60.1</b>	<b>68</b>	<b>111.0</b>	<b>62.54</b>	<b>.563</b>	<b>33.84</b>	<b>112.2</b>	<b>62.68</b>	<b>.564</b>
<b>Rollers:</b>													
Eastern.....	6	20	5.5	10.2	55.7	20	105.6	150.99	1.430	79.66	105.6	150.99	1.430
Pittsburgh.....	11	53	6.0	9.0	54.6	54	110.9	217.98	1.966	107.34	112.7	219.09	1.945
Great Lakes and Middle West.....	13	35	5.8	9.0	52.1	35	112.7	214.60	1.905	99.25	112.7	214.60	1.905
Southern.....	9	17	5.9	10.4	61.1	18	105.7	172.77	1.635	99.90	105.7	172.77	1.635
<b>Total.....</b>	<b>39</b>	<b>125</b>	<b>5.9</b>	<b>9.4</b>	<b>55.0</b>	<b>127</b>	<b>109.8</b>	<b>200.09</b>	<b>1.822</b>	<b>100.21</b>	<b>110.6</b>	<b>200.56</b>	<b>1.814</b>
<b>Roughers:</b>													
Eastern.....	6	36	5.6	9.9	54.5	36	108.5	85.19	.785	42.78	113.1	87.90	.777
Pittsburgh.....	7	60	5.9	9.3	55.4	69	93.2	90.15	.967	53.57	98.9	94.41	.955
Great Lakes and Middle West.....	10	52	5.6	9.6	53.5	53	105.6	107.12	1.015	54.30	106.3	107.72	1.013
Southern.....	8	31	5.9	10.5	61.8	37	90.9	58.26	.641	39.61	93.2	59.70	.640
<b>Total.....</b>	<b>31</b>	<b>179</b>	<b>5.7</b>	<b>9.7</b>	<b>55.8</b>	<b>195</b>	<b>99.0</b>	<b>87.79</b>	<b>.887</b>	<b>49.49</b>	<b>102.5</b>	<b>90.24</b>	<b>.881</b>

<b>Catchers:</b>													
Eastern	6	27	5.6	9.9	55.1	27	101.7	75.46	.742	40.88	111.1	81.05	.729
Pittsburgh	7	44	5.9	9.2	53.9	50	93.3	92.46	.991	53.41	98.3	96.49	.981
Great Lakes and Middle West	10	47	5.7	9.5	54.2	52	97.8	93.28	.953	51.65	103.9	97.59	.939
Southern	8	25	5.9	10.7	62.8	26	100.0	64.71	.647	40.63	102.7	66.01	.643
Total	31	143	5.8	9.7	55.8	155	97.4	85.12	.874	48.77	103.2	89.06	.863
<b>Stranders:</b>													
Eastern	6	50	5.6	9.8	54.0	52	97.7	61.35	.628	33.91	105.0	64.88	.618
Pittsburgh	7	83	5.8	8.9	52.3	96	89.8	74.45	.829	43.36	96.7	79.24	.819
Great Lakes and Middle West	10	105	5.7	9.4	53.8	116	97.9	96.64	.988	53.15	100.0	98.53	.985
Southern	7	33	5.8	10.5	61.2	43	78.5	41.13	.524	32.07	82.8	43.35	.523
Total	30	271	5.7	9.5	54.3	307	92.6	75.95	.820	44.53	97.4	79.07	.812
<b>Finishers:</b>													
Eastern	6	17	5.4	10.3	55.1	17	98.0	66.82	.682	37.58	102.7	69.36	.675
Pittsburgh	8	47	5.9	8.9	52.6	54	98.2	92.78	.945	49.71	103.5	97.96	.946
Great Lakes and Middle West	12	55	5.7	9.2	52.3	59	100.6	114.74	1.140	59.62	103.1	116.61	1.132
Southern	8	16	5.9	10.4	61.7	17	102.7	60.84	.592	36.53	107.6	64.31	.597
Total	34	135	5.8	9.4	53.9	147	99.7	94.90	.952	51.31	103.7	98.24	.947
<b>Hook-ups:</b>													
Eastern	6	25	5.3	10.4	54.8	26	98.1	55.18	.562	30.80	108.1	59.73	.553
Pittsburgh	6	41	6.1	9.1	55.3	52	77.5	52.43	.676	37.38	83.7	56.35	.673
Great Lakes and Middle West	9	55	5.7	9.0	51.2	63	92.0	60.30	.754	38.60	99.2	74.11	.747
Southern	6	29	6.0	10.6	63.3	31	104.2	52.40	.503	31.84	108.8	54.79	.504
Total	27	150	5.8	9.6	55.3	172	90.7	59.02	.620	35.96	97.6	63.08	.646
<b>Roll hands, other:</b>													
Eastern	3	3	5.7	10.1	56.3	3	85.2	45.93	.539	30.35	88.5	47.60	.538
Pittsburgh	8	144	6.3	9.0	56.9	161	106.0	90.37	.852	48.48	110.8	93.66	.846
Great Lakes and Middle West	10	90	5.8	8.7	50.4	114	80.9	62.66	.774	39.01	89.7	68.06	.759
Southern	7	31	5.9	10.1	60.3	42	78.6	46.68	.594	35.82	83.6	50.63	.606
Total	28	208	6.1	9.1	55.1	320	93.3	74.35	.797	43.91	99.5	78.46	.789
<b>Hotbed men:</b>													
Eastern	5	44	5.6	10.2	56.8	45	102.3	48.78	.477	27.09	109.8	51.78	.472
Pittsburgh	9	157	6.0	9.1	54.8	210	79.8	48.69	.609	33.37	87.8	53.10	.605
Great Lakes and Middle West	13	185	5.8	9.0	52.4	224	88.3	60.45	.685	36.89	97.1	66.36	.683
Southern	9	56	5.8	10.1	58.6	66	95.5	38.82	.406	23.79	100.0	40.28	.403
Total	36	442	5.9	9.3	54.5	545	87.1	52.90	.601	32.75	94.9	56.89	.599
<b>Shear-men:</b>													
Eastern	5	26	5.5	10.3	55.6	27	104.6	54.20	.518	28.80	109.4	56.72	.519
Pittsburgh	10	62	6.0	8.9	53.4	64	107.7	91.04	.845	45.12	109.3	92.00	.841
Great Lakes and Middle West	11	51	5.9	9.1	52.7	53	106.5	88.62	.832	43.85	108.0	89.41	.828
Southern	9	19	5.9	10.2	60.1	19	112.6	46.68	.415	24.94	115.4	47.71	.414
Total	35	158	5.9	9.3	54.4	163	107.4	78.98	.735	39.98	109.6	80.15	.731

TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—**Bar Mills**—Continued

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupations only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
<b>Shearmen's helpers:</b>													
Eastern.....	5	25	5.6	9.7	53.6	26	91.7	\$47.12	\$0.514	\$27.55	98.3	\$49.70	\$0.505
Pittsburgh.....	10	185	5.9	9.0	53.3	274	72.1	39.06	.542	28.89	76.9	41.64	.541
Great Lakes and Middle West.....	10	140	5.8	9.3	54.0	175	89.8	56.00	.625	33.75	95.5	58.99	.618
Southern.....	9	55	5.9	10.3	61.6	59	104.5	35.62	.341	21.01	107.9	36.70	.340
<b>Total.....</b>	<b>34</b>	<b>405</b>	<b>5.9</b>	<b>9.3</b>	<b>54.7</b>	<b>534</b>	<b>82.4</b>	<b>44.65</b>	<b>.542</b>	<b>29.65</b>	<b>87.5</b>	<b>47.17</b>	<b>.539</b>
<b>Bundlers:</b>													
Eastern.....	2	6	5.7	10.1	56.9	6	108.8	46.43	.427	24.30	113.6	48.17	.424
Pittsburgh.....	9	69	5.9	8.8	52.3	82	91.1	62.77	.579	30.28	95.3	55.12	.578
Great Lakes and Middle West.....	6	36	6.1	8.9	53.8	38	107.7	66.29	.523	28.14	113.7	60.10	.529
Southern.....	2	5	6.0	9.9	59.2	5	127.8	46.64	.365	21.61	129.8	47.43	.365
<b>Total.....</b>	<b>19</b>	<b>116</b>	<b>6.0</b>	<b>8.9</b>	<b>53.3</b>	<b>131</b>	<b>98.1</b>	<b>53.27</b>	<b>.543</b>	<b>28.94</b>	<b>102.8</b>	<b>55.95</b>	<b>.544</b>
<b>Laborers:</b>													
Eastern.....	6	51	5.4	10.5	56.3	58	92.2	33.51	.363	20.44	102.1	37.61	.368
Pittsburgh.....	11	185	6.3	9.0	56.1	249	84.2	39.47	.409	26.31	89.9	42.59	.474
Great Lakes and Middle West.....	12	103	6.0	9.1	55.2	141	85.0	38.88	.458	25.28	91.2	42.02	.461
Southern.....	9	130	5.8	9.7	56.2	159	93.1	24.57	.264	14.84	97.5	25.99	.267
<b>Total.....</b>	<b>38</b>	<b>469</b>	<b>6.0</b>	<b>9.4</b>	<b>56.0</b>	<b>607</b>	<b>87.5</b>	<b>34.86</b>	<b>.399</b>	<b>22.34</b>	<b>93.4</b>	<b>37.63</b>	<b>.403</b>

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bar Mills

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours by districts					
Turns per week	Day turns				Turns per week	Night turns				Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	South-ern	Total
	Hours					Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						
7	12	12	12	84					84		2	8	4	14	
7	12	12	9	81					81				1	1	
6	14	8½		78½					78½				1	1	
7	11	11	12	78					78				1	1	
7	12	12	3	75					75				1	1	
6	12	12		72					72	3	4	38	7	52	
6	12	11		71					71			2		2	
7	10	10	10	70					70		2		1	4	
6	12	9		69					69			1		1	
6	11½	11½		69					69				109	109	
6	12	8		68					68				3	3	
6	11½	10½		68					68			1		1	
7	10	10	8	68					68		2			2	
6	11½	10		67½					67½					3	
6	12	9		66½					66½			3		3	
6	12	6		66					66	9		2	18	27	
6	11	11		66					66		3	72	4	79	
6	11½	8		65½					65½	10				10	
6	13			65					65					1	
6	11	10		65					65			1		1	
7	10	10	5	65					65		1		1	2	
7	9	8	12	65					65	4				4	
6	11	9		64					64	1				1	
7	10½	5	6½	64					64	2				2	
7	10	10	10	70					70		35			35	
6	10	8		58					58						
6	11½	6		63½					63½	4			12	16	
7	10½	5	6	63½					63½	2				2	
6	11	8		63					63	2				2	
6	10½	10½		63					63	2	53	2		55	
7	10	10	3	63					63				1	1	
6	11½	5		62½					62½	1				1	
6	11	6		61					61				16	16	
6	10½	8½		61					61			2	43	45	
6	10½	8		60½					60½	1				1	
6	10½	6½		60½					60½	1				1	
5	12			60					60	152			12	164	
6	11	5		60					60	7			3	10	
6	10½	7½		60					60		7			7	
6	10	10		60					60	1	78	40	76	195	
6	10	9		59					59		8	21		29	
6	10½	6		58½					58½		23			23	
6	10	8½		58½					58½		2			2	
6	10	8		58					58	27	5	281	36	329	
5	11½			57½					57½	11			8	19	
6	10½	5		57½					57½	17				17	
6	9½	9½		57					57			234		234	
6	10	6		56					56				196	201	
6	9½	8½		56					56	5				5	
7	8	8	8	56					56	2				2	
6	10	5½		55½					55½		1	8		9	
6	10	5½		55½					55½	36				36	
6	10	5½		55½					55½	13				13	
5	11			55					55	27				27	
6	10	5		55					55	115		4	37	183	
6	9	9		54					54		27	1	29	50	
6	9½	5		53½					53½	58				58	
6	9	8		53					53	14				14	
5	10½			52½					52½	1				1	
6	9½	5		52½					52½	20				20	
5	10			50					50	83		4	26	113	
6	9	5		50					50	1	22		11	34	
6	8	8	8	48					48		1			1	
6	8	8		48					48			82		135	
6	8		8	48					48		1			1	
5	9			45					45				71	71	
6	8	5		45					45	2				2	
6	8	4		44					44		18			18	
Total.										633	368	787	729	2,517	

Group A.—Day turn only

160 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bar Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours by districts				
Day turns				Night turns				Average hours per week	Eastern	Pittsburgh	Great Lakes and Middle West	Southern	Total	
Turns per week	Hours			Turns per week	Hours									
	Monday to Friday	Saturday	Sunday		Per week	Monday to Friday	Saturday	Sunday	Per week					

Group B.—Night turn only

7	13	13	13	91	91						1	1
7	12	12	12	84	84						5	6
6	13	12	18	83	83	1		1	2			1
7	12	12	9	81	81							1
6	12	14		74	74							1
6	12		14	74	74	1						1
6	12	12		72	72							4
6	12		12	72	72	4			2			6
7	10	10	10	70	70			2				2
6	11½	11½		69	69			1				1
7	10	10	9	69	69			1				1
5	13			65	65	1			2			3
5	12½			62½	62½	7						7
5	12			60	60	4						29
6	10	10		60	60				6		19	20
6	10		10	60	60			3			20	3
5	11¾			58¾	58¾							1
5	11½			57½	57½	15						15
5	8	8	8	56	56			3				3
5	11			55	55				28			28
5	10½			52½	52½	1			1			2
7	8	8	8	56	56					4		4
5	10			50	50			1		4		5
6	8		10	50	50			1				1
6	8	8		48	48			3				3
6	8		8	48	48			4				4
5	8			40	40			3				3
Total						35	22	49	52			158

Group C.—Weekly changes from one shift to another

7	12	12	84	7	12	12	84	84	11		5	10	26
7	11	11	77	7	13	13	91	84	5				5
7	12	12	84	6	12	12	72	78	4				4
7	11	11	74	7	11	9	75	74½		2			2
7	10	8	70	7	11	8	75	72½		4			4
6	12	12	72	6	12	12	72	72				80	80
7	10	10	8	7	11	11	9	75	71½				1
7	11	11	77	5	13			65	71	1			2
7	10	10	70	7	10	10	70	70		13	2		15
7	10	8	70	7	10	8	70	70		4			4
6	11	6	61	6	13		13	78	69½	4			4
6	11½	11½	69	6	11½		11½	69	69		2		2
7	10	10	8	7	10	10	9	69	68½		80		80
7	11	11	74	5	12½			62½	68½			2	2
7	10	10	8	7	10	10	8	68	68		1		1
6	12	12	72	5	12			60	66	2			2
6	11	11	66	6	11		11	66	66		4		4
6	11	11	66	5	13			65	65½				4
6	10	10	60	7	10	10	10	70	65			141	141
6	10	10	60	7	10	10	10	70	65		4		4
7	10	10	70	6	10	10	10	60	65		6		6
6	11½	10½	68	5	12			60	64			2	2
6	10	10	60	7	10	10	8	68	64			2	82
7	10	9	68	6	10	10	10	60	64	82			10
6	11	6	61	5	13			65	63	2			2
6	10½	10½	63	6	10½		10½	63	63		15		15
6	10½	10½	63	5	12			60	61½			8	8

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bar Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district					
Day turns					Night turns					Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	South-ern	Total
Turns per week	Hours				Turns per week	Hours									
	Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week		Mon-day to Fri-day	Sat-ur-day	Sun-day	Per week						

Group C.—Weekly changes from one shift to another—Continued

5	12			60	5	12			60	60	2				2
5	11½			57½	5	12½			62½	60	139				139
7	10	10	10	70	5	10			50	60		1			1
6	10	10		60	6	10	10		60	60			188	294	482
6	10	10		60	6	10	10		60	60		330			330
7	9½	9½	8	65	5	11			55	60			4		4
6	10	9		59	6	10		10	60	59½		328			328
6	10	8½		58½	6	10		10	60	59¼		1			1
6	11	10½		65½	5	10½			52½	59		2			2
6	10	8		58	5	12			60	59			82		82
6	10	10½		60½	5	11			55	57¾		2			2
5	11			55	5	12			60	57¼		2			2
6	9½	9½		57	5	11			55	56			147		147
7	8	8	8	56	7	8	8	8	56	56			1		1
7	8	8	8	56	7	8	8	8	56	56		293	49		342
					7	8	8	8	56	56					
7	8	8	4	52	7	8	8	12	60	56		43			43
					7	8	8	8	56	56					
6	10	9		59	5	10	9		50	54½		108	45		153
6	9	9		54	6	9	9		54	54			1		1
6	8	8	8	56	6	8	8	8	56	53½			1		1
7	8	8	8	56	6	8	8	8	48	53½					
					6	8	8	8	48	53½		8	48		56
7	8	8	8	56	7	8	8	8	56	53½					
					7	8	8	8	56	53½		14			14
6	8	8		48	6	8	8	8	48	53½					
					7	8	8	8	56	53½		83	3		86
7	8	8	8	56	6	8	8	8	48	52		3			3
7	8	8	8	56	6	8	8	8	48	52		1			1
7	8	8	8	56	6	8	8	8	48	50½			148		148
					6	8	8	8	48	48					
7	8	8	8	56	6	8	8	8	48	50½		7			7
					6	8	8	8	48	48					
6	8	8	8	48	6	8	8	8	48	50½		1			1
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	50½			1		1
					6	8	8	8	48	48					
6	8	8	8	48	6	8	8	8	48	50½		215	227		442
					6	8	8	8	48	48					
5	10			50	5	10			50	50			125		125
6	8	10		50	6	8	8	8	48	50				3	3
					6	8	8	4	52	50					
6	9	9½		54½	5	8½			42½	48½		5			5
6	9	9		54	5	8½			42½	48½		3			3
6	8	8		48	6	8	8	8	48	48			9	3	12
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	48		6	23		29
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	48		255			255
					6	8	8	8	48	48					
6	8	8		48	6	8	8	8	48	48			73	10	83
6	8	8		48	6	8	8	8	48	48		3			3
7	8	9	3½	52½	6	8			40	46¼		4			4
6	8	9		49	6	8			40	46					
					6	8		9	49	46		6			6
6	8	8		48	6	8			40	46					
					6	8		10	50	46		3			3
6	9	9		54	5	8			40	45½					
6	8	8		48	6	8			40	45½		30			30
6	8	8		48	6	8			40	45½					
6	8	8		48	6	8	8		48	45½			239		239
					6	8	8		48	45½					
6	8	8		48	6	8	8		48	45½		101			101

162 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by district—Bar Mills—Continued

Customary turns and hours worked									Number of employees who worked each specified combination of customary turns and hours, by district				
Day turns				Night turns				Average hours per week	East-ern	Pitts-burgh	Great Lakes and Middle West	South-ern	Total
Turns per week	Hours			Turns per week	Hours								
	Mon-day to Fri-day	Sat-ur-day	Sun-day		Per week	Mon-day to Fri-day	Sat-ur-day						

Group C.—Weekly changes from one shift to another—Continued

6	8	9	49	5	8			40	44½		5			5
6	8	8	48	5	8			40	44		131	83		214
6	8	8½	48½	5	8			40	42½	33				33
6	8	8	48	5	8			40	42½		232	14		246
6	8	5	45	5	8			40	41½	62				62
5	8		40	5	8			40	40			9		9
				5	8			40	40					
Total.										266	2,448	1,686	400	4,800

ROUGHERS, ONLY

6	12	12	72	6	12	12		72	72				5	5
6	11½	11½	69					69	69				9	9
6	11	11	66	5	13			65	65½			3		3
6	10	10	60	7	10	10	8	68	64		4			4
6	10½	10½	63					63	63		3			3
6	11	6	61					61	61				2	2
6	10½	8½	61					61	61				1	1
5	12		60					60	60	4				4
5	11½		57½	5	12½			62½	60	8				8
6	10	10	60	6	10	10		60	60			7	13	20
6	10	10	60	6	10	10		60	60		14			14
6	10	10	60					60	60		2			2
6	10	9	59	6	10		10	60	59½		23			23
6	10	9	59					59	59			1		1
6	10	8	58	5	12			60	59			4		4
6	10	8	58					58	58			5		5
6	10	6	56					56	56				1	1
6	9½	9½	57	5	11			55	56			6		6
7	8	8	56	7	8	8	8	56	56		3			3
6	10	5¾	55¾					55¾	55¾	2				2
6	10	5¾	55¾					55¾	55¾	3				3
6	10	5	55					55	55	7				7
6	10	9	59	5	10			50	54½		3	4		7
6	9	9	54					54	54				1	1
6	9¾	5	53¾					53¾	53¾	6				6
5	10		50	5	10			50	50			8		8
5	10		50					50	50				2	2
6	8	8	48	6	8	8		48	48			3		3
6	8	8	48					48	48			2		2
6	8	8	48	6	8	8		48	48			5		5
6	3	8	48	5	8			40	45½					3
6	8	8	48	5	8			40	40		3			3
6	8	8½	48½	5	8			40	44		4	5		9
6	8	8	48	5	8			40	42½	6				6
6	8	8	48	5	8			40	40		10			10
				5	8			40	40					
Total.										36	69	53	37	195



TABLE E.—Average and classified full-time hours per week in six specified occupations, 1929, by district—Bar Mills

Occupation and district	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—									
				40, under 44	44, under 48	48, under 56	56, under 60	60, under 66	66, under 72	72	84		
<b>Heaters:</b>													
Eastern	6	40	55.1	13			1		17	5	4		
Pittsburgh	11	67	56.3	7	9	4	5	7	4	1	25	5	
Great Lakes and Middle West	12	38	51.6	6	4	9	12		1	1	2	2	1
Southern	8	29	63.0		2		4			4	2	14	3
Total	37	174	56.1	26	15	13	22	7	5	23	34	25	3
<b>Rollers:</b>													
Eastern	6	20	55.7	3			5		5	6	1		
Pittsburgh	11	54	54.6	8	3	5	4	6	13	9	4	2	
Great Lakes and Middle West	13	35	52.1		8	6	10	2	5	3	1	1	
Southern	9	18	61.1		1		2	1		6	2	4	2
Total	39	127	55.0	11	12	10	21	9	23	24	8	7	2
<b>Roughers:</b>													
Eastern	6	36	54.5	6			18		12				
Pittsburgh	7	69	55.4	10	7		3	3	23	16	7		
Great Lakes and Middle West	10	53	53.5		10	5	12	6	10	7	3		
Southern	8	37	61.8		3		3	1		13	3	9	5
Total	31	195	55.8	16	20	5	36	10	33	48	13	9	5
<b>Stranders:</b>													
Eastern	6	52	54.0	9			25		1	17			
Pittsburgh	7	96	52.3	16	29		5	5	12	16	13		
Great Lakes and Middle West	10	116	53.8		24	5	30	15	16	6	20		
Southern	7	43	61.2		2		5	2		8	9	12	5
Total	30	307	54.3	25	55	5	65	22	29	47	42	12	5
<b>Hot bed men:</b>													
Eastern	5	45	56.8				27		18				
Pittsburgh	9	210	54.8	16	17	14	51	19	49	35	3	6	
Great Lakes and Middle West	13	224	52.4		46	12	79	37	21	14	15		
Southern	9	66	58.6		13		7	1		23	6	9	7
Total	36	545	54.5	16	76	26	164	57	70	90	24	15	7
<b>Laborers:</b>													
Eastern	6	58	56.3				32		2	23			1
Pittsburgh	11	249	56.1		8	15	129	1	14	47	26	9	
Great Lakes and Middle West	12	141	55.2		4	27	24		63	12	4	7	
Southern	9	150	56.2		13		30	34	26	52		4	
Total	38	607	56.0		25	42	215	35	105	134	30	20	1



G. L. and M. W.	224	.685					1	8	18	20	43	9	8	8	14	8	17	31	11	12	9	6																									
Southern.....	66	.406		4	17		3	14	5	5	6	8	2	1				1																													
Total.....	545	.601		4	19		7	24	55	45	102	64	47	38	25	13	22	38	14	12	9	6																									
Laborers:																																															
Eastern.....	58	.363					14	41	3																																						
Pittsburgh.....	249	.469						97	4	148																																					
G. L. and M. W.	141	.458						2	84	20	25	6	3			1																															
Southern.....	169	.264	11	47	28	70	3																																								
Total.....	607	.399	11	47	28	84	46	184	24	173	6	3			1																																

<sup>1</sup> 5 employees earned \$2.50 and under \$2.75; 1 employee earned \$2.75 and under \$3; 2 employees earned \$3 and under \$3.25.  
<sup>2</sup> 2 employees earned \$2.50 and under \$2.75; 1 employee earned \$3.25 and under \$3.50.

TABLE G.—Average and classified hours actually worked by employees in six specified occupations in pay period covered, 1929, by district—  
Bar Mills

Occupation and district	Number of employees	Average hours worked	Number of employees who during the pay period worked hours specified																		
			Under 32	32, under 40	40, under 48	48, under 56	56, under 64	64, under 72	72, under 80	80	Over 80, under 88	Over 88, under 96	Over 96, under 104	Over 104, under 112	Over 112, under 120	Over 120, under 132	Over 132, under 144	Over 144, under 156	Over 156, under 168	Over 168, under 180	Over 180, under 192
<b>Heaters:</b>																					
Eastern	40	108.7			1	1	3	1		2	7	3	2		4	6	6		1	3	
Pittsburgh	67	101.9	6		2	2	1	2	3	2	1	2	4	3	5	7	12		1	2	
G. L. and M. W.	38	100.5		2	2	2			3	2	2	2	2	2	1	1	1		5		1
Southern	29	102.4	1		2	2				2	7		3		2		2		2	2	1
Total	174	103.3	7	4	5	9	4	2	7	2	6	20	6	11	6	9	2	11	16	21	1
<b>Rollers:</b>																					
Eastern	20	105.6			3						3	1	1		4		1	1	6		
Pittsburgh	54	112.7	1		2			1		4	1	3	4	6	1	6	7	9	2	3	2
G. L. and M. W.	35	112.7							1	3	1	4	1	4	1	4	1	4	4		2
Southern	18	105.7	1			1		1		2	3		3		1	1	3		1		1
Total	127	110.6	2	2	3	1	1		2	3	7	7	5	5	8	14	8	12	10	22	2
<b>Roughers:</b>																					
Eastern	36	113.1			2					2	1		9		3	5	12				
Pittsburgh	69	98.9	6		1	1	4	2	5	2		6	2	6	3	4	5	3	5		5
G. L. and M. W.	53	106.3	1		3	2	2	2	1	3	5	8	2	4	6	11	3	2	2	1	1
Southern	37	93.2	6		2	1	1		2	2	6		2		1	5	5	1		2	1
Total	195	102.5	13	1	8	4	5	4	8	2	7	12	6	28	4	12	12	14	33	4	7
<b>Stranders:</b>																					
Eastern	52	105.0			3		2	1	5	2	1	1	19	1	2		4	8		1	
Pittsburgh	96	96.7	13		1	1	1	1	5	6		15	2	3	7		8	10	3	7	
G. L. and M. W.	116	100.0	6		3	7	15	3	3	5	2	11	7	4	5		7	3	15	9	
Southern	43	82.8	9		1	3	1	1	4	2		5		4		2		1	5	3	1
Total	307	97.4	28	4	12	19	4	5	10	8	13	8	27	32	8	16	18	20	36	3	17
<b>Hotbed men:</b>																					
Eastern	45	109.8			4					4		2	1	8		6		3	2	14	
Pittsburgh	210	87.8	36	1	7	3	5	5	5	7	4	7	10	6	9	14	19	12	18	8	18

U. L. and M. W.	224	97.1	15	1	4	8	6	9	7	2	2	23	8	16	19	18	8	18	11	7	25	9	4	1	1	2	1	1	1	
Southern	66	100.0	6	1	5	3	1	3	3	4	1	---	16	2	---	---	4	---	---	2	7	---	---	---	---	---	---	---	---	
Total	545	94.9	57	3	16	18	12	17	15	13	11	30	36	25	36	32	37	30	32	19	64	18	2	14	1	4	---	2	1	
Laborers:																														
Eastern	58	102.1	---	1	2	2	2	2	1	1	6	---	10	1	5	---	3	---	9	1	9	---	2	1	---	---	---	---	---	---
Pittsburgh	249	89.9	40	4	8	7	5	5	6	2	5	5	4	8	11	18	19	18	25	3	31	---	14	---	5	---	4	---	2	---
O. L. and M. W.	141	91.2	24	3	2	5	5	5	3	2	4	3	9	8	6	10	7	5	6	5	8	---	7	1	8	---	4	---	1	---
Southern	150	97.5	17	5	2	9	12	7	3	1	8	---	18	1	24	1	23	1	2	9	7	---	3	---	4	---	2	---	---	---
Total	607	93.4	81	13	14	23	24	19	13	6	23	8	41	18	46	29	52	24	42	18	55	26	2	17	---	10	---	2	1	---

TABLE H.—Average and classified earnings actually received by employees in six specified occupations in pay period covered, 1929, by district—  
Bar Mills

Occupation and district	Number of employees	Average earnings per pay period	Number of employees whose earnings during the pay period were—																														
			Under \$5	\$5, under \$10	\$10, under \$15	\$15, under \$20	\$20, under \$25	\$25, under \$30	\$30, under \$35	\$35, under \$40	\$40, under \$45	\$45, under \$50	\$50, under \$55	\$55, under \$60	\$60, under \$65	\$65, under \$70	\$70, under \$75	\$75, under \$80	\$80, under \$85	\$85, under \$90	\$90, under \$95	\$95, under \$100	\$100, under \$110	\$110, under \$120	\$120, under \$130	\$130, under \$140	\$140, under \$150	\$150, under \$160	\$160, under \$180	\$180, under \$200	\$200, under \$250	\$250 and over	
<b>Heaters:</b>																																	
Eastern.....	40	\$83.90								2					3	8	2	2	1	2	5	5	6	1	3								
Pittsburgh.....	67	121.05		2	2	2		1				1	2		1		1		1	4	2	8	6	1	5	4							
G. L. and M. W.....	38	118.36					1				1				2	3	1	2		2	6	4	1	4	1	4	1	4	3	2	1		
Southern.....	29	91.45	1				4			1	1		4						2	1	1	5	1	2	2	1			1				
<b>Total.....</b>	<b>174</b>	<b>109.29</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>		<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>10</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>8</b>	<b>10</b>	<b>20</b>	<b>23</b>	<b>9</b>	<b>14</b>	<b>7</b>	<b>9</b>	<b>11</b>	<b>4</b>	<b>4</b>	<b>2</b>	
<b>Rollers:</b>																																	
Eastern.....	20	150.99										1				1		1						3	2	2			6	1	3		
Pittsburgh.....	54	219.09					1									1		1					1	1		2	1	3	5	8	14	15	
G. L. and M. W.....	35	214.60														2						1			2	1	1	2	5	8	5	11	
Southern.....	18	172.77		1																					2	2	2	1	2	5	2		
<b>Total.....</b>	<b>127</b>	<b>200.56</b>		<b>1</b>			<b>1</b>					<b>1</b>	<b>1</b>			<b>3</b>	<b>1</b>	<b>2</b>				<b>1</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>7</b>	<b>4</b>	<b>5</b>	<b>17</b>	<b>19</b>	<b>27</b>	<b>28</b>	
<b>Roughers:</b>																																	
Eastern.....	36	87.90							2	1		2	3		2	1	1	2	1	4	2		13	4									
Pittsburgh.....	69	94.41		1	3		2	1	1		1	1	1	2		3	2	4	1	7	7		11	6	7	2	2		4				
G. L. and M. W.....	53	107.72	1								1				1	1	7		8	2				4	3				4	4			
Southern.....	37	59.70	2		4		1	3	1		1	2	1		3	4	2	2	1	5	3		2										
<b>Total.....</b>	<b>195</b>	<b>90.24</b>	<b>3</b>	<b>1</b>	<b>7</b>		<b>3</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>12</b>	<b>6</b>	<b>13</b>	<b>10</b>	<b>20</b>	<b>9</b>	<b>38</b>	<b>14</b>	<b>10</b>	<b>2</b>	<b>2</b>		<b>8</b>	<b>4</b>			
<b>Stranders:</b>																																	
Eastern.....	52	64.88						2	3	6	10	5	1	2		5	2	8	3	3	1	1											
Pittsburgh.....	96	79.24	2	6	5	1				1	1	1	2		5	7	12	5	9	7	13	5	5	2	8		4						
G. L. and M. W.....	116	98.53		4	2				2	2	2		6	3	10	5	2	3	3	5	9	24	11	5	2	1	6	4	4	1			
Southern.....	43	43.35	7	2			8	2		2	3	6	1	3	1	1	1	2	1		1			1	1								
<b>Total.....</b>	<b>307</b>	<b>79.07</b>	<b>9</b>	<b>12</b>	<b>7</b>	<b>1</b>	<b>8</b>	<b>2</b>	<b>2</b>	<b>7</b>	<b>12</b>	<b>19</b>	<b>6</b>	<b>11</b>	<b>8</b>	<b>16</b>	<b>18</b>	<b>16</b>	<b>18</b>	<b>16</b>	<b>15</b>	<b>24</b>	<b>30</b>	<b>13</b>	<b>14</b>	<b>2</b>	<b>6</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>1</b>		



## SHEET MILLS

Data for this department cover 15 sheet-mill establishments located in 6 States, which during the pay-roll period covered employed 12,598 wage earners. Of this total 6,597 were in the 18 principal occupations for which separate figures are shown.

A study of wages and hours of labor for employees in this department was first made in 1910. From 1910 to 1914 data were secured for employees in the principal occupations only, but from 1914 to 1929 employees in all occupations were included.<sup>1</sup> Comparable data for employees in the principal occupations from 1910 to 1929 are given in Table A.

Hours of labor in this department show little change during the years 1914 and 1915, the full-time average hours per week being 52.3 and 52.5, respectively. In 1920 hours dropped to 50.3, or 4 per cent less than in 1914. Weekly hours in the years 1922 and 1924 were about the same as in 1920, but in 1926 hours decreased to 48.9, this being the 1929 average also, and 7 per cent less than in 1914.

This small decrease in full-time weekly hours in this department was due to the adoption of the 8-hour day for hot mill crews and certain other occupations long before its general adoption in other departments of the industry. Certain employees, chiefly laborers, have not as yet received the full benefit of the 8-hour day, as the average hours per day for employees in this occupation are 9.8.

Comparisons of full-time hours per week in the various principal occupations may be made from Table A. The average hours per week of employees in the hot mill occupations which include the heating and rolling crews have not varied much over the period 1910 to 1929. This is also true of the shear crew, but the hours of picklers and laborers show considerable variation. The average hours per week of picklers were 70.8 in 1910 as compared with 68.1 in 1913. There was little change until 1920 when the average was reduced to 51.5, which is 24 per cent below the 1913 figure. In 1922 picklers worked an average of 65.9 hours, but this average dropped to 56.9 in 1926 and to 52 in 1929. The average of 63.1 hours per week for laborers in 1910 did not change to any extent until 1920, when weekly hours were 59.5. However, in 1922 hours advanced to 65.2, which is close to the 1919 average of 64.5. There was a decrease in 1926 in average hours per week to 56.6, but an increase in 1929 to 60.7, a decrease of only 4 per cent compared with 1910.

The increases or decreases in full-time hours per week of employees have been caused chiefly by changes in daily hours of labor as average turns per week have remained practically the same from year to year. Table B shows that 95 per cent of the employees scheduled in 1914 worked 6 days per week or alternated or rotated regularly from 5 to 6 turns, and in 1929, 94 per cent of the employees worked such turns. While there has been some slight changes in some of the groups during the period 1914 to 1929, the number of turns per week

<sup>1</sup> Data were not obtained for the years 1916, 1918, 1921, 1923, 1925, 1927, and 1928.



changed very little. The per cent of 7-day workers was 4 in 1914, dropped to 3 in 1920, increased to 4 again in 1922, and to 5 in 1926 and 1929.

In order that a clearer idea may be given of the prevailing hours per day and per week, Table D is presented. This table shows that of the 12,598 employees covered 2,211 worked day turns only, 67 worked night turns only, and 10,320 alternated or rotated from day to night turn; 8,889 employees worked a day of 8 hours, 1,884 a day of 10 hours, 350 averaged 12 hours a day, and 4 averaged as many as 13 hours. Figures for all employees, whether on producing crews or engaged at other work, are included in Table D, but in order better to illustrate conditions as they apply to the producing crew, separate figures are given for one key occupation—rollers. While all of the 546 rollers had a day of 8 hours, 407 worked 5 days, 5 days, and 6 days per week in rotation, and 139 worked 5 days, 6 days, and 6 days in rotation. The table also shows the number of turns worked and full-time hours per week for all employees.

Table E shows the distribution of employees in six principal occupations according to their average full-time hours per week. This table shows that 2,018 employees in these occupations had average full-time hours per week of "over 40 and less than 44," 671 of "44 and under 48," 204 of 60, and 22 who had a week of 84 hours.

While hours of labor have shown rather small variations from year to year, hourly and weekly earnings have shown great changes. In 1914 the hourly rate for the department was 48.8 cents, which dropped to 45 cents in 1915, but by 1920 earnings reached the high average of \$1.039. Alternate decreases and increases in hourly earnings followed—to 69.4 cents in 1922, to 80.9 cents in 1924, to 75.9 cents in 1926, and to 79.3 cents in 1929 when the average was 63 per cent higher than in 1914 and 24 per cent lower than in 1920.

The average hourly earnings of employees in the various principal occupations are shown in Table A. Earnings in 1929 ranged from \$1.979 for rollers to 42.9 cents for laborers. In the principal occupations combined hourly earnings increased from 98.6 cents in 1926 to \$1.008 in 1929, or an increase of about 2 per cent. Most of the tonnage rates paid in sheet mills are based directly on the selling price of the product, thus the rates in this department in a large number of occupations are subject to wide fluctuations between studies such as made by the bureau. The greatest change in hourly earnings in the principal occupations as between 1926 and 1929 is found in the occupation of rollers, level-handed, whose earnings were \$1.162 in 1926 as compared with \$1.381 in 1929. Shearmen show the least change in hourly earnings, from \$1.222 in 1926 to \$1.227 in 1929. A distribution of employees by average hourly earnings for six principal occupations is shown in Table F.

Due to the small change in hours of labor per week full-time weekly earnings for the department have followed closely the changes in hourly earnings. In 1914 the average full-time weekly earnings for all employees was \$25.52, which dropped to \$23.63 in 1915, and then increased to \$52.26 in 1920, the highest figure for any year. In 1922 the average was \$35.46, but in 1924 had risen to \$40.61, and was followed by a decrease in 1926 to \$37.12. In 1929 the average was \$38.78, which is 52 per cent greater than in 1914. Weekly earnings of the principal occupations show similar or even greater changes.

Rollers, for example, earned \$63.21 in 1913 as against \$129.10 in 1920. In 1922 earnings had decreased to \$82.01, which was still 30 per cent above the 1913 average. By 1924 part of this loss had been regained, the average for that year being \$93.35; but earnings dropped again in 1926 to \$84.69. However, hourly rates increased somewhat in 1929 and full-time weekly earnings rose to \$85.89, which is 36 per cent above the 1913 figure. Table 1, page 4, shows average full-time hours per week, earnings per hour and full-time weekly earnings for the department as a whole for each year 1913 to 1929.

The 6,597 employees in the principal occupations worked an average of 80.5 hours in the 15-day period for which they received an average of \$80.20. This compares with 91.1 hours and \$72.22 for all employees in all occupations. The hours and earnings given for the principal occupations above include all hours and earnings received by employees as shown in Table C. Laborers worked the most time—105.3 hours—and openers, level handed, the least—71 hours. Rollers—a highly skilled occupation—earned the most money, \$159.33, and laborers the least, \$45.82.

A classification of employees in six principal occupations according to hours actually worked is given in Table G. Of a total of 448 laborers this table shows that 34 worked less than 32 hours during the pay period, while only 1 worked 192 hours or more. The two headings under which the largest number of laborers fall are "over 112 and under 120," and "over 120 and under 132," each having 65. Matchers is the only other occupation which had more employees than laborers working under 32 hours.

A like classification of earnings is made in Table H. Due to the variation of hours worked, as shown in Table G, there is considerable difference in earnings of employees in the same occupation. Fourteen laborers earned less than \$5 during the pay period, while only one earned from \$85 to \$90, and the largest number, 92, earned \$50 and under \$55. Rollers earned from \$15 and under \$20 up to \$250 and over, the average for the occupation being \$159.33.

SHEET MILLS

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Sheet Mills

Occupation and year	Number of plants	Number of employ-ees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—											
						Full-time hours per week	Earn-ings per hour	Full-time earn-ings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84							
<b>Pair heaters:</b>																				
1910.....	9	210	42.7	\$0.466	\$19.89	100	86	86	100											
1911.....	9	255	42.7	.502	21.42	100	92	92	100											
1912.....	9	249	42.7	.517	22.06	100	95	95	100											
1913.....	13	336	42.8	.543	23.23	100	100	100	100											
1914.....	15	399	42.8	.540	23.10	100	99	99	100											
1915.....	15	354	42.8	.518	22.17	100	95	95	100											
1917.....	8	276	43.7	1.038	45.48	102	191	195	100											
1919.....	11	382	43.4	1.046	45.40	101	193	195	100											
1920.....	13	521	43.4	1.386	60.13	101	255	259	100											
1922.....	14	576	43.3	.880	37.84	101	162	163	100											
1924.....	14	536	43.4	1.027	44.50	101	189	192	100											
1926.....	13	478	43.3	.925	40.05	101	170	172	100											
1929.....	15	580	43.4	.953	41.36	101	176	178	100											
<b>Rollers:</b>																				
1910.....	9	215	42.7	1.242	52.98	100	84	84	100											
1911.....	9	259	42.7	1.380	58.89	100	93	93	100											
1912.....	9	252	42.7	1.416	60.41	100	96	96	100											
1913.....	13	335	42.8	1.476	63.21	100	100	100	100											
1914.....	15	394	42.8	1.431	61.20	100	97	97	100											
1915.....	15	348	42.9	1.280	54.80	100	87	87	100											
1917.....	8	276	43.7	2.591	113.47	102	175	180	100											
1919.....	11	342	43.5	2.536	110.32	102	172	175	100											
1920.....	13	464	43.4	2.976	129.10	101	202	204	100											
1922.....	14	501	43.3	1.895	82.01	101	128	130	100											
1924.....	14	478	43.4	2.148	93.35	101	146	148	100											
1926.....	14	492	43.3	1.956	84.69	101	133	134	100											
1929.....	15	546	43.4	1.979	85.89	101	134	136	100											
<b>Rollers, level handed:</b>																				
1920.....	5	44	42.7	1.516	64.73				100											
1922.....	3	39	44.5	1.069	42.57				100											
1924.....	7	114	42.9	1.345	57.69				100											
1926.....	4	27	43.3	1.162	50.31				100											
1929.....	8	41	43.1	1.381	59.52				100											
<b>Rollers' helpers or finishers:</b>																				
1912.....	6	115	42.7	.474	20.21	100	94	94	100											
1913.....	8	171	42.7	.503	21.48	100	100	100	100											
1914.....	10	264	42.9	.555	23.77	100	110	111	100											
1915.....	10	233	42.9	.461	19.77	100	92	92	100											
1919.....	10	271	43.0	1.010	43.43	101	201	202	100											
1920.....	11	437	42.8	1.092	46.80	100	217	218	100											
1922.....	11	487	42.9	.721	30.90	100	143	144	100											
1924.....	11	437	43.0	.865	37.78	101	172	174	100											
1926.....	12	392	43.0	.787	33.84	101	151	158	100											
1929.....	14	448	43.2	.826	35.68	101	164	166	100											
<b>Roughers:</b>																				
1910.....	9	215	42.7	.558	23.82	100	87	87	100											
1911.....	9	255	42.7	.603	25.71	100	94	94	100											
1912.....	9	252	42.7	.616	26.29	100	96	96	100											
1913.....	13	336	42.8	.642	27.49	100	100	100	100											
1914.....	15	399	42.8	.648	27.73	100	101	101	100											
1915.....	15	353	42.8	.619	26.51	100	96	96	100											
1917.....	8	276	43.7	1.285	56.27	102	200	205	100											
1919.....	11	367	43.5	1.289	56.07	102	201	204	100											
1920.....	13	528	43.4	1.584	68.69	101	247	250	100											
1922.....	14	560	43.3	.994	42.83	101	155	156	100											
1924.....	14	533	43.4	1.150	49.94	101	179	182	100											
1926.....	14	510	43.3	1.037	44.90	101	162	165	100											
1929.....	15	581	43.4	1.067	46.31	101	166	168	100											

174 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Sheet Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—				
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84
<b>Catchers:</b>													
1910.....	9	215	42.7	\$0.544	\$23.19	100	87	86	100				
1911.....	9	258	42.7	.587	25.03	100	93	93	100				
1912.....	9	252	42.7	.603	25.71	100	96	96	100				
1913.....	13	336	42.8	.629	26.92	100	100	100	100				
1914.....	15	399	42.8	.636	27.23	100	101	101	100				
1915.....	15	350	42.8	.595	25.49	100	95	95	100				
1917.....	8	276	43.7	1.256	54.92	102	200	204	100				
1919.....	11	407	43.0	1.199	52.28	102	101	194	100				
1920.....	13	552	43.4	1.532	66.43	101	244	247	100				
1922.....	14	589	43.3	.961	41.54	101	153	154	100				
1924.....	14	570	43.4	1.099	47.70	101	175	177	100				
1926.....	14	527	43.3	.989	42.82	101	157	160	100				
1929.....	15	576	43.3	1.017	44.04	101	162	164	100				
<b>Matchers:</b>													
1910.....	9	210	42.7	.357	16.53	100	86	86	100				
1911.....	9	255	42.7	.418	17.83	100	93	93	100				
1912.....	9	249	42.7	.429	18.30	100	96	96	100				
1913.....	13	336	42.8	.448	19.16	100	100	100	100				
1914.....	15	399	42.8	.484	20.70	100	108	108	100				
1915.....	15	354	42.8	.475	20.34	100	106	106	100				
1917.....	8	276	43.7	.946	41.39	102	211	216	100				
1919.....	11	398	43.5	.981	42.67	102	219	223	100				
1920.....	13	642	43.4	1.225	53.12	101	273	277	100				
1922.....	14	743	43.3	.791	34.04	101	177	178	100				
1924.....	14	639	43.4	.932	40.42	101	208	211	100				
1926.....	10	400	43.5	.829	36.06	102	185	188	100				
1929.....	12	495	43.6	.894	38.98	102	200	203	100				
<b>Doublers:</b>													
1910.....	9	210	42.7	.372	15.86	100	87	86	100				
1911.....	9	252	42.7	.401	17.10	100	93	93	100				
1912.....	9	246	42.7	.412	17.58	100	96	96	100				
1913.....	13	336	42.8	.429	18.34	100	100	100	100				
1914.....	15	399	42.8	.462	19.75	100	108	108	100				
1915.....	15	354	42.8	.453	19.42	100	106	106	100				
1917.....	9	276	43.7	.906	39.57	102	211	216	100				
1919.....	11	437	43.4	.921	39.97	101	215	218	100				
1920.....	13	658	43.4	1.206	52.32	101	281	285	100				
1922.....	14	731	43.3	.775	33.42	101	181	182	100				
1924.....	14	661	43.4	.909	39.42	101	212	215	100				
1926.....	10	422	43.5	.804	34.97	102	187	191	100				
1929.....	11	524	43.6	.870	37.93	102	203	207	100				
<b>Sheet heaters:</b>													
1910.....	9	215	42.7	.883	37.68	100	89	89	100				
1911.....	9	259	42.7	.911	38.88	100	92	91	100				
1912.....	9	253	42.7	.949	40.51	100	96	95	100				
1913.....	12	307	42.8	.993	42.50	100	100	100	100				
1914.....	14	364	42.8	.966	41.34	100	97	97	100				
1915.....	14	324	42.9	.868	37.19	100	87	88	100				
1917.....	8	276	43.7	1.879	82.36	102	189	194	100				
1919.....	11	332	43.5	1.849	80.43	102	186	189	100				
1920.....	13	424	43.4	2.151	93.29	101	217	220	100				
1922.....	14	499	43.3	1.381	59.26	101	139	139	100				
1924.....	14	470	43.4	1.559	67.68	101	157	159	100				
1926.....	14	478	43.3	1.404	60.79	101	141	143	100				
1929.....	15	540	43.3	1.432	62.01	101	144	146	100				
<b>Sheet heaters, level handed:</b>													
1913.....	2	14	42.7	.707	30.17	100	100	100	100				
1914.....	2	56	42.7	.762	32.65	100	108	108	100				
1915.....	2	34	42.7	.686	29.27	100	97	97	100				
1919.....	3	15	42.7	1.316	56.19	100	186	186	100				
1920.....	8	94	43.0	1.661	71.45	101	235	237	100				
1922.....	7	90	43.3	.995	41.33	101	141	137	100				
1924.....	7	115	42.9	1.008	46.29	100	154	153	100				
1926.....	7	48	43.2	.978	42.25	101	138	140	100				
1929.....	7	34	43.6	1.054	45.95	102	149	152	100				

SHEET MILLS

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Sheet Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—				
						Full-time hours per week	Earnings per hour	Full-time earnings per week	4% and under	Over 4% under 60	Over 60 under 72	Over 72 under 84	84
<b>Sheet heaters' helpers:</b>													
1910.....	8	174	42.7	\$0.377	\$16.07	100	78	78	100				
1911.....	8	215	42.7	.436	18.59	100	90	90	100				
1912.....	8	208	42.7	.439	18.71	100	91	90	100				
1913.....	10	230	42.9	.483	20.70	100	100	100	100				
1914.....	13	309	42.8	.485	20.73	100	100	100	100				
1915.....	13	275	42.9	.453	19.60	100	95	95	100				
1917.....	6	216	43.2	.859	37.21	101	177	180	100				
1919.....	11	286	43.1	.926	39.91	100	192	193	100				
1920.....	12	367	42.7	1.140	48.68	100	236	235	100				
1922.....	13	454	42.8	.727	31.13	100	151	150	100				
1924.....	13	408	42.9	.894	38.51	100	185	186	100				
1926.....	13	422	42.9	.903	34.45	100	166	166	100				
1929.....	14	525	43.1	.841	36.25	100	174	175	100				
<b>Shearmen:</b>													
1910.....	7	85	46.0	.689	30.79	107	85	88	86		14		
1911.....	7	104	44.9	.722	32.86	105	89	94	90		10		
1912.....	7	105	44.9	.768	34.67	105	94	99	90		10		
1913.....	8	114	42.9	.814	34.90	100	100	100	100				
1914.....	10	136	42.9	.860	36.84	100	106	106	100				
1915.....	10	115	43.0	.827	35.48	100	102	102	100				
1917.....	7	149	43.5	1.399	60.90	101	173	175	100				
1919.....	11	221	43.3	1.463	63.35	101	180	182	100				
1920.....	8	122	43.5	1.891	82.22	101	232	236	100				
1922.....	12	190	43.3	1.175	50.90	101	144	146	100				
1924.....	10	159	43.7	1.289	56.26	102	158	161	100				
1926.....	12	198	43.6	1.222	53.28	102	150	152	99	1			
1929.....	14	287	43.5	1.227	53.37	101	151	153	100				
<b>Shearmen's helpers:</b>													
1910.....	6	62	46.4	.261	11.90	108	104	111	84		16		
1911.....	6	83	44.9	.308	13.59	105	123	126	90		10		
1912.....	6	77	45.1	.290	12.88	105	116	120	90		10		
1913.....	7	111	42.9	.251	10.77	100	100	100	100				
1914.....	9	128	42.9	.282	12.09	100	112	112	100				
1915.....	9	146	43.8	.242	10.59	102	96	98	95	2		3	
1917.....	6	120	43.2	.533	23.06	101	220	214	100				
1919.....	11	196	43.7	.682	29.80	102	272	277	98		2		
1920.....	7	155	43.7	.963	42.91	102	392	398	100				
1922.....	12	265	43.4	.642	27.69	101	256	257	100				
1924.....	8	203	43.8	.736	32.11	102	293	298	100				
1926.....	12	207	43.6	.683	29.78	102	272	277	101	(1)			
1929.....	14	281	43.5	.712	30.97	101	284	288	100				
<b>Openers:</b>													
1910.....	7	138	46.0	.274	12.57	101	98	100	86		14		
1911.....	7	167	45.2	.275	12.35	100	99	98	89		11		
1912.....	7	180	45.8	.289	13.04	101	104	104	87		13		
1913.....	6	168	45.4	.279	12.56	100	100	100	88		12		
1914.....	9	200	42.8	.282	12.06	94	101	96	100				
1915.....	9	180	43.6	.273	11.93	96	98	95	96				
1917.....	6	175	43.3	.662	28.70	95	237	229	100	2		2	
1919.....	10	266	43.6	.656	28.60	96	235	228	99		1		
1920.....	6	198	44.0	1.188	52.13	97	426	415	100				
1922.....	11	415	43.5	.732	31.27	96	262	249	100				
1924.....	9	284	43.5	.806	34.99	96	289	279	100				
1926.....	11	287	43.5	.741	32.23	96	266	257	100				
1929.....	11	370	43.2	.754	32.57	95	270	259	100				
<b>Openers, level banded:</b>													
1920.....	1	40	42.7	1.114	47.57				100				
1922.....	4	45	42.7	.607	25.30				100				
1924.....	4	52	42.7	.629	26.86				100				
1926.....	5	96	44.0	.651	28.64				100				
1929.....	5	106	44.1	.686	30.25				100				

<sup>1</sup> Less than 1 per cent.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Sheet Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index numbers (1913=100)			Per cent of employees whose average full-time hours per week were—								
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	60	Over 60, under 72	72	Over 72, under 84	84		
<b>Pickers:</b>																	
1910.....	4	50	70.8	\$0.181	\$12.75	104	84	88			10		90				
1911.....	5	58	71.2	.177	12.54	105	82	87			9	16	69				7
1912.....	5	39	71.7	.186	13.23	105	86	91			13	15	56				15
1913.....	8	71	68.1	.216	14.49	100	100	100	11		7	8	73				
1914.....	9	121	69.6	.211	14.55	102	98	100	7		4	8	81				
1915.....	9	126	69.8	.209	14.44	102	97	100	6		3	6	84				
1919.....	7	67	68.3	.600	40.98	100	278	283		6	24		70				
1920.....	7	65	61.5	.792	41.13	76	367	234	77		5	17	2				
1922.....	11	106	65.9	.508	33.51	97	235	231	8	8	7	42	5	31			
1924.....	12	150	63.6	.555	35.48	93	257	245	7	13	31	21	25	3			
1926.....	11	127	56.9	.631	35.90	84	292	248	20	24	34	17	4				
1929.....	14	125	62.0	.713	37.08	78	330	256	59	11	19	6	4				
<b>Feeders:</b>																	
1920.....	5	41	56.8	.704	39.39				41		20	39					
1922.....	8	119	61.4	.500	30.64				32	7	10	30	9	12			
1924.....	8	101	53.1	.578	30.72				59	9	2	3	27				
1926.....	8	93	45.3	.647	29.31				95				5				
1929.....	10	90	46.6	.709	33.04				86	10			4				
<b>Laborers:</b>																	
1910.....	9	347	63.1	.164	10.35	97	86	84		4	64	13	16	1	3		
1911.....	9	361	63.6	.166	10.54	98	87	86		5	53	25	16		2		
1912.....	9	354	63.5	.169	10.72	98	89	87		4	54	26	15	1			
1913.....	13	351	64.9	.190	12.28	100	100	100		17	37	13	28	4	1		
1914.....	15	378	65.9	.188	12.37	102	99	101		10	26	32	26	3	2		
1915.....	15	394	65.0	.188	12.21	100	99	99		10	32	30	18	8	1		
1917.....	8	656	61.8	.331	20.46	95	174	167			73	26	2				
1919.....	9	270	64.5	.462	29.80	99	243	243		8	51	13	28				
1920.....	11	866	59.5	.536	32.01	92	282	261	32	10	20	11	22	5			
1922.....	13	808	65.2	.356	23.06	100	187	188		29	31	8	32				
1924.....	13	757	64.6	.420	27.15	100	221	221	3	20	34	13	30				
1926.....	14	493	56.6	.475	26.89	87	250	219	31	27	22	13	5	2			
1929.....	15	448	60.7	.429	26.04	94	226	212	2	33	46	6	5	3	6		

**TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by district and year—Sheet Mills**

District and year	Number of plants	Number of employees	Number of employees whose customary working turns per week were—								Per cent of employees whose customary working turns per week were—									
			5	5, 5, and 6 in rotation	5 and 6 alternately	5, 6, and 6 in rotation	6	6 and 7 alternately	6, 6, and 7 in rotation	6, 7, and 7 in rotation	7	5	5, 5, and 6 in rotation	5 and 6 alternately	5, 6, and 6 in rotation	6	6 and 7 alternately	6, 6, and 7 in rotation	6, 7, and 7 in rotation	7
<b>Pittsburgh:</b>																				
1914.....	10	4, 150	3	2, 521	110	-----	1, 282	-----	-----	234	(1)	61	3	-----	31	-----	-----	-----	-----	6
1915.....	10	3, 808	20	2, 179	144	-----	1, 208	20	-----	237	1	57	4	-----	32	1	-----	-----	-----	6
1920.....	9	5, 410	40	2, 483	193	847	1, 669	68	-----	110	1	46	4	16	31	1	-----	-----	-----	2
1922.....	9	5, 798	120	2, 674	97	877	1, 732	34	-----	264	2	46	2	15	30	1	-----	-----	-----	5
1924.....	9	5, 787	64	2, 713	253	862	1, 697	20	-----	178	1	47	4	15	29	(1)	-----	-----	-----	3
1926.....	9	6, 054	46	2, 932	252	790	1, 858	11	-----	165	1	48	4	13	31	(1)	-----	-----	-----	3
1929.....	9	6, 382	17	2, 977	332	1, 107	1, 663	5	38	3	240	(1)	47	5	17	26	(1)	1	(1)	4
<b>Great Lakes and Middle West:</b>																				
1914.....	5	2, 154	12	1, 144	9	216	705	57	-----	11	1	53	(1)	10	33	8	-----	-----	-----	1
1915.....	5	1, 928	12	994	6	252	625	31	-----	8	1	52	(1)	13	32	2	-----	-----	-----	(1)
1920.....	4	3, 328	12	1, 342	51	519	1, 252	-----	-----	152	(1)	40	2	16	38	-----	-----	-----	-----	5
1922.....	5	3, 863	33	1, 670	143	552	1, 261	38	-----	166	1	43	4	14	33	1	-----	-----	-----	4
1924.....	5	3, 903	1	1, 798	90	575	1, 242	26	-----	171	(1)	46	2	15	32	1	-----	-----	-----	4
1926.....	5	4, 699	61	2, 063	45	918	1, 205	61	-----	346	1	44	1	20	26	1	-----	-----	-----	7
1929.....	6	6, 216	1	2, 903	76	736	2, 041	17	28	38	376	(1)	47	1	12	33	(1)	(1)	1	6
<b>Total:</b>																				
1914.....	15	6, 304	15	3, 665	119	216	1, 987	57	-----	245	(1)	58	2	3	32	1	-----	-----	-----	4
1915.....	15	5, 736	32	3, 173	150	252	1, 833	51	-----	245	1	55	3	4	32	1	-----	-----	-----	4
1920.....	13	8, 738	52	3, 825	244	1, 366	2, 921	68	-----	262	1	44	3	16	33	1	-----	-----	-----	3
1922.....	14	9, 661	153	4, 344	240	1, 429	2, 993	72	-----	430	(1)	45	2	15	32	1	-----	-----	-----	4
1924.....	14	9, 690	65	4, 511	343	1, 437	2, 939	46	-----	349	1	47	4	15	30	(1)	-----	-----	-----	4
1926.....	14	10, 753	107	4, 995	297	1, 708	3, 063	72	-----	511	1	46	3	16	28	1	-----	-----	-----	5
1929.....	15	12, 698	18	5, 880	408	1, 843	3, 704	22	66	41	616	(1)	47	3	15	29	(1)	1	(1)	5

<sup>1</sup> Less than 1 per cent.

TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Sheet Mills

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)								
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations			
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour	
<b>Pair heaters:</b>														
Pittsburgh.....	9	284	5.4	8.0	43.5	302	80.8	\$77.52	\$0.959	\$41.72	87.2	\$83.75	\$0.961	
Great Lakes and Middle West.....	6	246	5.4	8.0	43.2	278	68.0	64.17	.944	40.78	71.0	66.77	.940	
Total.....	15	530	5.4	8.0	43.4	580	74.6	71.12	.953	41.36	79.4	85.61	.952	
<b>Rollers:</b>														
Pittsburgh.....	9	274	5.4	8.0	43.5	286	86.1	168.28	1.955	85.04	89.1	171.22	1.921	
Great Lakes and Middle West.....	6	242	5.4	8.0	43.2	260	71.1	142.93	2.011	86.88	74.0	146.26	1.975	
Total.....	15	516	5.4	8.0	43.4	546	78.9	156.21	1.979	85.89	81.9	159.33	1.944	
<b>Rollers, level handed:</b>														
Pittsburgh.....	4	20	5.4	8.0	42.9	23	73.2	100.74	1.376	59.03	85.5	114.81	1.343	
Great Lakes and Middle West.....	4	13	5.4	8.0	43.5	18	48.4	67.40	1.391	60.51	61.8	77.16	1.249	
Total.....	8	33	5.4	8.0	43.1	41	62.3	86.10	1.381	59.52	75.1	98.28	1.309	
<b>Rollers, helpers or finishers:</b>														
Pittsburgh.....	8	214	5.4	8.0	43.1	242	74.2	62.44	.842	36.29	80.3	67.65	.842	
Great Lakes and Middle West.....	6	184	5.4	8.0	43.3	206	66.7	53.71	.806	34.90	71.3	58.50	.821	
Total.....	14	398	5.4	8.0	43.2	448	70.7	58.42	.826	35.68	76.2	63.44	.833	
<b>Roughers:</b>														
Pittsburgh.....	9	283	5.4	8.0	43.6	312	77.4	84.92	1.097	47.83	87.4	97.43	1.115	
Great Lakes and Middle West.....	6	240	5.4	8.0	43.2	269	67.7	69.55	1.027	44.37	73.5	74.98	1.020	
Total.....	15	523	5.4	8.0	43.4	581	72.9	77.81	1.067	46.31	81.0	87.04	1.075	



<b>Cutters:</b>														
Pittsburgh.....	9	263	5.4	8.0	43.4	291	79.0	80.97	1.025	44.49	85.4	86.98	1.019	
Great Lakes and Middle West...	6	250	5.4	8.0	43.2	285	67.8	67.82	1.007	43.50	71.4	71.07	.995	
Total.....	15	513	5.4	8.0	43.3	576	73.2	74.46	1.017	44.04	78.5	79.11	1.008	
<b>Matchers:</b>														
Pittsburgh.....	6	192	5.5	8.0	44.0	227	77.3	70.97	.918	40.39	88.3	79.13	.897	
Great Lakes and Middle West...	6	232	5.4	8.0	43.3	268	62.4	54.14	.868	37.58	66.2	57.03	.861	
Total.....	12	424	5.4	8.0	43.6	495	69.2	61.86	.894	38.98	76.3	67.17	.880	
<b>Doublers:</b>														
Pittsburgh.....	6	203	5.5	8.0	44.0	242	78.5	70.63	.899	39.56	87.4	78.00	.892	
Great Lakes and Middle West...	5	224	5.4	8.0	43.2	282	58.3	48.79	.836	36.12	63.5	52.68	.830	
Total.....	11	427	5.5	8.0	43.6	524	67.7	58.88	.870	37.93	74.5	64.37	.864	
<b>Sheet heaters:</b>														
Pittsburgh.....	9	270	5.4	8.0	43.5	282	86.0	123.59	1.437	62.51	89.3	126.02	1.412	
Great Lakes and Middle West...	6	244	5.4	8.0	43.1	258	71.6	102.01	1.424	61.37	74.5	104.68	1.404	
Total.....	15	514	5.4	8.0	43.3	540	79.1	113.28	1.432	62.01	82.2	115.82	1.408	
<b>Sheet heaters, level handed:</b>														
Pittsburgh.....	4	15	5.3	8.0	42.7	16	82.5	77.84	.944	40.31	85.9	81.09	.944	
Great Lakes and Middle West...	3	12	5.6	8.0	44.7	18	52.4	63.37	1.208	54.00	70.9	82.12	1.088	
Total.....	7	27	5.4	8.0	43.6	34	66.6	70.18	1.054	45.95	81.1	81.63	1.006	
<b>Sheet heaters' helpers:</b>														
Pittsburgh.....	8	235	5.4	8.0	43.0	260	76.9	65.24	.848	36.46	81.5	68.77	.844	
Great Lakes and Middle West...	6	229	5.4	8.0	43.2	265	63.3	52.69	.832	35.94	67.8	58.59	.834	
Total.....	14	464	5.4	8.0	43.1	525	70.1	58.91	.841	36.25	74.6	62.62	.839	
<b>Shearmen:</b>														
Pittsburgh.....	8	139	5.5	8.0	43.7	146	86.8	109.12	1.258	54.97	90.0	111.57	1.240	
Great Lakes and Middle West...	6	120	5.4	8.0	43.2	141	68.4	81.21	1.188	51.32	74.1	85.54	1.155	
Total.....	14	265	5.4	8.0	43.5	287	77.7	95.41	1.227	53.37	82.2	98.78	1.202	
<b>Shearmen's helpers:</b>														
Pittsburgh.....	8	118	5.5	8.0	43.9	133	80.4	58.00	.721	31.65	64.9	61.20	.721	
Great Lakes and Middle West...	6	120	5.4	8.0	43.1	148	61.8	43.40	.702	30.26	67.5	47.71	.707	
Total.....	14	238	5.4	8.0	43.5	281	70.6	50.31	.712	30.97	75.7	54.09	.714	

**TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation and district—Sheet Mills—Continued**

Occupation and district	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
<b>Openers, male:</b>													
Pittsburgh	6	177	5.5	8.0	43.7	194	79.8	\$60.73	\$0.761	\$33.26	85.9	\$64.74	\$0.753
Great Lakes and Middle West	5	148	5.3	8.0	42.7	176	58.5	43.37	.742	31.68	62.4	46.82	.751
Total	11	325	5.4	8.0	43.2	370	69.6	52.47	.754	32.57	74.7	56.22	.752
<b>Openers, level handed:</b>													
Pittsburgh	2	10	5.3	8.0	42.7	17	47.5	19.33	.407	17.38	64.9	28.74	.443
Great Lakes and Middle West	3	70	5.5	8.0	44.3	89	68.8	49.74	.723	32.03	72.2	52.43	.726
Total	5	80	5.5	8.0	44.1	106	65.4	44.86	.686	30.25	71.0	48.63	.685
<b>Picklers:</b>													
Pittsburgh	8	58	5.6	9.8	55.3	68	93.2	65.24	.700	38.71	106.1	71.74	.676
Great Lakes and Middle West	6	53	5.9	8.2	48.5	67	82.0	59.85	.730	35.41	84.3	60.92	.723
Total	14	111	5.8	9.0	52.0	125	88.1	62.78	.713	37.08	96.2	66.80	.695
<b>Feeders:</b>													
Pittsburgh	6	45	5.5	8.6	47.7	48	91.8	69.31	.755	36.01	97.4	72.47	.744
Great Lakes and Middle West	4	40	5.7	8.0	45.3	42	93.9	61.67	.657	29.76	95.9	62.62	.653
Total	10	85	5.6	8.3	46.6	90	92.8	65.74	.709	33.04	96.7	67.88	.702
<b>Laborers:</b>													
Pittsburgh	9	193	6.3	9.9	62.6	244	99.0	42.58	.430	26.92	108.2	47.46	.439
Great Lakes and Middle West	6	159	6.0	9.7	58.4	204	96.1	41.02	.427	24.94	101.8	43.86	.431
Total	15	352	6.1	9.8	60.7	448	97.7	41.87	.429	26.04	105.3	45.82	.435

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by districts—Sheet Mills

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district			
Day turns					Night turns					Average hours per week	Pitts- burgh	Great Lakes and Middle West	Total
Turns per week	Hours				Turns per week	Hours							
	Mon- day to Fri- day	Sat- ur- day	Sun- day	Per week		Mon- day to Fri- day	Sat- ur- day	Sun- day	Per week				
7	13	13	13	91					91		1	1	
7	12	12	12	84					84		47	47	
7	12	12	10	82					82		1	1	
7	11	11	11	77					77		23	23	
7	11	11	9	75					75		1	1	
7	10½	10½	10½	73½					73½		1	1	
6	12	12		72					72		41	41	
6	10	10		71					71		1	1	
6	10	10	10	70					70		54	38	
6	10	9		68					68		13	13	
6	11½	10		67½					67½		1	1	
6	11	11		66					66		12	11	
6	10	10	5	65					65		1	1	
6	10½	10½		63					63		2	2	
6	10	8	5	63					63		1	1	
6	9	9	9	63					63		4	58	
6	10	10	10	60					60			1	
6	10	10		60					60		332	629	
6	10	9		59					59		269	51	
6	10	8		58					58		43	43	
6	10½	5		57½					57½			21	
6	9½	9½		57					57		4	4	
6	8	8	8	56					56		2	4	
6	10	5		55					55		5	1	
6	9	10		55					55		2	2	
6	9	9½		54½					54½		1	1	
6	9	9		54					54		201	96	
6	9	8½		53½					53½		45	45	
6	8	8		53					53		48	48	
6	8	8	8	56					52		5	5	
6	8	8		48									
6	9	6		51					51		36	36	
6	8½	8		50½					50½		1	1	
6	9	5		50					50		1	1	
6	8	8	8	48					48		1	1	
6	8	8		48					48		45	47	
6	8	7		47					47		8	8	
Total											1,254	957	2,211

Group B.—Night turn only

					7	13	13	13	91	91	2		2
					7	12	12	12	84	84	7		7
					6	13½	13½		81	81		1	1
					6	12	12		72	72	11		12
					6	12		12	72	72	1		1
					7	10	10		70	70		1	1
					6	11		11	66	66		3	3
					6	9	9	9	63	63		5	5
					5	12			60	60	14		15
					6	10	10	10	60	60		1	1
					6	10		10	60	60	1		4
					7	8	8	8	56	56		1	1
					6	9	9	9	54	54	2		2
					6	9		9	54	54	3		5
					5	10			50	50	3		3
					6	8	8	8	48	48	1		1
					6	8	8		48	48	1		1
					6	8		8	48	48	2		2
Total											48	19	67

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929, by districts—Sheet Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district			
Turns per week	Day turns				Turns per week	Night turns				Average hours per week	Pitts- burgh	Great Lakes and Middle West	Total
	Hours					Hours							
	Mon- day to Fri- day	Sat- ur- day	Sun- day	Per week		Mon- day to Fri- day	Sat- ur- day	Sun- day	Per week				

Group C.—Weekly changes from one shift to another

7	12	12	12	84	7	12	12	12	84	84	24	7	31
7	10	10	10	70	7	12	12	12	84	77	6		2
7	12	12	4	76	7	12	12	4	76	76		2	6
6	12	12		72	6	12		12	72	72	93		2
6	11	11		66	6	13		13	78	72	60		93
6	10	10		60	6	14		14	84	72	14		60
7	10	10	10	70	7	10	10	10	70	70	1	6	7
6	10	10		60	6	13		13	78	69		8	8
6	12	12		72	5	12			60	66		28	28
6	11	11		66	6	12		11	66	66	31	23	54
6	10	10		60	6	12		12	72	66	3		3
6	10	10		60	6	12		12	72	66	4		4
6	10	10		60	6	11		11	66	63		35	35
7	9	9	9	63	7	9	9	9	63	63		53	53
6	10	10	10	60	6	10	10	10	60	60	7	5	12
6	10	10	10	60	6	10	10	10	60	60		2	2
6	10	10		60	5	10		10	60	60	44	569	613
6	10	10		60	6	10		10	60	60	27		27
6	10	10		60	6	10		10	60	59½	20		20
6	10	8		58	6	10	10	10	60	59	12		12
6	10	8		58	6	10		10	60	59	3		3
7	9	9	9	63	6	9		9	54	58½		17	17
7	8	8	8	56	5	12			60	58	4		4
6	9½	10		57½	6	9½		9	56½	57	3		3
6	9½	9½		57	6	10		9½	57	57	15		15
6	9	8		53	6	10		10	60	56½	3		3
6	8	8	12	60	7	8	8	12	60	56	3		3
7	8	8	8	56	6	8	8	8	48	56			
7	8	8	8	56	7	8	8	8	56	56	51	201	252
6	10	10		60	5	10			50	55	142	48	190
6	9	9		54	6	9	9	9	54	54		6	6
6	9	9		54	6	9	9	9	54	54	37	7	44
6	9	8½		53½	6	9		9	54	53¾	2		2
7	8	8	8	56	7	8	8	8	56	53¾		32	32
6	8	8		48	6	8	8	8	48	48			
6	8	8		48	7	8	8	8	56	53¾		6	6
6	8	8		48	8	8	8	8	56	53¾			
6	9	8		53	5	10			50	51½	14		14
6	9	8½		53½	6	8		8	48	50¾	10		19
7	8	8	8	56	6	8	8	8	48	50¾	16	25	41
7	8	8	8	56	6	8		8	48	50¾			
6	8	8	8	48	6	8	8	8	48	50¾	22		22
6	8	8		48	7	8	8	8	56	50¾		3	3
6	8	8		48	6	8	8	8	48	48			
6	8	10		50	6	8		10	50	50	3		3
6	9	9		54	5	9			46	49½	135		135
6	9	8		53	5	9			45	49	3		3
6	8	8	8	48	6	8	8	8	48	48	64	13	77
6	8	8		48	6	8	8	8	48	48	6		6
6	8	8		48	6	8	8	8	48	48			
6	8	8		48	6	8	8	8	48	48	47	42	89
6	8	8		48	6	8		8	48	48	26	49	75
6	8	8		48	6	8	8	8	48	48		410	410
6	8	8		48	6	8	8	8	48	48			
6	8	8		48	6	8	8	8	48	48			
6	8	8		48	5	8	8	8	48	48	21	2	2
6	8	8		48	6	8	8	8	48	48		2	23
6	8	8		48	5	8	8	8	40	45½	1,088	736	1,824
6	8	8		48	6	8	8	8	40	45½	19		19

TABLE D.—Customary full-time turns per week and hours per turn (and per week, 1929, by districts—Sheet Mills—Continued

Customary turns and hours worked										Number of employees who worked each specified combination of customary turns and hours, by district			
Day turns					Night turns					Average hours per week	Pittsburgh	Great Lakes and Middle West	Total
Turns per week	Hours				Turns per week	Hours							
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week				
6	8	8	-----	48	5	8	-----	40	44	11	-----	11	
6	8	8	-----	48	5	8	-----	40	42½	2,977	2,903	5,880	
Total	-----	-----	-----	-----	-----	-----	-----	-----	-----	5,080	5,240	10,320	

## Group C.—Weekly changes from one shift to another—Continued

6	8	8	-----	48	5	8	-----	40	44	11	-----	11
6	8	8	-----	48	5	8	-----	40	42½	2,977	2,903	5,880
Total	-----	-----	-----	-----	-----	-----	-----	-----	-----	5,080	5,240	10,320

## ROLLERS ONLY

6	8	8	-----	48	6	8	-----	8	48	45½	91	48	139
6	8	8	-----	48	5	8	-----	40	42½	195	212	407	
Total	-----	-----	-----	-----	-----	-----	-----	-----	-----	286	260	546	

TABLE E.—Average and classified full-time hours per week in six specified occupations, 1929, by district—Sheet Mills

Occupation and district	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—															
				40, under 44	44, under 48	48	Over 48, under 56	56, under 60	60	Over 60, under 66	66, under 72	72	Over 72, under 84	84					
<b>Rollers:</b>																			
Pittsburgh	9	286	43.5	195	91														
Great Lakes and Middle West	6	260	43.2	212	48														
Total	15	546	43.4	407	139														
<b>Roughers:</b>																			
Pittsburgh	9	312	43.6	206	106														
Great Lakes and Middle West	6	269	43.2	221	48														
Total	15	581	43.4	427	154														
<b>Matchers:</b>																			
Pittsburgh	6		44.0	108	119														
Great Lakes and Middle West	6	268	43.3	214	54														
Total	12	495	43.6	322	173														
<b>Sheet heaters:</b>																			
Pittsburgh	9	282	43.5	192	90														
Great Lakes and Middle West	6	258	43.1	217	41														
Total	15	540	43.3	409	131														
<b>Sheet heaters' helpers:</b>																			
Pittsburgh	8	260	43.0	231	29														
Great Lakes and Middle West	6	265	43.2	220	45														
Total	14	525	43.1	451	74														
<b>Laborers:</b>																			
Pittsburgh	9	244	62.6			7	86	4	61		28	22	14	22					
Great Lakes and Middle West	6	204	58.4	2			42	15	143	1		1							
Total	15	448	60.7	2		7	128	19	204	1	28	23	14	22					



**TABLE G.—Average and classified hours actually worked by employees in six specified occupations in pay period covered, 1929, by district—  
Sheet Mills**

Occupation and district	Number of employees	Average hours worked	Number of employees who during the pay period worked hours specified—																													
			Under 32	32, under 40	40, under 48	48, under 56	56, under 64	64, under 72	72, under 80	80	Over 80, under 88	88	Over 88, under 96	96	Over 96, under 104	104	Over 104, under 112	112	Over 112, under 120	120	Over 120, under 132	132	Over 132, under 144	144	Over 144, under 156	Over 156, under 168	Over 168, under 180	180	Over 180, under 192	192 and over		
<b>Rollers:</b>																																
Pittsburgh.....	284	89.1	3	2	1	1	6	2	12	53	3	59	1	90	1	47	2	2					1									
Great Lakes and Middle West.....	260	74.0	6	2	9	16	15	76	28	18	3	29	2	43		12																
Total.....	544	81.9	9	4	10	17	22	78	40	71	9	88	3	133	1	59	2	2				1										
<b>Roughers:</b>																																
Pittsburgh.....	312	87.4	1	3	2	5	1	8	30	59	2	65	3	92	2	36		2	1													
Great Lakes and Middle West.....	269	73.5	11	3	9	23	24	62	31	16	2	38	4	35	3	14	1		1													
Total.....	581	81.0	12	6	11	28	25	60	61	75	4	103	7	127	5	50	1	2	3	1												
<b>Matchers:</b>																																
Pittsburgh.....	227	88.3	9	1	2		5	5	8	24	2	53	4	65	5	29	4	8	1	1	1											
Great Lakes and Middle West.....	268	66.2	27	6	16	21	25	55	27	15	5	23	1	34	1	10	1															
Total.....	495	76.3	36	7	18	21	30	60	35	39	7	76	5	99	6	39	5	8	1	2	1											
<b>Sheet heaters:</b>																																
Pittsburgh.....	282	89.3	1	3	1	3	1	8	15	42	2	56	5	90	6	35			2		1											
Great Lakes and Middle West.....	258	74.5	3	4	11	13	24	71	28	15	2	33	1	40		16																
Total.....	540	82.2	4	7	12	16	23	79	43	57	4	91	5	139	6	51			2		1											
<b>Sheet heaters' helpers:</b>																																
Pittsburgh.....	290	81.5	7	4	9	5	7	6	19	59	6	35	6	72	1	22	1			1												
Great Lakes and Middle West.....	265	67.8	23	8	15	21	32	50	20	18	1	28	2	28	1	15	3															
Total.....	525	74.6	30	12	24	26	39	56	39	77	7	63	8	100	2	37	4			1												
<b>Laborers:</b>																																
Pittsburgh.....	244	108.2	17	8	2	3	10	5	5	2	7	1	7	6	10		14	1	27	6	35	4	22	3	21	17		4	4	2	1	
Great Lakes and Middle West.....	204	101.8	17	3	4	5	4	9	3	1	8		9		8	1	35	11	38	11	30	1	10	1	4	2						
Total.....	448	105.3	34	11	6	8	14	14	8	3	15	1	16	6	18	1	49	1	65	17	65	5	32	4	25	19	4	4	2	1		





## TIN-PLATE MILLS

Data for this department were collected from the pay rolls of eight establishments located in four States and cover 8,386 employees in all occupations. Of this number 4,859 were found in the principal occupations for which separate figures are given. Data were first obtained in 1910, and from 1910 to 1914 employees in the principal occupations only were covered, while in 1914 and all subsequent years all employees in all occupations were included. Figures for all employees cover the period 1914 to 1929;<sup>1</sup> but comparative figures for employees in the principal occupations are given from 1910 to 1929.

In all previous studies averages for this department were shown by geographical district, but in this study averages are given only for the country as a whole and district averages are omitted. In recent years, certain establishments of this department have adopted mechanical equipment to take the place of certain hand work. This has created some new occupations among which are mechanical doublers, single boys, and machine tinner. These changes also affected the duties of certain other occupations such as pair heaters and hand doublers. While all establishments covered have not adopted all of the newer mechanical appliances there are now enough employees in these recently created occupations to warrant adding them to the list of principal occupations and to separate employees in some of the other occupations into two divisions, namely, hand and mechanical. For example, doublers in the studies previous to 1929 had been placed under one classification whether or not they worked as hand or machine operators, but in the 1929 study there are two classifications—doubler, hand, and doubler, mechanical—and separate averages are given for each.

Another example is that of doublers' helpers which in former years included employees assisting either hand or mechanical doublers as well as pair heaters whose duties, before the adoption of the mechanical doubler, was to assist in the doubling work. Since the mechanical doubler has come into use, duties of pair heaters in some plants have changed to such an extent that they now have full charge of the pair furnace—fire the furnace, clean the grates, charge all pairs into the furnace, and drag all or part of the pairs to the rougher's stand—and in no way do they assist the doubler. This has resulted in the separation of pair heaters from the classification of doublers' helpers and they are now presented as a separate occupation, which separation leaves only employees assisting hand doublers in this classification. Therefore, the averages for 1929 cover doublers' helpers, hand, only. Since all establishments have not yet adopted these newer methods, and in order not to reveal the identity of any plant, all averages are presented for the country as a whole and not by district. This change in no way affects the figures for the United States as a whole as they are comparable from year to year over the period for which they are given. (See Bulletin No. 442 for district figures for earlier years.) However, when comparing the 1929 averages for earnings per hour and per week (*with averages for earlier years*) those of doublers,

<sup>1</sup> Data were not obtained in 1916, 1918, 1921, 1923, 1925, 1927, and 1928.

hand; doublers, mechanical; doublers, level-handed, hand; doublers' helpers, hand; are not altogether comparable due to the changes above outlined. In the occupation of tanners, hand, all figures from 1910 to 1929 are for hand tanners, as the employees in the occupation of tanners, machine, were not included in the averages for any year and are first presented as one of the principal occupations in 1929.

The hours of labor of employees in tin-plate mills are subject to only slight variation from year to year. As far back as 1910, which is the first year for which data for this department were obtained, the 8-hour day had been found to be desirable for employees working on the hot mills because the shorter workday made possible the speeding-up of production. However, there were some employees—such as laborers, branners, and other unskilled and semiskilled general workers—who worked longer hours. The average full-time hours per week for all employees in 1914 were 46 which increased to 50.4 in 1915. Averages for 1920 and 1922 do not show much change, but in 1924 hours dropped to 48.8. This decrease was continued to 48.1 in 1926 and to 47.4 in 1929. This is the only department where average full-time weekly hours in 1929 are greater than they were in 1914. Average full-time hours per week, earnings per hour and full-time weekly earnings for the department are shown in Table 1, page 4. Comparisons of full-time hours per week in the various principal occupations may be made from Table A.

While the adoption of the 8-hour day in 1923 did not affect the daily hours of labor for employees in the hot mill crews it did decrease the hours of employees in certain other occupations such as laborers and branners. In 1910 branners worked an average of 67.8 hours per week, which decreased to 63.7 hours in 1913; and in 1919 a full-time week of 61.3 hours, which were increased to 65.1 in 1922. However, in 1924, following the general decrease in daily hours in 1923, branners worked a customary week of 52.2 hours, which is 18 per cent below the 1913 average. While the 1926 average is the same as that of 1924 it is 2.6 hours greater than the average of 49.6 in 1929. Laborers had a customary week of 60.6 hours in 1910 which remained at about this figure until 1919 when the average rose to 64.3 hours. In 1924, following the general decrease in hours of labor, laborers had a customary week of 56.9 hours which is only slightly less than the week of 57.1 hours in 1929.

The decrease in average weekly hours over the period 1914 to 1929 was brought about by a decrease in daily hours rather than by any change in the number of turns (days) worked per week. Table B shows that in 1914, 58 per cent of all employees worked a week of 5 days, 5 days, and 6 days in each 3-week cycle, and 37 per cent regularly worked a week of 6 days. There was practically no change in these percentages until 1924 when 51 per cent of all employees worked a week of 5 days, 5 days, and 6 days in rotation, and 44 per cent regularly worked a week of 6 days. In 1929 the percentages were 59 and 34, respectively, being practically the same as those for 1914. Seven-day work is of little importance in this department as only 1 per cent worked a week of this length in 1929 as compared with 2 per cent in 1926.

An idea of the prevailing hours per day and per week for employees in this department in 1929 may be gained from Table D. Of the 8,386 employees covered by this table 1,816 worked day turns only,

41 night turns only, and 6,529 alternated or rotated from day to night work. Of the 1,816 employees who worked days only, 1,759 had a customary week of 60 hours or less, while only 2 of the 57 who worked over 60 hours per week had an 84-hour week. Of the 41 employees who worked night turns only 6 had a customary week of over 60 hours, while 6,429 of the 6,529 who alternated or rotated from day to night turn had a customary week of 60 hours or less. It may also be seen that 5,906, or 70 per cent of the employees covered in Table D, had a work-day which averaged 8 hours or less each day they were on duty. All employees in all occupations, whether or not connected with producing crews, are included in Table D, but to illustrate conditions as they apply to employees of the producing crews, separate figures are given for one key occupation—roller. All of the 378 employees who worked as roller during the pay period worked 8 hours per day, and  $42\frac{2}{3}$  hours per week.

Table E shows the distribution by average full-time hours per week of employees in six principal occupations. Three of these occupations showed no employees working as many as an average of 44 hours per week. In the occupation of laborers only 6 had a customary week of over 60 hours while 103 had a week of less than 56 hours.

While the trend of hours of labor has been downward in recent years, hourly earnings have advanced greatly. In 1914 the average hourly earnings for all employees were 42.5 cents. By 1920 earnings had advanced to 94.9 cents, the peak of earnings for this department and almost  $2\frac{1}{4}$  times those of 1914. The depression of 1921 had not been fully overcome in 1922 when the average was 65.0 cents which, however, increased to 79.5 cents in 1924. A decrease in earnings per hour in 1926 to 70.4 cents was followed by an increase in 1929 to 73.2 cents, 72 per cent above the 1914 average. Most of the tonnage rates paid in tin-plate mills are based directly on the selling price of the product; that is, at the close of a certain period tonnage rates are adjusted in accordance with the price of tin-plate sheets during that interval. Thus the rates paid in this department in a large number of occupations are subject to wide fluctuations in a 2 or 3 year study such as the bureau makes.

Comparison of hourly earnings for employees in the principal occupations may be made from Table A. For example, rollers in 1910 earned an average of \$1.025 per hour which increased to \$1.139 in 1913, then decreased to \$1.106 in 1915, but rose to \$2.248 in 1919. In 1920 the high point of \$2.542 per hour was recorded, but when the 1922 study was made hourly earnings had decreased to \$1.701, and in 1924 increased to \$2.099 but fell again in 1926 to \$1.635. The heavy production of tin-plate in 1928 continued into 1929, the effect of which is seen in the 1929 average of \$1.778 per hour. A distribution by average hourly earnings of employees in six of the principal occupations in 1929 is given in Table F.

In 1914 the average full-time weekly earnings of all employees were \$19.55 which increased in 1915 to \$21.57. In 1920 weekly earnings had advanced to \$48.02 which is the high point and is almost two and a half times the 1914 average. There was a decrease in weekly earnings in 1922, but an increase to \$38.80 in 1924. This average dropped to \$34.70 in 1929 which is more than one and three-fourths times as much as earnings were in 1914. Weekly earnings in

the various principal occupations show similar increases. Rollers, for example, earned an average of \$43.73 in 1910 which increased to \$47.33 in 1911. From 1912 to 1915 there was little change in weekly earnings, increasing from \$46.82 to \$47.17. An advance in 1919 brought weekly earnings up to \$95.99, which is \$12.55 less than the high mark of \$108.54 for 1920. Due to the 1921 depression in the industry weekly earnings dropped to \$72.56 in 1922 but by 1924 much of this loss had been regained, weekly earnings having risen to \$89.36. Earnings again decreased in 1926 to \$69.81 which is practically 8 per cent less than the 1929 average of \$75.92.

The 4,859 employees in the principal occupations worked an average of 77 hours during the 15-day period covered by the 1929 study, for which they received \$65.91. This includes all of the hours worked and earnings received by these employees as shown in Table C. Laborers worked the most time—103.3 hours—and rollers, level handed, the least—48.3 hours. Assorters, female, one of the very few female occupations in the industry, earned the least money—\$31.33—and rollers, a very highly skilled occupation, earned the most, \$129.43. Laborers who worked the most hours of any of the principal occupations received \$43.83.

A classification of employees in six principal occupations according to hours actually worked in 1929 is made in Table G. The table shows in the occupation of heaters, level handed, that 16 of the 604 employees worked less than 32 hours during the pay period scheduled, while 1 worked over 120 and under 132 hours; however, the largest number—166—is found under the group heading "80 hours." Laborers show the widest spread; 13 worked under 32 hours and 7 over 144 and under 156 hours.

A like classification of earnings is made in Table H. There is considerable variation in the earnings of employees in the same occupations due to the various hours worked as shown in Table G. Laborers earned from under \$5 to \$65 and under \$70, the largest number having earned \$45 and under \$50. Assorters, female, ranged from under \$5 to \$50 and under \$55, the largest number having earnings between \$30 and \$35. The occupation of rollers is the only one that had any employees who earned as much as \$200.

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Tin-Plate Mills

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index number (1913=100)			Per cent of employees whose average full-time hours per week were—				
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84
<b>Rollers:</b>													
1910	5	174	42.7	\$1.025	\$43.73	100	90	90	100				
1911	6	201	42.7	1.109	47.33	100	97	97	100				
1912	6	229	42.7	1.097	46.82	100	96	96	100				
1913	9	356	42.7	1.139	48.59	100	100	100	100				
1914	10	345	42.7	1.115	47.59	100	98	98	100				
1915	10	349	42.7	1.106	47.17	100	97	97	100				
1919	9	410	42.7	2.248	95.99	100	197	198	100				
1920	9	476	42.7	2.542	108.54	100	223	223	100				
1922	9	400	42.7	1.701	72.56	100	149	149	100				
1924	9	414	42.7	2.099	89.36	100	184	184	100				
1926	8	371	42.7	1.635	69.81	100	144	144	100				
1929	8	378	42.7	1.778	75.92	100	156	156	100				
<b>Rollers, level handed:</b>													
1919	7	46	42.7	1.362	58.16				100				
1920	7	212	42.7	1.599	68.29				100				
1922	3	138	42.7	.924	38.62				100				
1924	6	166	42.7	1.080	46.16				100				
1926	4	35	42.7	.952	40.65				100				
1929	5	65	42.7	.949	40.52				100				
<b>Roughers:</b>													
1910	5	174	42.7	.425	18.14	100	80	80	100				
1911	6	196	42.7	.507	21.63	100	95	95	100				
1912	6	216	42.7	.513	21.89	100	96	96	100				
1913	10	380	42.7	.533	22.73	100	100	100	100				
1914	11	367	42.7	.560	23.87	100	105	105	100				
1915	11	366	42.7	.562	23.96	100	105	105	100				
1919	9	447	42.7	1.193	60.94	100	224	224	100				
1920	9	502	42.7	1.363	68.21	100	256	256	100				
1922	9	429	42.7	.893	38.08	100	168	168	100				
1924	9	465	42.7	1.150	49.11	100	216	216	100				
1926	8	383	42.7	.902	38.52	100	169	170	100				
1929	8	401	42.7	1.014	43.30	100	190	190	100				
<b>Catchers:</b>													
1910	5	174	42.7	.427	18.23	100	92	92	100				
1911	6	198	42.7	.487	20.79	100	105	105	100				
1912	6	239	42.7	.403	17.20	100	87	87	100				
1913	10	354	42.7	.463	19.74	100	100	100	100				
1914	11	347	42.7	.468	19.95	100	101	101	100				
1915	11	361	42.7	.489	20.87	100	106	106	100				
1919	9	507	42.7	1.014	43.30	100	219	219	100				
1920	9	541	42.7	1.217	51.96	100	263	263	100				
1922	9	456	42.7	.817	34.83	100	176	176	100				
1924	9	465	42.7	1.003	42.83	100	217	217	100				
1926	8	398	42.7	.806	34.42	100	174	176	100				
1929	8	382	42.7	.926	39.54	100	200	200	100				
<b>Screw boys:</b>													
1910	5	174	42.7	.308	13.15	100	84	84	100				
1911	6	198	42.7	.345	14.72	100	94	94	100				
1912	6	221	42.7	.352	15.03	100	96	96	100				
1913	10	387	42.7	.366	15.64	100	100	100	100				
1914	11	384	42.7	.385	16.43	100	105	105	100				
1915	11	372	42.7	.389	16.59	100	106	106	100				
1919	9	466	42.7	.818	34.93	100	223	223	100				
1920	9	585	42.7	.973	41.54	100	266	266	100				
1922	9	476	42.7	.676	28.65	100	185	183	100				
1924	9	484	42.7	.840	36.15	100	230	231	100				
1926	8	412	42.7	.633	27.03	100	173	173	100				
1929	8	408	42.7	.691	29.51	100	189	189	100				
<b>Doublers:</b>													
1910	5	174	42.7	.632	26.97	100	85	85	100				
1911	6	205	42.7	.706	30.13	100	95	95	100				
1912	6	247	42.7	.677	28.90	100	91	92	100				
1913	10	341	42.7	.740	31.58	100	100	100	100				
1914	10	324	42.7	.734	31.32	100	99	99	100				
1915	10	322	42.7	.718	30.63	100	97	97	100				
1919	8	352	42.7	1.408	60.12	100	190	190	100				
1920	9	330	42.7	1.655	70.69	100	224	224	100				
1922	9	322	42.7	1.046	44.80	100	141	142	100				
1924	8	345	42.7	1.243	53.07	100	168	168	100				
1926	8	332	42.7	.787	33.60	100	106	107	100				



TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Tin-Plate Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index number (1913=100)			Per cent of employees whose average full-time hours per week were—				
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under 60	Over 48, under 60	Over 60, under 72	Over 72, under 84	84
<b>Heaters' helpers:</b>													
1910.....	4	165	42.7	\$0.348	\$14.84	100	81	81	100				
1911.....	5	166	42.7	.436	18.60	100	101	101	100				
1912.....	5	109	42.7	.396	16.92	100	92	92	100				
1913.....	8	147	42.7	.480	18.36	100	100	100	100				
1914.....	8	127	42.7	.476	20.32	100	111	111	100				
1915.....	8	202	42.7	.455	19.43	100	106	106	100				
1919.....	8	241	42.7	1.052	44.92	100	245	245	100				
1920.....	8	230	42.7	1.174	50.14	100	273	273	100				
1922.....	8	135	42.7	.847	36.02	100	197	196	100				
1924.....	8	252	42.7	.981	41.88	100	228	228	100				
1926.....	6	196	42.7	.772	32.96	100	180	180	100				
1929.....	8	180	42.7	.811	34.63	100	189	189	100				
<b>Shearmen:</b>													
1910.....	5	58	52.7	.497	25.68	93	102	94	53	12	34		
1911.....	6	65	52.8	.555	28.72	93	114	105	54	11	35		
1912.....	6	72	51.8	.573	29.00	92	118	106	60	10	31		
1913.....	9	126	56.5	.485	27.34	100	100	100	6	82	13		
1914.....	9	116	56.9	.486	27.61	101	100	101	3	84	14		
1915.....	8	112	57.3	.514	29.55	101	106	108		86	14		
1919.....	6	140	48.3	1.398	66.07	85	282	242	56	44			
1920.....	6	103	44.1	1.280	56.52	78	264	207	80	20			
1922.....	8	118	44.6	.915	40.52	79	189	148	83	17			
1924.....	8	123	43.4	1.137	49.35	77	234	181	100				
1926.....	7	111	43.1	1.024	44.13	76	211	161	100				
1929.....	7	110	42.9	1.076	46.16	76	222	169	100				
<b>Openers, male:</b>													
1910.....	3	94	57.5	.221	12.72	101	81	82		100			
1911.....	4	84	57.3	.266	15.24	101	97	98		100			
1912.....	5	93	56.9	.296	16.86	100	108	108	4	96			
1913.....	7	210	56.9	.274	15.58	100	100	100		100			
1914.....	7	201	56.8	.266	15.14	100	97	97		100			
1915.....	7	227	57.2	.247	14.13	101	90	91		93	7		
1919.....	5	235	52.3	.800	41.84	92	292	269	28	77			
1920.....	4	204	56.2	.728	40.55	99	266	260		100			
1922.....	6	186	49.0	.631	29.08	86	230	187	36	64			
1924.....	6	224	55.3	.721	39.87	97	263	256	11	80	8		
1926.....	6	239	51.8	.795	41.18	91	290	264	31	69			
1929.....	7	253	48.3	.685	33.09	85	250	212	59	41			
<b>Tinners, hand:</b>													
1910.....	4	224	42.9	.402	17.27	98	93	92	98	2			
1911.....	5	283	43.0	.429	18.48	99	99	98	98	2			
1912.....	5	294	43.4	.444	19.28	100	103	102	94	6			
1913.....	8	464	43.6	.433	18.84	100	100	100	95	5	(1)		
1914.....	8	486	43.5	.442	19.22	100	102	102	96	5	(1)		
1915.....	8	487	43.3	.442	19.13	99	102	102	97	3	(1)		
1919.....	8	683	43.0	.977	42.01	99	226	223	97	3			
1920.....	9	702	42.9	1.114	47.85	98	257	254	100				
1922.....	6	410	43.3	.795	34.20	99	184	182	100				
1924.....	6	361	43.4	.976	42.39	100	225	225	100				
1926.....	5	225	43.5	.840	36.54	100	194	200	100				
1929.....	6	164	42.7	.907	39.64	100	209	210	100				
<b>Tinners, machine:</b>													
1929.....	4	84	43.4	.794	34.46				100				
<b>Redippers:</b>													
1910.....	1	14	46.2	.570	26.56	87	106	95	71	29			
1911.....	1	17	47.2	.619	29.32	89	115	105	71	29			
1912.....	1	10	55.0	.592	32.58	104	110	116		100			
1913.....	3	26	53.0	.536	28.03	100	100	100	42	54	4		
1914.....	3	23	53.0	.538	28.55	100	100	102	43	52	4		
1915.....	3	19	51.4	.563	28.81	97	105	103	58	37	5		
1919.....	2	29	46.9	1.272	59.66	88	237	213	55	45			
1920.....	3	27	43.1	1.538	66.26	81	287	236	100				
1922.....	2	33	43.1	1.027	44.26	81	192	158	100				
1924.....	2	38	43.0	1.235	58.11	81	230	189	100				
1926.....	2	25	42.9	1.154	49.51	81	215	177	100				
1929.....	2	20	42.9	1.158	49.68	81	216	177	100				

<sup>1</sup> Less than 1 per cent.

194 WAGES AND HOURS OF LABOR—IRON AND STEEL

TABLE A.—Average customary full-time hours per week, earnings per hour, and full-time earnings per week, and index numbers therefor, 1910 to 1929, by occupation—Tin-Plate Mills—Continued

Occupation and year	Number of plants	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Index number (1913=100)			Per cent of employees whose average full-time hours per week were—													
						Full-time hours per week	Earnings per hour	Full-time earnings per week	48 and under	Over 48, under 60	Over 60, under 72	Over 72, under 84	84									
<b>Risers:</b>																						
1910	2	34	44.1	\$0.262	\$11.51	98	94	91	88	12												
1911	3	42	44.8	.275	12.30	99	99	98	86	14												
1912	3	30	50.1	.239	11.98	111	86	95	40	60												
1913	3	34	45.1	.279	12.59	100	100	100	100													
1914	4	48	51.3	.268	13.70	114	96	109	52	46	2											
1915	4	41	49.5	.288	14.16	110	103	112	66	32	2											
1919	3	46	47.4	.642	30.43	105	230	242	50	50												
1920	3	41	43.2	.791	34.12	96	284	271	100													
1922	2	54	42.9	.528	22.65	95	189	180	100													
1924	2	39	42.9	.703	30.16	95	252	240	100													
1926	2	34	42.9	.638	27.37	95	229	217	100													
1929	2	24	43.0	.639	27.48	95	229	218	100													
<b>Branners:</b>																						
1910	2	12	67.8	.170	11.52	106	89	95				100										
1911	2	20	67.7	.170	11.50	106	89	95				100										
1912	2	16	67.7	.170	11.51	106	89	95				100										
1913	4	37	63.7	.190	12.14	100	100	100				43		46								
1914	4	41	64.1	.198	12.69	101	104	105				39		51		10						
1915	4	34	65.4	.203	13.22	103	107	109				24		76								
1919	6	60	61.3	.452	27.71	96	238	228	23		30	27	13							7		
1920	6	48	62.4	.624	38.68	98	328	319	23	10		35	31									
1922	6	32	65.1	.455	28.98	102	239	239	31	6		38								25		
1924	6	73	52.2	.536	27.83	82	282	229	74	3		16		7								
1926	5	64	52.2	.505	26.36	82	266	217	65	3		31										
1929	4	51	49.6	.600	29.76	78	316	245	71			29										
<b>Assorters, female:</b>																						
1910	4	101	49.7	.128	6.41	93	79	73	46	54												
1911	5	120	50.7	.138	7.03	94	85	80	38	62												
1912	5	127	51.4	.145	7.39	96	89	84	37	63												
1913	6	171	53.7	.163	8.75	100	100	100	25	75												
1914	6	172	53.3	.153	8.26	99	94	94	27	73												
1915	6	208	55.4	.162	8.98	103	99	103	23	77												
1919	6	279	48.5	.417	20.22	90	256	231	44	56												
1920	7	295	46.9	.465	21.83	87	285	249	43	57												
1922	6	230	43.3	.365	15.84	81	224	181	96		2											
1924	6	291	43.6	.422	18.40	81	259	210	98		2											
1926	4	250	43.4	.384	16.67	81	236	191	100													
1929	5	264	46.1	.369	17.01	86	228	194	70	30												
<b>Laborers:</b>																						
1910	4	191	60.6	.165	9.97	98	87	86			53	24	23									
1911	5	238	61.0	.164	10.01	99	87	86			37	38	24		1							
1912	6	276	61.6	.167	10.32	100	88	89			30	43	25		(1)					(1)		
1913	9	575	61.6	.189	11.64	100	100	100			24	18	58		(1)					(1)		
1914	9	469	62.4	.189	11.78	101	100	101			13	16	72									
1915	9	444	61.6	.190	11.72	100	101	101			33	16	51			(1)						
1919	6	418	64.3	.461	29.64	104	244	255			1	13	36	32								
1920	8	271	60.5	.533	32.19	98	282	277			62	13	21									
1922	9	231	59.4	.359	21.26	96	190	183			72	19	9									
1924	9	197	56.9	.439	24.99	92	232	215			7	29	55	9								
1926	8	188	60.3	.426	25.69	98	225	221			60	31	19									
1929	8	251	57.1	.422	24.10	93	223	207			67	31	2									

<sup>1</sup> Less than 1 per cent.



TABLE B.—Number and per cent of employees who customarily worked each specified number of turns per week, 1914 to 1929, by year—  
Tin-Plate Mills

Year	Number of plants	Number of employees	Number of employees whose customary turns per week were—									Per cent of employees whose customary turns per week were—								
			5	5, 5, and 6 in rotation	5 and 6 alternately	5, 6, and 6 in rotation	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7	5	5, 5, and 6 in rotation	5 and 6 alternately	5, 6, and 6 in rotation	6	6, 6, and 7 in rotation	6 and 7 alternately	6, 7, and 7 in rotation	7
1914.....	11	6,033	4	3,488	214		2,245		16		66	(1)	58	4		37		(1)		1
1915.....	11	6,147	3	3,532	181		2,279		20		132	(1)	57	3		37		(1)		2
1920.....	9	10,523	65	5,827	478		3,981		50		122	1	55	5		38		(1)		1
1922.....	9	9,166	96	4,960	439		3,486		108		57	1	54	5		38			2	1
1924.....	9	10,549	21	5,345	190		4,635		198		160	(1)	51	2		44		2		2
1925.....	8	8,892	56	4,919	206		3,188	122	160	52	189	1	55	2		36	1		1	2
1929.....	8	8,386	17	4,956	348	66	2,834	40	15		126	(1)	59	4	1	34	(1)	(1)		1

<sup>1</sup> Less than 1 per cent.

TABLE C.—Average customary working time of employees per day and per week and average hours actually worked and earnings received per employee in pay period covered, 1929, by occupation—Tin-Plate Mills

Occupation	Number of plants	Positions				Employees working in scheduled pay period (15 days)							
		Number	Average customary full-time of employees in the positions			Number	Averages for specified occupation only				Averages for specified and any other occupations		
			Turns per week	Hours per turn	Hours per week		Hours worked	Earnings	Earnings per hour	Full-time earnings per week	Hours worked	Earnings	Earnings per hour
Heaters.....	8	115	5.3	8.0	42.7	121	72.5	\$84.02	\$1.159	\$49.49	76.0	\$87.11	\$1.145
Heaters, level handed.....	8	556	5.3	8.0	42.7	604	70.5	69.25	.982	41.93	73.7	71.47	.970
Heaters' helpers.....	8	170	5.3	8.0	42.7	180	72.0	58.38	.811	34.63	77.4	61.61	.796
Rollers.....	8	357	5.3	8.0	42.7	378	71.2	126.61	1.778	75.92	74.2	129.43	1.745
Rollers, level handed.....	5	41	5.3	8.0	42.7	65	46.3	43.93	.949	40.52	48.3	46.62	.965
Roughers.....	8	376	5.3	8.0	42.7	401	70.2	71.17	1.014	43.30	74.2	74.22	1.000
Catchers.....	8	357	5.3	8.0	42.7	382	72.1	66.70	.926	39.54	75.1	68.25	.909
Screw boys.....	8	370	5.3	8.0	42.7	408	69.4	47.91	.691	29.51	72.3	49.37	.683
Doublers, hand.....	4	186	5.3	8.0	42.7	193	74.1	67.52	.912	38.94	75.4	68.47	.908
Doublers, mechanical.....	5	214	5.3	8.0	42.7	229	69.2	46.99	.679	28.99	74.2	49.19	.663
Doublers, level handed, hand.....	3	40	5.3	8.0	42.7	45	75.5	62.17	.824	35.18	77.7	63.98	.824
Doublers' helpers, hand.....	3	151	5.3	8.0	42.7	156	76.3	53.54	.702	29.98	77.2	54.35	.704
Pair heaters.....	5	180	5.3	8.0	42.7	187	69.1	54.93	.795	33.95	71.7	56.08	.782
Single boys.....	5	282	5.3	8.0	42.7	299	72.7	53.21	.732	31.26	74.8	54.14	.724
Shearmen.....	7	102	5.5	7.9	42.9	110	72.4	77.88	1.076	46.16	72.8	78.13	1.073
Openers, male.....	7	237	5.9	8.1	48.3	253	84.1	57.62	.685	33.09	84.7	58.00	.685
Tinners, hand.....	6	153	5.4	8.1	43.7	164	77.1	69.95	.907	39.64	78.7	70.91	.901
Tinners, machine.....	4	78	5.4	8.0	43.4	84	74.8	69.35	.794	34.46	80.6	62.35	.774
Redippers.....	2	19	5.3	8.0	42.9	20	85.7	99.25	1.158	49.68	87.4	100.12	1.146
Risers.....	2	22	5.3	8.1	43.0	24	82.8	62.80	.639	27.48	84.2	53.61	.637
Branners.....	4	49	5.7	8.7	49.6	51	83.9	60.33	.600	29.76	86.3	61.47	.607
Assorters, female.....	5	251	5.7	8.0	46.1	254	84.5	31.20	.369	17.01	84.9	31.33	.369
Laborers.....	8	217	6.0	9.5	57.1	251	99.4	41.04	.422	24.10	103.3	43.83	.424





TIN-PLATE MILLS

TABLE D.—Customary full-time turns per week and hours per turn and per week, 1929—Tin-Plate Mills—Continued

Customary turns and hours worked										Average hours per week	Number of employees who worked each specified combination of customary turns and hours	
Day turns					Night turns							
Turns per week	Hours				Turns per week	Hours						
	Monday to Friday	Saturday	Sunday	Per week		Monday to Friday	Saturday	Sunday	Per week			
<b>ROLLERS, ONLY</b>												
0	8	8	-----	48	5	8	-----	-----	40	40	42%	378

TABLE E.—Average and classified full-time hours per week in six specified occupations, 1929—Tin-Plate Mills

Occupation	Number of establishments	Number of employees	Average full-time hours per week	Number of employees whose full-time hours per week were—						
				40, under 44	44, under 48	48	Over 48, under 56	56, under 60	60	
				Over 66, under 72						
Rollers.....	8	378	42.7	378	-----	-----	-----	-----	-----	-----
Doublers, hand.....	4	193	42.7	193	-----	-----	-----	-----	-----	-----
Heaters, level handed.....	8	604	42.7	604	-----	-----	-----	-----	-----	-----
Tinners, hand.....	6	184	43.7	158	-----	6	-----	-----	-----	-----
Assorters (female).....	5	264	46.1	99	76	3	76	-----	-----	-----
Laborers.....	8	261	57.1	-----	-----	-----	103	65	77	6



TABLE H.—Average and classified earnings actually received by employees in six specified occupations in pay period covered, 1929—  
Tin-plate Mills

Occupation	Number of employees	Average earnings per pay period	Number of employees whose earnings during the pay period were—																													
			Under \$5	\$5, under \$10	\$10, under \$15	\$15, under \$20	\$20, under \$25	\$25, under \$30	\$30, under \$35	\$35, under \$40	\$40, under \$45	\$45, under \$50	\$50, under \$55	\$55, under \$60	\$60, under \$65	\$65, under \$70	\$70, under \$75	\$75, under \$80	\$80, under \$85	\$85, under \$90	\$90, under \$95	\$95, under \$100	\$100, under \$110	\$110, under \$120	\$120, under \$130	\$130, under \$140	\$140, under \$150	\$150, under \$160	\$160, under \$180	\$180, under \$200	\$200, under \$250	
			Heaters, level handed.	604	\$71.47	2	9	1	1	1	2	8	16	10	8	9	30	66	81	112	79	65	44	21	20	10	6	2				
Rollers	378	129.43		1	1	1	1	1	1	1	3	2		1	2	6	2	4	3	6	7	6	38	34	57	52	58	40	31	17	2	
Doublers, hand.	193	68.47	1			2				2	1	1	3	25	59	44	19	10	3	5	5	3	2	4	2							
Tinners, hand.	164	70.91	1	2		1	1	3		2	4	3	5	16	17	16	29	18	15	9	4	4	10	3	1							
Assorters, female.	254	31.33	2	2	1	6	15	67	96	49	12	3	3	1																		
Laborers	251	43.88	6	4	5	3	6	4	11	16	43	84	48	10	8	8																

TIN-PLATE MILLS

## LIST OF BULLETINS OF THE BUREAU OF LABOR STATISTICS

*The following is a list of all bulletins of the Bureau of Labor Statistics published since July, 1912, except that in the case of bulletins giving the results of periodic surveys of the bureau, only the latest bulletin on any one subject is here listed.*

*A complete list of the reports and bulletins issued prior to July, 1912, as well as the bulletins published since that date, will be furnished on application. Bulletins marked thus (\*) are out of print.*

### **Conciliation and Arbitration (including strikes and lockouts).**

- \*No. 124. Conciliation and arbitration in the building trades of Greater New York. [1913.]
- \*No. 133. Report of the industrial council of the British Board of Trade on its inquiry into industrial agreements. [1913.]
- No. 139. Michigan copper district strike. [1914.]
- No. 144. Industrial court of the cloak, suit, and skirt industry of New York City. [1914.]
- No. 145. Conciliation, arbitration, and sanitation in the dress and waist industry of New York City. [1914.]
- \*No. 191. Collective bargaining in the anthracite-coal industry. [1916.]
- \*No. 198. Collective agreements in the men's clothing industry. [1916.]
- No. 233. Operation of the industrial disputes investigation act of Canada. [1918.]
- No. 255. Joint industrial councils in Great Britain. [1919.]
- No. 283. History of the Shipbuilding Labor Adjustment Board, 1917 to 1919.
- No. 287. National War Labor Board: History of its formation, activities, etc. [1921.]
- No. 303. Use of Federal power in settlement of railway labor disputes. [1922.]
- No. 341. Trade agreement in the silk-ribbon industry of New York City. [1923.]
- No. 402. Collective bargaining by actors. [1926.]
- No. 468. Trade agreements, 1927.
- No. 481. Joint industrial control in the book and job printing industry. [1928.]

### **Cooperation.**

- No. 313. Consumers' cooperative societies in the United States in 1920.
- No. 314. Cooperative credit societies in America and in foreign countries. [1922.]
- No. 437. Cooperative movement in the United States in 1925 (other than agriculture).

### **Employment and Unemployment.**

- \*No. 109. Statistics of unemployment and the work of employment offices in the United States. [1918.]
- No. 172. Unemployment in New York City, N. Y. [1915.]
- \*No. 183. Regularity of employment in the women's ready-to-wear garment industries. [1915.]
- \*No. 195. Unemployment in the United States. [1916.]
- No. 196. Proceedings of the Employment Managers' Conference held at Minneapolis, Minn., January 19 and 20, 1916.
- \*No. 202. Proceedings of the conference of Employment Managers' Association of Boston, Mass., held May 10, 1916.
- No. 206. The British system of labor exchanges. [1916.]
- No. 227. Proceedings of the Employment Managers' Conference, Philadelphia, Pa., April 2 and 3, 1917.
- No. 235. Employment system of the Lake Carriers' Association. [1918.]
- \*No. 241. Public employment offices in the United States. [1918.]
- No. 247. Proceedings of Employment Managers' Conference, Rochester, N. Y., May 9-11, 1918.
- No. 310. Industrial unemployment: A statistical study of its extent and causes. [1922.]
- No. 409. Unemployment in Columbus, Ohio, 1921 to 1925.

### **Foreign Labor Laws.**

- \*No. 142. Administration of labor laws and factory inspection in certain European countries. [1914.]
- No. 494. Labor legislation of Uruguay. [1929.]
- No. 510. Labor legislation of Argentina. (In press.)

### **Housing.**

- \*No. 158. Government aid to home owning and housing of working people in foreign countries. [1914.]
- No. 263. Housing by employers in the United States. [1920.]
- No. 295. Building operations in representative cities in 1920.
- No. 500. Building permits in the principal cities of the United States in [1921 to] 1928.



### **Industrial Accidents and Hygiene.**

- \*No. 104. Lead poisoning in potteries, tile works, and porcelain enameled sanitary ware factories. [1912.]
- No. 120. Hygiene of the painters' trade. [1913.]
- \*No. 127. Dangers to workers from dusts and fumes, and methods of protection. [1913.]
- \*No. 141. Lead poisoning in the smelting and refining of lead. [1914.]
- \*No. 165. Lead poisoning in the manufacture of storage batteries. [1914.]
- \*No. 179. Industrial poisons used in the rubber industry. [1915.]
- No. 188. Report of British departmental committee on the danger in the use of lead in the painting of buildings. [1916.]
- \*No. 201. Report of committee on statistics and compensation insurance cost of the International Association of Industrial Accident Boards and Commissions. [1916.]
- \*No. 207. Causes of death, by occupation. [1917.]
- \*No. 219. Industrial poisons used or produced in the manufacture of explosives. [1917.]
- No. 221. Hours, fatigue, and health in British munition factories. [1917.]
- No. 230. Industrial efficiency and fatigue in British munition factories. [1917.]
- \*No. 231. Mortality from respiratory diseases in dusty trades (inorganic dusts). [1918.]
- \*No. 234. Safety movement in the iron and steel industry, 1907 to 1917.
- No. 236. Effects of the air hammer on the hands of stonemasons. [1918.]
- No. 249. Industrial health and efficiency. Final report of British Health of Munition Workers' Committee. [1919.]
- \*No. 251. Preventable death in the cotton-manufacturing industry. [1919.]
- No. 256. Accidents and accident prevention in machine building. [1919.]
- No. 267. Anthrax as an occupational disease. [1920.]
- No. 276. Standardization of industrial accident statistics. [1920.]
- No. 280. Industrial poisoning in making coal-tar dyes and dye intermediates. [1921.]
- No. 291. Carbon-monoxide poisoning. [1921.]
- No. 293. The problem of dust phthisis in the granite-stone industry. [1922.]
- No. 298. Causes and prevention of accidents in the iron and steel industry, 1910-1919.
- No. 306. Occupation hazards and diagnostic signs: A guide to impairments to be looked for in hazardous occupations. [1922.]
- No. 392. Survey of hygienic conditions in the printing trades. [1925.]
- No. 405. Phosphorus necrosis in the manufacture of fireworks and in the preparation of phosphorus. [1926.]
- No. 425. Record of industrial accidents in the United States to 1925.
- No. 427. Health survey of the printing trades, 1922 to 1925.
- No. 428. Proceedings of the Industrial Accident Prevention Conference, held at Washington, D. C., July 14-16, 1926.
- No. 460. A new test for industrial lead poisoning. [1928.]
- No. 466. Settlement for accidents to American seamen. [1928.]
- No. 488. Death from lead poisoning, 1925-1927.
- No. 490. Statistics of industrial accidents in the United States to the end of 1927.
- No. 507. Causes of death, by occupation.

### **Industrial Relations and Labor Conditions.**

- No. 237. Industrial unrest in Great Britain. [1917.]
- No. 340. Chinese migrations, with special reference to labor conditions. [1923.]
- No. 349. Industrial relations in the West Coast lumber industry. [1923.]
- No. 361. Labor relations in the Fairmont (W. Va.) bituminous-coal field. [1924.]
- No. 380. Postwar labor conditions in Germany. [1925.]
- No. 383. Works council movement in Germany. [1925.]
- No. 384. Labor conditions in the shoe industry in Massachusetts, 1920-1924.
- No. 390. Labor relations in the lace and lace-curtain industries in the United States. [1925.]
- No. 483. Conditions in the shoe industry in Haverhill, Mass., 1928.

### **Labor Laws of the United States (including decisions of courts relating to labor).**

- No. 211. Labor laws and their administration in the Pacific States. [1917.]
- No. 229. Wage-payment legislation in the United States. [1917.]
- No. 285. Minimum-wage laws of the United States: Construction and operation. [1921.]
- No. 321. Labor laws that have been declared unconstitutional. [1922.]
- No. 322. Kansas Court of Industrial Relations. [1923.]
- No. 343. Laws providing for bureaus of labor statistics, etc. [1923.]
- No. 370. Labor laws of the United States, with decisions of courts relating thereto. [1925.]
- No. 408. Laws relating to payment of wages. [1926.]
- No. 444. Decisions of courts and opinions affecting labor, 1926.
- No. 467. Minimum wage legislation in various countries. [1928.]
- No. 486. Labor legislation of 1928.

**Proceedings of Annual Conventions of the Association of Government Labor Officials of the United States and Canada. Name changed in 1928 to Association of Governmental Officials in Industry of the United States and Canada.**

- \*No. 266. Seventh, Seattle, Wash., July 12-15, 1920.
- No. 307. Eighth, New Orleans, La., May 2-6, 1921.
- No. 323. Ninth, Harrisburg, Pa., May 22-26, 1922.
- No. 352. Tenth, Richmond, Va., May 1-4, 1923.
- \*No. 389. Eleventh, Chicago, Ill., May 19-23, 1924.
- \*No. 411. Twelfth, Salt Lake City, Utah, August 13-15, 1925.
- No. 429. Thirteenth, Columbus, Ohio, June 7-10, 1926.
- No. 455. Fourteenth, Paterson, N. J., May 31 to June 3, 1927.
- No. 490. Fifteenth, New Orleans, La., May 15-24, 1928.
- No. 508. Sixteenth, Toronto, Canada, June 4-7, 1929.

**Proceedings of Annual Meetings of the International Association of Industrial Accident Boards and Commissions.**

- No. 210. Third, Columbus, Ohio, April 25-28, 1916.
- No. 248. Fourth, Boston, Mass., August 21-25, 1917.
- No. 264. Fifth, Madison, Wis., September 24-27, 1918.
- \*No. 273. Sixth, Toronto, Canada, September 23-26, 1919.
- No. 281. Seventh, San Francisco, Calif., September 20-24, 1920.
- No. 304. Eighth, Chicago, Ill., September 19-23, 1921.
- No. 333. Ninth, Baltimore, Md., October 9-13, 1922.
- No. 350. Tenth, St. Paul, Minn., September 24-26, 1923.
- No. 385. Eleventh, Halifax, Nova Scotia, August 26-28, 1924.
- No. 395. Index to proceedings, 1914-1924.
- No. 406. Twelfth, Salt Lake City, Utah, August 17-20, 1925.
- No. 432. Thirteenth, Hartford, Conn., September 14-17, 1926.
- No. 456. Fourteenth, Atlanta, Ga., September 27-29, 1927.
- No. 485. Fifteenth, Paterson, N. J., September 11-14, 1928.
- No. 511. Sixteenth, Buffalo, N. Y., October 8-11, 1929.

**Proceedings of Annual Meetings of International Association of Public Employment Services.**

- No. 192. First, Chicago, December 19 and 20, 1913; second, Indianapolis, September 24 and 25, 1914; third, Detroit, July 1 and 2, 1915.
- No. 226. Fourth, Buffalo, N. Y., July 20 and 21, 1916.
- No. 311. Ninth, Buffalo, N. Y., September 7-9, 1921.
- No. 337. Tenth, Washington, D. C., September 11-13, 1922.
- No. 355. Eleventh, Toronto, Canada, September 4-7, 1923.
- No. 400. Twelfth, Chicago, Ill., May 19-23, 1924.
- No. 414. Thirteenth, Rochester, N. Y., September 15-17, 1925.
- No. 478. Fifteenth, Detroit, Mich., October 25-28, 1927.
- No. 501. Sixteenth, Cleveland, Ohio, September 18-21, 1928.

**Productivity of Labor.**

- No. 356. Productivity costs in the common-brick industry. [1924.]
- No. 360. Time and labor costs in manufacturing 100 pairs of shoes, 1923.
- No. 407. Labor costs of production and wages and hours of labor in the paper boxboard industry. [1926.]
- No. 412. Wages, hours, and productivity on the pottery industry, 1925.
- No. 441. Productivity of labor in the glass industry. [1927.]
- No. 474. Productivity of labor in merchant blast furnaces. [1928.]
- No. 575. Productivity of labor in newspaper printing. [1929.]

**Retail Prices and Cost of Living.**

- \*No. 121. Sugar prices, from refiner to consumer. [1913.]
- \*No. 130. Wheat and flour prices, from farmer to consumer. [1913.]
- No. 164. Butter prices, from producer to consumer. [1914.]
- No. 170. Foreign food prices as affected by the war. [1915.]
- No. 357. Cost of living in the United States. [1924.]
- No. 369. The use of cost-of-living figures in wage adjustments. [1925.]
- No. 495. Retail prices, 1890 to 1928.

**Safety Codes.**

- \*No. 331. Code of lighting: Factories, mills, and other work places.
- No. 336. Safety code for the protection of industrial workers in foundries.
- No. 350. Specifications of laboratory tests for approval of electric headlighting devices for motor vehicles.
- No. 351. Safety code for the construction, care, and use of ladders.
- No. 375. Safety code for laundry machinery and operations.
- No. 378. Safety code for woodworking plants.

### **Safety Codes—Continued.**

- No. 382. Code of lighting school buildings.
- No. 410. Safety code for paper and pulp mills.
- No. 430. Safety code for power presses and foot and hand presses.
- No. 433. Safety codes for the prevention of dust explosions.
- No. 436. Safety code for the use, care, and protection of abrasive wheel..
- No. 447. Safety code for rubber mills and calendars.
- No. 451. Safety code for forging and hot-metal stamping.
- No. 463. Safety code for mechanical power-transmission apparatus—first revision.
- No. 509. Textile safety code.
- No. 512. Code for identification of gas mask canisters.

### **Vocational and Workers' Education.**

- \*No. 159. Short-unit courses for wage earners, and a factory school experiment. [1915.]
- \*No. 182. Vocational education survey of Richmond, Va. [1915.]
- No. 199. Vocational education survey of Minneapolis, Minn. [1917.]
- No. 271. Adult working-class education in Great Britain and the United States. [1920.]
- No. 459. Apprenticeship in building construction. [1923.]

### **Wages and Hours of Labor.**

- \*No. 146. Wages and regularity of employment and standardization of piece rates in the dress and waist industry of New York City. [1914.]
- \*No. 147. Wages and regularity of employment in the cloak, suit, and skirt industry. [1914.]
- No. 161. Wages and hours of labor in the clothing and cigar industries, 1911 to 1913.
- No. 163. Wages and hours of labor in the building and repairing of steam-railroad cars, 1907 to 1913.
- \*No. 190. Wages and hours of labor in the cotton, woolen, and silk industries, 1907 to 1914.
- No. 204. Street-railway employment in the United States. [1917.]
- No. 225. Wages and hours of labor in the lumber, millwork, and furniture industries, 1916.
- No. 265. Industrial survey in selected industries in the United States, 1919.
- No. 297. Wages and hours of labor in the petroleum industry, 1920
- No. 356. Productivity costs in the common-brick industry. [1924.]
- No. 358. Wages and hours of labor in the automobile-tire industry, 1923.
- No. 360. Time and labor costs in manufacturing 100 pairs of shoes, 1923.
- No. 365. Wages and hours of labor in the paper and pulp industry, 1923.
- No. 394. Wages and hours of labor in metalliferous mines, 1924.
- No. 407. Labor cost of production and wages and hours of labor in the paper boxboard industry. [1926.]
- No. 412. Wages, hours, and productivity in the pottery industry, 1925.
- No. 413. Wages and hours of labor in the lumber industry in the United States, 1925.
- No. 416. Hours and earnings in anthracite and bituminous coal mining, 1922 and 1924.
- No. 442. Wages and hours of labor in the iron and steel industry, 1907 to 1926.
- No. 454. Hours and earnings in bituminous-coal mining, 1922, 1924, and 1926.
- No. 471. Wages and hours of labor in foundries and machine shops, 1927.
- No. 472. Wages and hours of labor in the slaughtering and meat-packing industry, 1927.
- No. 476. Union scales of wages and hours of labor, 1927. [Supplement to Bul. No. 457.]
- No. 482. Union scales of wages and hours of labor, May 15, 1928.
- No. 484. Wages and hours of labor of common street laborers, 1928.
- No. 487. Wages and hours of labor in woolen and worsted goods manufacturing, 1910 to 1928.
- No. 492. Wages and hours of labor in cotton-goods manufacturing, 1910 to 1928.
- No. 498. Wages and hours of labor in the boot and shoe industry, 1910 to 1928.
- No. 499. History of wages in the United States from colonial times to 1928.
- No. 502. Wages and hours of labor in the motor-vehicle industry, 1928.
- No. 503. Wages and hours of labor in the men's clothing industry, 1911 to 1928.
- No. 504. Wages and hours of labor in the hosiery and underwear industries, 1907 to 1928.

### **Welfare Work.**

- \*No. 123. Employers' welfare work. [1913.]
- No. 222. Welfare work in British munitions factories. [1917.]
- \*No. 250. Welfare work for employees in industrial establishments in the United States. [1919.]
- No. 458. Health and recreation activities in industrial establishments, 1926.

### **Wholesale Prices.**

- No. 284. Index numbers of wholesale prices in the United States and foreign countries. [1921.]
- No. 453. Revised index numbers of wholesale prices, 1923 to July, 1927.
- No. 493. Wholesale prices, 1913 to 1928.

### **Women and Children in Industry.**

- No. 116. Hours, earnings, and duration of employment of wage-earning women in selected industries in the District of Columbia. [1913.]
- \*No. 117. Prohibition of night work of young persons. [1913.]
- No. 118. Ten-hour maximum working-day for women and young persons. [1913.]

**Women and Children in Industry—Continued.**

- No. 119. Working hours of women in the pea canneries of Wisconsin. [1913.]
- \*No. 122. Employment of women in power laundries in Milwaukee. [1913.]
- No. 100. Hours, earnings, and conditions of labor of women in Indiana mercantile establishments and garment factories. [1914.]
- \*No. 167. Minimum-wage legislation in the United States and foreign countries. [1915.]
- \*No. 175. Summary of the report on conditions of woman and child wage earners in the United States. [1915.]
- \*No. 176. Effect of minimum-wage determinations in Oregon. [1915.]
- \*No. 180. The boot and shoe industry in Massachusetts as a vocation for women. [1915.]
- \*No. 182. Unemployment among women in department and other retail stores of Boston, Mass. [1916.]
- No. 193. Dressmaking as a trade for women in Massachusetts. [1916.]
- No. 215. Industrial experience of trade-school girls in Massachusetts. [1917.]
- \*No. 217. Effect of workmen's compensation laws in diminishing the necessity of industrial employment of women and children. [1918.]
- No. 223. Employment of women and juveniles in Great Britain during the war. [1917.]
- No. 253. Women in the lead industries. [1919.]

**Workmen's Insurance and Compensation (including laws relating thereto).**

- \*No. 101. Care of tuberculosis wage earners in Germany. [1912.]
- \*No. 102. British national insurance act, 1911.
- No. 103. Sickness and accident insurance law of Switzerland. [1912.]
- No. 107. Law relating to insurance of salaried employees in Germany. [1913.]

**Workmen's Insurance and Compensation (including laws relating thereto)—Continued.**

- \*No. 155. Compensation for accidents to employees of the United States. [1914.]
- No. 212. Proceedings of the conference on social insurance called by the International Association of Industrial Accident Boards and Commissions, Washington, D. C., December 5-9, 1916.
- \*No. 243. Workmen's compensation legislation in the United States and foreign countries, 1917 and 1918.
- No. 301. Comparison of workmen's compensation insurance and administration. [1922.]
- No. 312. National health insurance in Great Britain, 1911 to 1921.
- No. 379. Comparison of workmen's compensation laws of the United States as of January 1, 1925.
- No. 477. Public-service retirement systems, United States and Europe. [1928.]
- No. 496. Workmen's compensation legislation of the United States and Canada as of January, 1929. With text of legislation enacted in 1927 and 1928.

**Miscellaneous Series.**

- \*No. 174. Subject index of the publications of the United States Bureau of Labor Statistics up to May 1, 1915.
- No. 206. Profit sharing in the United States. [1916.]
- No. 242. Food situation in central Europe, 1917.
- No. 254. International labor legislation and the society of nations. [1919.]
- No. 268. Historical survey of international action affecting labor. [1920.]
- No. 282. Mutual relief associations among Government employees in Washington, D. C. [1921.]
- No. 299. Personnel research agencies: A guide to organized research in employment management, industrial relations, training, and working conditions. [1921.]
- No. 319. The Bureau of Labor Statistics: Its history, activities, and organization. [1922.]
- No. 326. Methods of procuring and computing statistical information of the Bureau of Labor Statistics. [1923.]
- No. 342. International Seamen's Union of America: A study of its history and problems. [1923.]
- No. 246. Humanity in government. [1923.]
- No. 373. Convict labor in 1923.
- No. 386. Cost of American almshouses. [1925.]
- No. 398. Growth of legal-aid work in the United States. [1926.]
- No. 401. Family allowances in foreign countries. [1926.]
- No. 461. Labor organizations in Chile. [1928.]
- No. 462. Park recreation areas in the United States. [1928.]
- No. 465. Beneficial activities of American trade-unions. [1928.]
- No. 479. Activities and functions of a State department of labor. [1928.]
- No. 489. Care of aged persons in the United States. [1929.]
- No. 491. Handbook of labor statistics: 1929 edition.
- No. 505. Directory of homes for the aged in the United States. [1929.]
- No. 506. Handbook of American trade unions, 1929 edition.

