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WAGES AND HOURS OF LABOR SERIES

**WAGES AND HOURS OF LABOR  
IN THE IRON AND STEEL  
INDUSTRY: 1907 TO 1920**



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# BULLETIN OF THE U. S. BUREAU OF LABOR STATISTICS.

NO. 305

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## WAGES AND HOURS OF LABOR IN THE IRON AND STEEL INDUSTRY: 1907 TO 1920.

### INTRODUCTION AND SUMMARY.

Earnings per hour, hours of labor, and earnings in 1920, together with summary figures for preceding years taken from previous reports,<sup>1</sup> are presented in this report for 10 departments of the iron and steel industry in the United States.

These statistics may be taken as fairly representative of the industry, as they are based on a sufficient number of representative plants in each district to show conditions in their locality.

Statistics are presented in this report for employees in—

- Blast furnaces, <sup>2</sup>1907-1920.
- Bessemer converters, <sup>2</sup>1907-1920.
- Open-hearth furnaces, <sup>2</sup>1910-1920.
- Puddling mills, <sup>3</sup>1914-1920.
- Bloomjng mills, <sup>2</sup>1910-1920.
- Plate mills, <sup>2</sup>1910-1920.
- Standard rail mills, <sup>3</sup>1910-1920.
- Bar mills, <sup>3</sup>1907-1920.
- Sheet mills, <sup>2</sup>1910-1920.
- Tin-plate mills, <sup>3</sup>1910-1920.

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.

The figures for 1920 are based on actual pay-roll data for one pay-roll period, in most cases the second half of October, but in a few instances, when conditions in the plants in October were not representative, reports were taken for a normal period as near October as available. The figures for the years 1907 to 1915 are in most cases for the second half of May; those for 1917 are for a pay-roll period in September of that year; while those for 1919 are nearly all for a half-month pay-roll period in the first three months of 1919.

While the aim in the 1920 survey was to obtain data for a period when the highest rates were paid in the industry, it was found that in a few instances reductions had been made prior to the survey. The general tables in this report refer to one specific period in each year and do not, therefore, in any way reflect month to month changes.

In a few cases in 1920 where wages were paid weekly, two consecutive pay rolls were taken and in order to bring all such schedules to a working period equivalent to the second half of October, which had 16 days, including 3 Saturdays and 3 Sundays, the total hours worked were increased by the addition of the percentage of the full

<sup>1</sup> For years up to 1915, see Bul. No. 218; for 1917, Monthly Labor Review for March, 1918; and for 1919, Bul. No. 265, Industrial survey in selected industries in the United States, 1919.

<sup>2</sup> No data available for 1916 or 1918.

<sup>3</sup> No data available for 1916, 1917, or 1918.

time of the missing days that the hours actually worked were of the average full time for the pay period. Pay rolls for periods longer than the last half of October were reduced to an equivalent length by a similar method.

The average earnings per hour were obtained by dividing the total amount earned by the total hours actually worked in an occupation, and in the cases where the pay-roll periods were adjusted to conform in length to the second half of October the average earnings for the half month are the product of the adjusted hours and the actual average earnings per hour. Thus, while we have a slightly theoretical pay-roll period in a few instances, the actual average earnings per hour have not been affected.

The full-time hours of labor per week shown in the tables in this report are the customary regular hours of work of individual employees under normal conditions in the establishment. 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 individual employees is not always the working time of their occupation as a whole. Some plants operating seven days per week make provision for laying off each employee one day a week. In such a plant the full-time hours per week of an employee working 12 hours a day is 72 hours. In all tables where the number of positions have been used, as is the case for all data presented up to and including 1917, the full-time hours of the man in the position have been reported and not the hours of the position. The term "jobs" or "positions" used in this report is defined as the number of 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.

The earnings per hour appearing in the tables include both the earnings of time workers and those of tonnage or piece workers. All earnings per hour apply to individuals, as no contract work for groups of employees is included.

The 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.

Six general statistical tables are presented in this report. Some of them show data for 1920 only, while others bring into comparison summary figures for 1920 and for earlier years. A statement of the data contained in each of the several tables is given on pages 13 to 16. Probably the two most important of these tables are Tables D and F, which contain 1920 data only. Tables corresponding to these were not published in preceding reports, and they contain many items not heretofore shown which add to the completeness of the report. That part of each of the six tables relating to each department is found in the section relating to such department. The form and purpose of the tables are the same for each department.

#### INDEX NUMBERS, BY DEPARTMENTS.

In the sections of this report relating to the several departments, the full-time weekly earnings, the full-time hours of labor per week, and the earnings per hour are shown for each of the principal productive occupations. These occupation figures have been sum-

marized and are presented in the form of index numbers for each department as a whole. The index for each year is simply the per cent that the average for that year is of the average for 1913. The year 1913 is taken as the base as it was the last full year before the World War. For puddling mills 1914 is taken as the base, as data for this department were first obtained for that year.

Table 1 shows for each department as a whole index numbers of average full-time hours per week, earnings per hour, and full-time weekly earnings as computed from the data for the principal productive occupations. Data were collected for all occupations in 1914, 1915, and 1920 only. The data for other than selected occupations are not used in this table, so that the data used for the several years, though not complete, are strictly comparable. The years shown are those for which data are available.

TABLE 1.—INDEX NUMBERS OF AVERAGE FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME WEEKLY EARNINGS IN COMBINED SELECTED OCCUPATIONS IN THE SEVERAL DEPARTMENTS OF THE IRON AND STEEL INDUSTRY, BY YEARS.

[1913=100, except for puddling mills, for which 1914=100.]

Department and year.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Department and year.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.
<b>Blast furnaces:</b>				<b>Plate mills:</b>			
1907.....	103	88	91	1910.....	99	89	88
1908.....	101	85	86	1911.....	98	87	85
1909.....	102	83	85	1912.....	100	92	91
1910.....	102	87	90	1913.....	100	100	100
1911.....	102	89	90	1914.....	99	101	100
1912.....	99	92	90	1915.....	99	107	106
1913.....	100	100	100	1917.....	100	156	156
1914.....	97	101	97	1919.....	102	233	237
1915.....	97	101	97	1920.....	99	267	265
1917.....	98	156	152	<b>Standard rail mills:</b>			
1919.....	100	250	248	1910.....	104	90	92
1920.....	93	283	258	1911.....	100	89	83
<b>Bessemer converters:</b>				1912.....	100	89	90
1907.....	102	85	86	1913.....	100	100	100
1908.....	98	79	79	1914.....	99	99	98
1909.....	102	82	84	1915.....	100	97	96
1910.....	103	86	88	1919.....	96	221	215
1911.....	101	82	84	1920.....	89	256	235
1912.....	101	90	90	<b>Bar mills:</b>			
1913.....	100	100	100	1907.....	106	94	99
1914.....	98	90	90	1908.....	106	84	89
1915.....	98	94	94	1909.....	107	86	91
1917.....	98	151	149	1910.....	104	95	99
1919.....	95	208	218	1911.....	106	90	93
1920.....	99	241	254	1912.....	103	90	98
<b>Open-hearth furnaces:</b>				1913.....	100	100	100
1910.....	99	89	86	1914.....	100	96	97
1911.....	96	89	85	1915.....	100	98	98
1912.....	98	92	91	1919.....	103	214	221
1913.....	100	100	100	1920.....	99	252	253
1914.....	97	100	97	<b>Sheet mills:</b>			
1915.....	92	104	96	1910.....	102	84	85
1917.....	99	152	150	1911.....	102	91	92
1919.....	98	239	234	1912.....	101	93	94
1920.....	89	282	253	1913.....	100	100	100
<b>Puddling mills:</b>				1914.....	100	101	101
1914.....	100	100	100	1915.....	101	92	92
1915.....	98	96	94	1917.....	104	178	183
1919.....	98	269	260	1919.....	99	193	195
1920.....	103	279	295	1920.....	100	229	240
<b>Blooming mills:</b>				<b>Tin-plate mills:</b>			
1910.....	102	81	83	1910.....	98	88	87
1911.....	101	82	84	1911.....	99	98	97
1912.....	101	87	88	1912.....	99	99	98
1913.....	100	100	100	1913.....	100	100	100
1914.....	97	102	98	1914.....	100	102	102
1915.....	97	104	100	1915.....	100	102	101
1917.....	100	133	131	1919.....	97	220	217
1919.....	96	220	217	1920.....	95	252	253
1920.....	91	233	220				

The index numbers appearing in the above table are based on a combination of the principal productive occupations only in each department. The following table furnishes a comparison of the increase or decrease in earnings per hour between employees in *all* occupations and those in the selected occupations. These increases or decreases are presented in the form of percentages and show the changes between the years 1914 and 1915, 1914 and 1920, and 1915 and 1920, these being the only years for which data for all occupations were secured. The differences between the increases in the "selected occupations" and in "all occupations" are mainly due to the variations in the proportion of skilled and unskilled labor in the two groupings.

TABLE 2.—PER CENT OF INCREASE OR DECREASE IN EARNINGS PER HOUR IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS IN THE IRON AND STEEL INDUSTRY, 1915 OVER 1914, 1920 OVER 1914, AND 1920 OVER 1915, BY DEPARTMENTS.

Department.	Per cent of increase (+) or decrease (—) in—					
	Selected occupations.			All occupations.		
	1915 over 1914.	1920 over 1914.	1920 over 1915.	1915 over 1914.	1920 over 1914.	1920 over 1915.
Blast furnaces.....	(1)	+182	+182	(1)	+177	+176
Bessemer converters.....	+4	+168	+157	+4	+165	+156
Open-hearth furnaces.....	+4	+182	+171	+4	+183	+173
Puddling mills.....	-4	+179	+191	-4	+170	+181
Blooming mills.....	+2	+130	+124	(1)	+145	+146
Plate mills.....	+6	+165	+150	+5	+160	+149
Standard rail mills.....	-3	+158	+165	-2	+151	+157
Bar mills.....	+1	+161	+158	-4	+156	+168
Sheet mills.....	-9	+127	+149	-8	+113	+131
Tin-plate mills.....	(1)	+147	+148	+1	+123	+122

<sup>1</sup> No change.

#### FULL-TIME WORKING DAYS PER WEEK.

Table 3 shows for the several years a percentage distribution of employees in each department according to their customary number of turns per week. The figures for all years preceding 1919 are based on the number of jobs or positions required under normal conditions to operate a plant or such units of it as were operating, while those for 1919 and 1920 are based on the number of men actually appearing on the pay rolls. Figures are presented for employees working in "selected occupations" and also for those working in "all occupations" of a department.

TABLE 3.—PERCENT OF EMPLOYEES IN THE SELECTED OCCUPATIONS AND OF THOSE IN ALL OCCUPATIONS IN EACH DEPARTMENT WORKING EACH SPECIFIED NUMBER OF DAYS PER WEEK, BY YEARS.

Department.	Year.	Number of plants.	Per cent of employees whose customary working time per week was—									
			5 days	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days	5 days and 7 days alternately.	6 days and 7 days alternately.	5 days, 6 days, and 7 days in rotation.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.
<b>BLAST FURNACES.</b>												
Selected occupations.	1907	20					3					97
	1908	20					5					95
	1909	20					3					97
	1910	34					5					95
	1911	35					11		(1)			89
	1912	36					18		(1)			82
	1913	35					19					81
	1914	38					37		5			58
	1915	38					37		4			59
	1917	18					44		7			49
	1919	24					10		10			80
	1920	28					21		25			54
All occupations.....	1914	38					42		5		(1)	53
	1915	38					42		4		(1)	54
	1920	28					29		17			54
<b>BESSEMER CONVERTERS.</b>												
Selected occupations.	1907	9					61		13		1	24
	1908	9					69		10		2	19
	1909	9					62		14		1	22
	1910	10					58		4	5	1	32
	1911	10					77		6		2	15
	1912	10					69		13		2	16
	1913	10					73		10		5	11
	1914	12					81		2		5	(1) 12
	1915	12					80		2		4	13
	1917	8					85		9		1	5
	1919	11					79		11		5	5
	1920	11					64		7		5	23
All occupations.....	1914	12					80		3		3	(1) 13
	1915	12					80		3		3	(1) 14
	1920	11					59		10		3	(1) 26
<b>OPEN-HEARTH FURNACES.</b>												
Selected occupations.	1910	17		6			34		1	28		32
	1911	17		4			46		1			(1) 18
	1912	17		2			33			36		1 29
	1913	17		2			28			33		2 34
	1914	22					34			34		(1) 31
	1915	22					33			35		(1) 32
	1917	13		5			46			22		(1) 27
	1919	17					26			46		(1) 28
	1920	19		(1)			25			42		(1) 30
All occupations.....	1914	22					39			26		(1) 34
	1915	22	(1)	(1)			39			27		(1) 34
	1920	19		(1)			27	(1)		37		(1) 33
<b>PUDDLING MILLS.</b>												
Selected occupations.	1914	29	13	66	8		12		(1)			(1)
	1915	29	25	52	12		11		(1)			(1)
	1919	12	(1)	65	22		13		(1)			(1)
	1920	15	(1)	65	15		22		(1)			(1)
All occupations.....	1914	29	13	63	8		15		1			1
	1915	29	24	50	11		13		1			1
	1920	15	(1)	60	13		26		(1)			1

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

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TABLE 3.—PERCENT OF EMPLOYEES IN THE SELECTED OCCUPATIONS AND OF THOSE IN ALL OCCUPATIONS IN EACH DEPARTMENT WORKING EACH SPECIFIED NUMBER OF DAYS PER WEEK, BY YEARS—Continued.

Department.	Year.	Number of plants.	Per cent of employees whose customary working time per week was—										
			5 days	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days	5 days and 7 days alternately.	6 days and 7 days alternately.	5 days, 6 days, and 7 days in rotation.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days
<b>BLOOMING MILLS.</b>													
Selected occupations.	1910	19		7			66		10				18
	1911	19	(1)	6			64		15				16
	1912	19	(1)	5			64		15				16
	1913	19		5			63		15		7	1	11
	1914	23	3	2			76		8		6	1	5
	1915	23	3	1			73		10		7	2	5
	1917	12					71		22		6		1
	1919	19					64		11		12	1	12
	1920	20	2	1			63		19		4	1	11
All occupations.....	1914	23	2	2			74		7		3	(1)	11
	1915	23	2	1			73		9		3	1	11
	1920	20	1	(1)			67		14		2	1	15
<b>PLATE MILLS.</b>													
Selected occupations.	1910	11		13			82		1				5
	1911	11	3	35			57		(1)				5
	1912	11	2	33			57		1				8
	1913	11		37			54		2			1	7
	1914	13		43			49		5			(1)	3
	1915	13	(1)	46			46		4			(1)	3
	1917	7		23			77						(1)
	1919	11		21			85		1				2
	1920	11		20			79		(1)				(1)
All occupations.....	1914	13		34			57		3			(1)	6
	1915	13	(1)	35			55		3			(1)	6
	1920	11		18			78		1				3
<b>STANDARD RAIL MILLS.</b>													
Selected occupations.	1910	6					68		1		2		30
	1911	7					91		5		2		3
	1912	7					90		6		2		2
	1913	7					97		1		(1)		2
	1914	7		8		1	90						1
	1915	7		6		2	91		1				2
	1919	5					100		(1)				1
	1920	4					98		2				1
All occupations.....	1914	7		7		1	88		1				4
	1915	7		5		1	88		1				5
	1920	4					92		3		1		4
<b>BAR MILLS.</b>													
Selected occupations.	1907	15	2	52	2	3	39	1	2				1
	1908	15	3	49	2	2	42	1	1				1
	1909	15	1	48	2	2	43	(1)	2				2
	1910	25	4	30	1	1	60	(1)	1				3
	1911	26	1	43	1	1	53	(1)	1				(1)
	1912	26	1	43	1	1	47	(1)	1		(1)		(1)
	1913	44	7	48	2	1	35	(1)	1		5	(1)	1
	1914	57	5	53	2	1	32	(1)	1		5	(1)	(1)
	1915	57	5	54	2	1	33	(1)	(1)		(1)	(1)	(1)
	1919	23	7	42		1	48		1		(1)		1
	1920	25	4	36	6	4	40	(1)	1		9	1	(1)
All occupations.....	1914	57	6	47	2	1	33	(1)	1		4	(1)	1
	1915	57	6	48	1	1	43	(1)	1		(1)		1
	1920	25	3	33	4	3	46	(1)	3		7	1	1

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

**TABLE 3.—PERCENT OF EMPLOYEES IN THE SELECTED OCCUPATIONS AND OF THOSE IN ALL OCCUPATIONS IN EACH DEPARTMENT WORKING EACH SPECIFIED NUMBER OF DAYS PER WEEK, BY YEARS—Concluded.**

Department.	Year.	Number of plants.	Per cent of employees whose customary working time per week was—										
			5 days	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days	5 days and 7 days alternately.	6 days and 7 days alternately.	5 days, 6 days, and 7 days in rotation.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days
<b>SHEET MILLS.</b>													
Selected occupations.	1910	9	(1)	2	81	.....	16	.....	.....	.....	.....	.....	1
	1911	9	(1)	1	84	.....	14	.....	.....	.....	.....	.....	1
	1912	9	(1)	2	84	.....	14	.....	(1)	.....	.....	.....	1
	1913	13	1	(1)	81	6	11	.....	(1)	.....	.....	(1)	1
	1914	15	(1)	(1)	83	5	11	.....	(1)	.....	.....	.....	1
	1915	15	(1)	1	80	6	11	.....	(1)	.....	.....	.....	1
	1917	8	.....	2	49	31	18	.....	.....	.....	.....	.....	.....
	1919	11	1	(1)	68	24	7	.....	.....	.....	.....	.....	.....
	1920	13	(1)	1	63	20	16	.....	.....	.....	.....	.....	1
All occupations.....	1914	15	(1)	2	58	3	32	.....	1	.....	.....	.....	4
	1915	15	1	3	55	4	32	.....	1	.....	.....	.....	4
	1920	13	1	3	53	6	33	.....	1	.....	.....	.....	3
<b>TIN-PLATE MILLS.</b>													
Selected occupations.	1916	5	(1)	1	79	.....	20	.....	.....	.....	.....	.....	.....
	1911	6	(1)	(1)	79	.....	21	.....	.....	.....	.....	.....	(1)
	1912	6	.....	2	78	.....	20	.....	.....	.....	.....	.....	(1)
	1913	10	.....	1	74	.....	24	.....	.....	.....	.....	.....	.....
	1914	10	.....	2	75	.....	23	.....	.....	.....	.....	.....	(1)
	1915	11	.....	1	74	.....	25	.....	.....	.....	.....	.....	(1)
	1919	9	(1)	4	89	.....	16	.....	.....	.....	.....	.....	1
	1920	9	1	2	84	.....	13	.....	.....	.....	.....	.....	.....
All occupations.....	1914	11	(1)	4	58	.....	37	.....	(1)	.....	.....	.....	1
	1915	11	(1)	3	57	.....	37	.....	(1)	.....	.....	.....	2
	1920	9	1	5	55	.....	38	.....	(1)	.....	.....	.....	1

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

A blast furnace is the only department in the industry which from the nature of its process must be in continuous operation day and night seven days per week. The report for blast furnaces, therefore, shows the actual change in the amount of necessarily regular 7-day work throughout the entire period covered by these reports. Before the war the provision for laying off each employee in rotation one day in seven, by a system of relief men (introduced in 1910), had so far obtained that the percentage of employees doing 7-day work in the principal productive occupations of blast furnaces had decreased from 95 in 1910 to 59 in 1915, with an additional 4 per cent working 7 days in alternate weeks. In 1919 the percentage of employees doing regular 7-day work had risen to 80, with 10 per cent working seven days in alternate weeks, but in 1920 the relief system had so far been restored that 54 per cent were working seven days regularly and 25 per cent in alternate weeks.

#### FULL-TIME WORKING HOURS PER WEEK.

In Table 4 is shown a percentage distribution, according to the average full-time hours per week, of employees in the several departments of the iron and steel industry. The percentages for the years

1907 to 1917 are based on the number of jobs or positions normally required to operate the different plants, while those for 1919 and 1920 are based on the number of employees actually appearing on the pay rolls.

The classified hours of the table are average hours and do not reflect the long hours of one week that may alternate with much shorter hours the next. Thus a man who works 72 hours one week and 84 hours the next has an average of 78 hours and is tabulated in the group "Over 72 and under 84." As in Table 3, employees are tabulated in two groups, those working in selected occupations and those working in all occupations.

TABLE 4.—PER CENT OF EMPLOYEES IN SELECTED OCCUPATIONS, AND THOSE IN ALL OCCUPATIONS IN EACH DEPARTMENT, WORKING EACH SPECIFIED NUMBER OF AVERAGE FULL-TIME HOURS PER WEEK, BY YEARS.

Department.	Year.	Number of plants.	Per cent of employees whose average full-time hours per week were—							
			48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	Over 84.
<b>BLAST FURNACES.</b>										
Selected occupations.....	1907	20	.....	.....	3	13	( <sup>1</sup> )	5	80	.....
	1908	20	.....	.....	5	17	.....	7	71	.....
	1909	20	.....	.....	3	15	( <sup>1</sup> )	8	74	.....
	1910	34	.....	( <sup>1</sup> )	4	13	1	8	75	.....
	1911	35	.....	( <sup>1</sup> )	4	12	6	6	72	.....
	1912	36	.....	4	5	11	13	6	61	.....
	1913	35	.....	1	6	11	13	6	64	( <sup>1</sup> )
	1914	38	( <sup>1</sup> )	1	8	11	25	7	46	( <sup>1</sup> )
	1915	38	.....	1	6	12	26	7	47	( <sup>1</sup> )
	1917	18	.....	.....	4	6	40	5	44	.....
	1919	24	.....	7	3	6	8	12	64	.....
	1920	28	( <sup>1</sup> )	15	2	9	17	33	23	.....
All occupations.....	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> )
<b>BESSEMER CONVERTERS.</b>										
Selected occupations.....	1907	9	23	2	1	8	21	24	23	( <sup>1</sup> )
	1908	9	29	3	2	8	27	15	16	.....
	1909	9	22	3	1	6	25	26	18	.....
	1910	10	17	7	3	1	33	12	24	3
	1911	10	19	2	2	7	41	20	9	.....
	1912	10	22	3	2	7	30	21	15	.....
	1913	10	17	8	1	8	33	24	10	.....
	1914	12	18	9	3	10	39	10	11	.....
	1915	12	18	8	4	7	41	9	12	.....
	1917	8	22	1	1	1	61	14	( <sup>1</sup> )	.....
	1919	11	13	5	2	15	46	18	1	.....
	1920	11	17	8	1	17	26	16	15	.....
All occupations.....	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	.....
<b>OPEN-HEARTH FURNACES.</b>										
Selected occupations.....	1910	17	( <sup>1</sup> )	1	2	13	25	33	27	.....
	1911	17	.....	1	2	25	23	34	15	.....
	1912	17	.....	2	2	11	23	40	23	.....
	1913	17	.....	1	1	8	23	37	31	.....
	1914	22	( <sup>1</sup> )	5	6	8	20	40	21	( <sup>1</sup> )
	1915	22	.....	4	5	10	22	38	22	.....
	1917	13	.....	( <sup>1</sup> )	.....	7	39	26	28	.....
	1919	17	.....	8	2	2	24	45	20	.....
	1920	19	( <sup>1</sup> )	32	1	10	9	46	3	.....
All occupations.....	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	38	6	( <sup>1</sup> )

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

TABLE 4.—PER CENT OF EMPLOYEES IN SELECTED OCCUPATIONS, AND THOSE IN ALL OCCUPATIONS IN EACH DEPARTMENT, WORKING EACH SPECIFIED NUMBER OF AVERAGE FULL-TIME HOURS PER WEEK, BY YEARS—Continued.

Department.	Year.	Number of plants.	Per cent of employees whose average full-time hours per week were—							
			48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	Over 84.
<b>PUDDLING MILLS.</b>										
Selected occupations.....	1914	29	29	58	5	7	1	(1)	.....	.....
	1915	29	32	55	5	7	1	(1)	.....	.....
	1919	12	34	49	3	13	1	(1)	(1)	.....
	1920	15	24	45	11	14	6	(1)	(1)	.....
All occupations.....	1914	29	27	55	6	9	1	1	(1)	.....
	1915	29	31	53	6	9	1	(1)	(1)	.....
	1920	15	24	41	12	15	7	(1)	1	(1)
<b>BLOOMING MILLS.</b>										
Selected occupations.....	1910	19	2	6	1	10	57	7	17	.....
	1911	19	2	8	2	11	56	10	12	.....
	1912	19	2	8	1	11	55	11	12	.....
	1913	19	3	11	1	12	47	19	6	.....
	1914	23	6	13	3	8	56	11	3	.....
	1915	23	6	13	3	6	55	15	2	.....
	1917	12	10	6	3	6	59	22	1	.....
	1919	19	13	13	(1)	6	48	12	8	.....
	1920	20	16	19	2	8	34	17	5	.....
All occupations.....	1914	23	3	8	5	8	59	9	9	(1)
	1915	23	2	7	4	7	58	12	9	(1)
	1920	20	12	12	2	12	35	18	8	(1)
<b>PLATE MILLS.</b>										
Selected occupations.....	1910	11	.....	.....	7	57	32	1	3	.....
	1911	11	.....	(1)	9	47	42	1	1	.....
	1912	11	.....	(1)	8	42	43	5	2	1
	1913	11	.....	(1)	7	42	44	5	1	1
	1914	13	.....	1	4	48	39	7	1	.....
	1915	13	.....	4	4	48	36	8	1	.....
	1917	7	.....	1	3	22	74	.....	(1)	.....
	1919	11	.....	4	1	21	73	1	1	.....
	1920	11	.....	2	5	40	47	6	(1)	.....
All occupations.....	1914	13	.....	3	4	44	39	6	4	.....
	1915	13	.....	5	5	41	38	7	4	.....
	1920	11	(1)	5	4	41	42	4	3	.....
<b>STANDARD RAIL MILLS.</b>										
Selected occupations.....	1910	6	4	2	8	4	52	1	30	.....
	1911	7	4	2	4	8	72	7	3	.....
	1912	7	4	2	5	8	72	8	2	.....
	1913	7	4	2	7	4	80	3	2	.....
	1914	7	8	.....	3	11	78	.....	(1)	.....
	1915	7	6	.....	2	7	82	2	2	.....
	1919	5	20	(1)	2	.....	77	.....	1	.....
	1920	4	33	1	3	19	43	.....	1	.....
All occupations.....	1914	7	5	(1)	3	13	74	1	4	.....
	1915	7	4	1	2	9	77	2	5	.....
	1920	4	33	4	2	20	37	2	2	.....
<b>BAR MILLS.</b>										
Selected occupations.....	1907	15	5	13	9	52	19	3	1	.....
	1908	15	4	14	12	47	20	1	(1)	.....
	1909	15	4	14	10	59	9	3	1	.....
	1910	25	11	12	12	46	17	3	1	(1)
	1911	26	11	20	8	47	14	1	(1)	.....
	1912	26	11	27	7	41	13	1	(1)	.....
	1913	44	6	37	10	41	4	2	(1)	.....
	1914	57	5	34	8	47	5	1	(1)	.....
	1915	57	10	31	6	46	7	1	(1)	.....
	1919	23	14	10	13	47	14	1	1	.....
	1920	25	10	34	4	42	8	1	(1)	.....
All occupations.....	1914	57	4	31	12	44	7	2	1	.....
	1915	57	8	30	10	42	8	1	1	.....
	1920	25	9	28	8	40	12	3	(1)	.....

1 Less than 1 per cent.

10 WAGES AND HOURS OF LABOR—IRON AND STEEL INDUSTRY.

TABLE 4.—PER CENT OF EMPLOYEES IN SELECTED OCCUPATIONS, AND THOSE IN ALL OCCUPATIONS IN EACH DEPARTMENT, WORKING EACH SPECIFIED NUMBER OF AVERAGE FULL-TIME HOURS PER WEEK, BY YEARS—Concluded.

Department.	Year.	Number of plants.	Per cent of employees whose average full-time hours per week were—							
			48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	Over 84.
<b>SHEET MILLS.</b>										
Selected occupations.....	1910	9	81	1	10	4	4	(1)	(1)	.....
	1911	9	84	1	7	5	4		(1)	.....
	1912	9	84	(1)	7	5	3	(1)	(1)	.....
	1913	13	88	2	4	1	4	(1)	(1)	.....
	1914	15	89	1	2	3	5	(1)	(1)	.....
	1915	15	87	1	3	3	4	1	(1)	.....
	1917	8	86		15	5	(1)			.....
	1919	11	92	1	4	1	3			.....
	1920	13	90	1	3	2	3	1		.....
All occupations.....	1914	15	62	2	8	10	13	2	2	.....
	1915	15	61	2	10	12	11	2	2	.....
	1920	13	64	6	8	9	9	2	1	.....
<b>TIN-PLATE MILLS.</b>										
Selected occupations.....	1910	5	81	13	4	3				.....
	1911	6	80	11	6	3	(1)			.....
	1912	6	79	12	6	3	(1)	(1)	(1)	.....
	1913	10	75	14	3	8	(1)			.....
	1914	10	78	13	2	8	(1)		(1)	.....
	1915	11	77	15	3	6		(1)		.....
	1919	9	83	10	3	3	1	(1)	(1)	.....
	1920	9	88	9	1	1	(1)			.....
All occupations.....	1914	11	59	17	9	12	2	(1)	1	(1)
	1915	11	60	18	9	11	1	1	1	(1)
	1920	9	58	18	6	10	7	1	(1)	.....

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

The relief provision for blast furnaces referred to in the discussion of customary working turns per week is reflected in this table in a marked degree. In 1910, 75 per cent of the employees in the principal productive occupations worked 84 hours per week regularly and 8 per cent over 72 and under 84 hours. In 1915 the percentages of employees working these hours had dropped to 47 and 7, respectively. In 1919 the percentages had risen to 64 and 12, respectively, while in 1920 only 23 per cent were working 84 hours per week, with 33 per cent in the group "Over 72 and under 84." In 1920, therefore, a total of 56 per cent were working over 72 hours per week as compared with 76 per cent in 1919 and 54 per cent in 1915. The introduction of the three-shift system of 8 hours each is shown to some extent by the figures in the column headed "Over 48 and under 60" hours per week. The percentage shown in this column was 15 for 1920 as compared with 7 for 1919 and only 1 for 1915.

**COMMON LABORERS.**

Nearly all common laborers in the iron and steel industry are paid on an hourly basis and their earnings depend upon the number of hours worked. The basic labor rate is practically the same in all departments of a plant, and from it, to a large extent, are determined the rates for other occupations requiring little skill. The rate for common labor, therefore, is of importance beyond the limits of the occupation proper.

In this survey "common labor" has been confined to laborers, wholly unskilled and more or less of a floating gang, who worked in and about the mill proper, but upon whose work the mill was not primarily dependent for operation.

In Table 5, in which are shown the average earnings per hour of common laborers in each department by districts and by years, 1907 to 1920, each department of an establishment is counted as a separate plant. The number of plants stated is the total of all departments. The number of plants in each department of the industry is not shown here.

TABLE 5.—AVERAGE EARNINGS PER HOUR OF COMMON LABORERS IN EACH DEPARTMENT OF THE IRON AND STEEL INDUSTRY, BY DISTRICTS AND BY YEARS, 1907 TO 1920.

District, year, and number of plants.	All departments.	Blast furnaces.	Bessemer converters.	Open-hearth furnaces.	Puddling mills.	Blooming mills.	Plate mills.	Standard rail mills.	Bar mills.	Sheet mills.	Tin-plate mills.
<b>Eastern:</b>											
4 plants.....1907	\$. 134	\$. 135								\$. 132	
1908	. 120	. 115								. 131	
1909	. 123	. 119								. 131	
18 plants.....1910	. 142	. 142		\$. 145		\$. 143	\$. 131			. 147	
19 plants.....1911	. 141	. 140		. 146		. 139	. 131			. 145	
20 plants.....1912	. 144	. 144		. 152		. 141	. 133			. 145	
28 plants.....1913	. 157	. 151		. 168		. 162	. 151	\$. 160		. 156	
39 plants.....1914	. 156	. 153		. 169	\$. 163	. 172	. 151	. 157		. 151	
1915	. 155	. 151		. 171	. 157	. 154	. 151	. 161		. 150	
7 plants.....1917	. 278	. 271		. 287		. 250	. 250				
17 plants.....1919	. 398	. 423		. 408	. 400	. 437	. 368			. 409	
19 plants.....1920	. 451	. 444		. 485	. 451	. 437	. 398			. 479	
<b>Pittsburgh:</b>											
17 plants.....1907	. 154	. 152	\$. 156							. 154	
1908	. 156	. 154	. 156							. 157	
1909	. 152	. 152	. 153							. 151	
57 plants.....1910	. 164	. 166	. 164	. 162		. 168	. 167	. 161	. 161	\$. 164	\$. 165
59 plants.....1911	. 166	. 165	. 167	. 164		. 170	. 168	. 169	. 163	. 166	. 164
1912	. 167	. 163	. 168	. 165		. 169	. 172	. 168	. 163	. 168	. 167
61 plants.....1913	. 190	. 191	. 192	. 190		. 192	. 191	. 189	. 183	. 191	. 192
76 plants.....1914	. 190	. 192	. 193	. 188	. 190	. 192	. 188	. 194	. 183	. 192	. 192
1915	. 190	. 189	. 193	. 193	. 189	. 192	. 189	. 184	. 184	. 192	. 194
23 plants.....1917	. 301	. 292	. 299	. 300		. 300	. 300			. 321	
47 plants.....1919	. 480	. 484	. 485	. 471	. 447	. 489	. 484	. 484	. 482	. 460	. 477
57 plants.....1920	. 530	. 525	. 532	. 537	. 529	. 537	. 532	. 535	. 528	. 517	. 530
<b>Great Lakes and Middle West:</b>											
12 plants.....1907	. 158	. 162	. 154							. 159	
1908	. 153	. 152	. 152							. 158	
1909	. 151	. 153	. 146							. 157	
37 plants.....1910	. 163	. 162	. 161	. 162		. 163	. 164	. 163	. 167		
39 plants.....1911	. 166	. 166	. 164	. 166		. 166	. 164	. 159	. 166		
40 plants.....1912	. 168	. 166	. 166	. 170		. 167	. 162	. 169	. 170		
49 plants.....1913	. 189	. 189	. 190	. 190		. 190	. 195	. 191	. 189	. 187	. 186
70 plants.....1914	. 189	. 190	. 191	. 191	. 182	. 190	. 190	. 192	. 190	. 180	. 186
1915	. 188	. 187	. 191	. 191	. 180	. 190	. 189	. 189	. 190	. 180	. 186
23 plants.....1917	. 313	. 296	. 297	. 299		. 295	. 289			. 335	
54 plants.....1919	. 469	. 466	. 501	. 485	. 464	. 487	. 469	. 472	. 450	. 463	. 434
43 plants.....1920	. 541	. 549	. 545	. 559	. 521	. 528	. 514	. 511	. 526	. 547	. 535
<b>Southern:</b>											
6 plants.....1907	. 130	. 130									
1908	. 111	. 111									
1909	. 112	. 112									
14 plants.....1910	. 129	. 128		. 130		. 131					
1911	. 131	. 131		. 130		. 132					
15 plants.....1912	. 130	. 130		. 132		. 131					
22 plants.....1913	. 140	. 136		. 152		. 138			. 142		
29 plants.....1914	. 146	. 137		. 169	. 144	. 148			. 141		
1915	. 141	. 134		. 158	. 146	. 140			. 142		
9 plants.....1917	. 222	. 226		. 221		. 217					
16 plants.....1919	. 331	. 334		. 370	. 299	. 374			. 275		
20 plants.....1920	. 396	. 359		. 480	. 312	. 404			. 381		
<b>Total:</b>											
39 plants.....1907	. 151	. 146	. 155							. 153	
1908	. 147	. 140	. 155							. 153	
1909	. 145	. 138	. 151							. 150	
126 plants.....1910	. 158	. 150	. 163	. 157		. 162	. 159	. 163	. 160	. 164	. 165
131 plants.....1911	. 161	. 151	. 166	. 161		. 163	. 158	. 169	. 159	. 166	. 164
134 plants.....1912	. 162	. 152	. 167	. 164		. 163	. 161	. 169	. 160	. 168	. 167
160 plants.....1913	. 181	. 173	. 192	. 185		. 185	. 175	. 187	. 169	. 190	. 189
214 plants.....1914	. 181	. 177	. 193	. 185	. 173	. 187	. 174	. 185	. 173	. 188	. 189
1915	. 180	. 171	. 193	. 186	. 167	. 187	. 174	. 182	. 173	. 188	. 190
62 plants.....1917	. 298	. 281	. 298	. 292		. 287	. 294			. 331	
134 plants.....1919	. 461	. 457	. 489	. 468	. 436	. 469	. 450	. 478	. 443	. 462	. 461
199 plants.....1920	. 508	. 474	. 537	. 525	. 457	. 511	. 498	. 531	. 506	. 536	. 533

## AVERAGE HOURLY EARNINGS OF DEPARTMENTS, BY DISTRICTS, 1920.

In securing data for 1920 total hours worked and total earnings in the pay-roll period were secured for each department covered.

Table 6 shows, by districts, the average hourly earnings in 1920 in each of the 10 departments. This average was obtained by dividing the total earnings by the total hours worked.

TABLE 6.—AVERAGE HOURLY EARNINGS IN SPECIFIED DEPARTMENTS OF THE IRON AND STEEL INDUSTRY IN 1920, BY DISTRICTS.

District.	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.
Eastern.....	\$0.514	.....	\$0.586	\$0.873	\$0.622	\$0.545	.....	\$0.693	.....	.....
Pittsburgh.....	.592	\$0.689	.683	1.098	.662	.710	\$0.668	.714	\$1.061	\$0.964
Great Lakes and Middle West.....	.658	.663	.708	.866	.680	.740	.593	.785	.997	.913
Southern.....	.439	.....	.606	.572	.612	.....	.....	.565	.....	.....
Total.....	.571	.677	.671	.885	.659	.671	.632	.713	1.039	.949

The highest averages were found in the sheet and tin-plate mill departments, the rolling crews in these mills working in three shifts at a high speed and making exceptionally high hourly rates. Puddlers also make such extremely high hourly rates that the average for the puddling-mill department as a whole was not much below that of the tin-plate mill department. The lowest hourly average was found in the blast-furnace department, owing to the preponderance of common labor or of occupations requiring only very moderate skill. The averages for the two steel-making departments and the remaining rolling mills all fell within a range of 8 cents, the bar-mill average being the highest.

The Pittsburgh and the Great Lakes and Middle West districts showed considerably higher average hourly earnings than the Eastern and Southern districts. This condition was due to the decidedly lower rates paid to common labor in the Eastern and Southern districts, the proportion of common labor and of occupations requiring little skill in nearly every department being sufficient to affect materially the average for all occupations, even though there was in many cases much less variation between the rates of highly skilled occupations in the several districts. The Southern district was represented in five departments only, and in four of them the average earnings per hour were lower than in the Eastern district but in open-hearth furnaces in the Southern district they were 2 cents higher than in the Eastern district. The skilled occupations in this department in the Southern district are all paid unexpectedly high rates<sup>4</sup>—rates that approach those of the Pittsburgh and the Great Lakes districts. For example, melters' first helpers averaged \$1.065 per hour in the Southern district, as against \$1.09 in the Pittsburgh district and only 81.2 cents in the Eastern district, and steel pourers and ladle cranemen in the Southern district actually averaged higher hourly earnings than in the Pittsburgh district. Laborers in this department in the Southern district, on the other hand, averaged lower earnings per hour than in any other district and the proportional number employed per plant was considerably higher than in any other district.

<sup>4</sup>Compare Table D (3) (pp. 64 to 66).

## SCOPE OF 1920 DATA.

In 1920 information was obtained from plants located in eleven 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 half of Pennsylvania. The "Pittsburgh" district includes not only the plants in Pittsburgh proper, but also others in western Pennsylvania, those along the border line in 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 districts, including Colorado. Although this is a very large territory geographically, it is essentially a unit industrially, so far as the iron and steel industry is concerned, the wage rates of the entire district being based largely on those paid in the two producing centers, Buffalo and Chicago. The "Southern" district includes plants in Virginia, Tennessee, Alabama, Kentucky, and the southern part of Ohio. The southern Ohio 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.

The actual number of employees reported in each district in each department and the number of plants covered in 1920 are shown in Table 7. Each department of an establishment has been counted as a separate plant.

TABLE 7.—NUMBER OF PLANTS AND OF EMPLOYEES SHOWN ON PAY ROLLS IN 1920, BY DEPARTMENTS AND DISTRICTS.

Department.	Eastern district.		Pittsburgh district.		Great Lakes and Middle West district.		Southern district.		Total.	
	Plants	Em- ployees.	Plants	Em- ployees.	Plants	Em- ployees.	Plants	Em- ployees.	Plants	Em- ployees.
Blast furnaces.....	3	642	8	4,877	9	3,839	8	2,725	28	12,083
Bessemer converters.....	4	930	6	1,766	5	1,122	.....	.....	11	2,888
Open-hearth furnaces.....	4	930	6	3,089	6	3,033	3	955	19	8,007
Puddling mills.....	4	618	5	1,090	3	927	3	627	15	3,262
Blooming mills.....	3	248	8	1,706	6	1,233	3	384	20	3,571
Plate mills.....	3	937	5	1,569	3	721	.....	.....	11	3,227
Standard rail mills.....	.....	.....	2	652	2	692	.....	.....	4	1,344
Bar mills.....	6	949	7	2,928	7	2,049	5	759	25	6,685
Sheet mills.....	.....	.....	9	5,278	4	3,249	.....	.....	13	8,527
Tin-plate mills.....	.....	.....	6	7,171	3	3,195	.....	.....	9	10,366
Total.....	23	4,324	62	30,126	48	20,060	22	5,450	155	59,960

## EXPLANATION OF TABLES.

A brief explanation is here given of the six general tables that appear in each of the sections relating to the several departments.

*Table A.*—Average customary full-time hours per week, average earnings per hour, average full-time weekly earnings, and percentages of employees working classified average full-time hours per week are presented for each of the selected occupations in each department for

all years for which data are available. The figures for 1920 were compiled for this report and those for earlier years were taken from previous reports published by this bureau.

With the exception of laborers and those employed in certain other unskilled general positions, the number of employees reported for each year except 1919 and 1920 is the number of positions required in each occupation to operate the plants under normal operating conditions or such units as were operated for the period scheduled, and does not necessarily mean the number of men who actually worked at the occupation during the whole or a part of the pay-roll period reported. All figures shown for 1919 and 1920 are based on the number of individuals appearing on the pay rolls.

*Table B.*—To aid in making a comparison of the actual data over a period of years, index numbers have been computed from the averages shown in Table A for full-time hours per week, earnings per hour, and full-time weekly earnings. These index numbers are presented for all occupations in all departments covered by this survey. They are simply percentages, data for 1913 being taken as the base, or 100 per cent. The index for each year is the per cent that the average for that year is of the average for 1913.

*Table C.*—A classification showing numbers and percentages of employees according to the number of days, or turns, per week customarily worked is presented in Table C. The figures are presented for the years 1907 to 1920,<sup>5</sup> for each district reported and for all districts combined. With the exception of laborers and those employed in certain other unskilled general positions, the number of employees reported for each year except 1919 and 1920 represent the number of positions required to operate the plants under normal operating conditions or such units as were operated for the period scheduled, and does not necessarily mean the number of men who actually worked during the pay-roll period. All figures shown for 1919 and 1920 are based on the number of individuals appearing on the pay rolls. When employees worked at two or more occupations in 1920 in which the number of turns, or days, per week differed, such employees have been tabulated as often as their turns per week changed. Data covering all occupations were obtained in 1914, 1915, and 1920 only, and in addition to the tabulation of selected occupations for all years a separate tabulation has been made for all occupations for these three years.

*Table D.*—Table D covers the most important facts relative to average turns per week, average hours per turn, average full-time hours per week, classified average full-time hours per week, and average hourly and weekly earnings. A complete analysis of the average working time and average earnings of employees in each selected occupation in each department in 1920 can be made from this table. Data are presented in this table by districts and for all districts combined, for each occupation.

Two sets of figures relating to number of employees are tabulated, the first showing the number of positions to be filled in each occupation, and the second the number of men actually working either all or part of the pay-roll period. While the customary average turns per week, average hours per turn, and average hours per week in each

<sup>5</sup> For three departments; 1910 to 1920, for six departments; and 1914 to 1920 for one department. No data were available for 1916 and 1918.

occupation are based on the number of positions, in the figures presented allowance was made for regular relief of employees, if any, so that the report shows the average customary turns and hours for individual employees in the positions. Average customary full-time hours per week of the actual individuals engaged in each occupation have been classified. However, these hours are average hours and do not show the actual hours worked by an employee in any one week, unless such employee does not alternate between day and night shifts, or works day and night shifts of equal length.

The average earnings per hour were obtained by dividing actual earnings in the pay-roll period by actual hours worked. The average full-time weekly earnings at each occupation under consideration were computed for each district by multiplying the average hours per week by the average earnings per hour. Average earnings per pay-roll period were computed by dividing the aggregate earnings of all employees by the number of persons working during the pay-roll period. The table shows averages for the work done in a specified occupation and also for the work done by the same employees in any and all occupations at which they may have been engaged during the pay-roll period, including the specified occupation. The second set of averages is deemed necessary as the average for the specified occupation alone fails to indicate the entire time and earnings of the individuals under consideration.

*Table E.*—In former years classified hourly earnings were shown for all employees in all selected occupations, but in this report classified hourly earnings are shown for employees in two occupations only in each department. These occupations have been selected as representative of the degree of variation or spread of wages in all occupations. In no case does the same occupation appear in any two departments, except that of rollers, which appears in puddling mills and sheet mills, and that of heaters, which appears in blooming mills and tin-plate mills, and in these departments the duties of the repeated occupations vary so widely that they may be considered two distinct occupations. Exceptionally high or low earnings per hour in any occupation indicate that the employees were working under unusual conditions, such as performing all work on Sunday at time and one-half rate, or working on a turn which produced exceedingly high or low tonnage.

*Table F.*—This table shows the customary number of day turns and night turns per week and the corresponding hours for each turn for each day of the week, as well as the full-time hours per week, for three groups of employees, by districts, as follows: Those who work days only, those who work nights only, and those who alternate or rotate weekly from day to night shift. The order of arrangement begins with the highest number of days per week and hours per day. The number of hours worked per day seldom varies during the period Monday to Friday, inclusive, but the number of hours worked on Saturday and Sunday often differ from the number worked during the first five days of the week.

Employees in two crews who alternate on day and night work and who work seven days on day turn and seven nights on night turn, unless there is some system of relief, must work a long shift of 18 to 24 hours when changing turns. Likewise, when on a three-shift system employees must work more than 8 hours out of 24 when

changing turn. There are, however, varied systems of relief in force in many plants whereby this long turn is avoided.

In some instances in the table hours are reported for seven days, 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, but either this 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 can 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.

There are many divisions of the 24-hour workday, brought about, in numerous instances, by employees arranging to divide day and night work into various lengths to suit their desires, and plants have recognized these divisions. This accounts for such turns as 11 hours for day and 13 hours for night, 10 hours for day and 14 hours for night, or 10½ hours for day and 13½ hours for night. The prevailing idea is, however, to divide the 24-hour workday equally between the day and night shifts. In some departments 3 shifts, usually of equal length, are customary.

This table is divided into two parts, part 1 covering only those employees who worked but *one combination* of customary turns and hours and part 2 covering those who worked *two or more combinations* of turns and hours. Where an employee worked in two or more occupations and there was a variation in the number of turns per week or in the length of the turns, the employee has been tabulated as often as such change may have taken place. For example, an employee may have worked as a shearman on a basis of 6 turns per week of 12 hours each, a shearman's helper on a basis of 6 turns per week of 11 hours each, and further as a laborer on a basis of 5 turns per week of 13 hours each, in which event the employee would be found in part 2 of the table, where he would be tabulated three different times. This method of tabulation of necessity causes duplications in the number of employees in part 2 of the table. For the actual number of employees in each department for each district see Table 7 (p. 13).

## BLAST FURNACES.<sup>6</sup>

The year 1920 marked the highest point of earnings per hour and per week in the blast-furnace department in the period 1907 to 1920. Average earnings per hour for 1920 in the selected occupations as a whole when compared with similar data for 1919 showed an increase of 13 per cent, when compared with 1913 an increase of 183 per cent, and when compared with 1907 an increase of 222 per cent. Average full-time hours per week in 1920 when compared with the averages for 1919 and 1913 showed a decrease of 7 per cent in each case and when compared with 1907 a decrease of 10 per cent. Average full-time weekly earnings in 1920 showed an increase of 4 per cent as compared with 1919, of 158 per cent over 1913, and of 184 per cent over 1907 (see index numbers, Table 1, p. 3).

The most significant facts concerning average earnings and average hours in each of the principal productive occupations in this department for the years 1907 to 1920 are shown in Table A (1). The data for 1920 cover 28 plants representing 6,856 employees in 16 selected occupations and 5,227 in all other occupations, making a total of 12,083 employees in all occupations. The average earnings per hour in 1920 for the department as a whole, including all occupations, selected and others, were 57.1 cents.

While from the nature of its process a blast furnace is in continuous operation, seven-day "turn" occupations have been reduced in many instances to six-day positions, or six days one week and seven days the next, the missing turn being worked by a relief man. This decrease in turns is reflected in average hours per week. Referring to the occupation of bottom fillers, for example, the average full-time hours per week from 1907 to 1911, inclusive, were 84. For the next four years the hours decreased slightly, but in 1917 they again reached the maximum of 84, due to working conditions of the war period. In 1919 the hours decreased to 82.2 and in 1920 dropped to 67.1. This last decrease, amounting to 18 per cent, was the largest recorded in any blast-furnace occupation, and was largely caused by a change from two shifts to three shifts per day in certain plants.

Some idea of the changes that have taken place in average hourly earnings from year to year in the blast-furnace department may be gained by a study of the occupation of stockers. The average earnings per hour of stockers in 1907 were 17 cents. The averages fluctuated somewhat from year to year, but the first great increase occurred in 1917, when the average advanced to 29.5 cents. This advance continued during the years 1919 and 1920 to 46.5 and 52.7 cents, respectively.

Average full-time weekly earnings in 1920 showed an increase over those of other years in practically all instances. However, the increase was not so marked as in the earnings per hour, owing to the reduction in working time of employees. In some instances there

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<sup>6</sup> Summary figures relating to the blast-furnace department are given, with figures for other departments of the iron and steel industry, on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

was a reduction in weekly earnings accompanying an increase in hourly earnings; for example, while the earnings per hour of larrymen increased from 54.2 cents in 1919 to 58.6 cents in 1920, the hours per week decreased during the same period from 80.4 to 73.8, causing a decrease in full-time weekly earnings from \$43.58 in 1919 to \$42.65 in 1920.

In 1907, 100 per cent of the employees in 12 occupations out of 16 were working 84 hours per week. In 1920 the greatest proportion working 84 hours per week in any occupation was 49 per cent.

TABLE A (1).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BLAST FURNACES.

[For explanation of this table see p. 13.]

Occupation, and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—					
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	Over 72 and under 84.	84	
<b>Stockers:</b>											
18 plants.....	1907	824	81.4	\$0.170	\$13.83			2	9	13	77
	1908	473	79.1	.157	12.43			1	26	15	58
	1909	737	80.9	.158	12.75				10	30	60
32 plants.....	1910	1,445	79.9	.164	13.17		(1)	1	18	2	15
	1911	904	79.7	.168	13.40		1	3	12	7	16
34 plants.....	1912	1,069	78.8	.171	13.46		1	2	10	13	23
33 plants.....	1913	1,269	78.0	.192	15.00		1	3	18	12	22
35 plants.....	1914	1,031	74.9	.188	14.03		3	4	27	21	16
	1915	878	74.6	.188	13.99		2	5	27	22	17
14 plants.....	1917	441	77.4	.205	22.79				3	47	9
20 plants.....	1919	1,043	78.1	.465	36.32		13	(1)	-6	6	8
27 plants.....	1920	1,624	75.5	.527	39.68		10	1	5	16	49
<b>Bottom fillers:</b>											
7 plants.....	1907	293	84.0	.160	13.40						100
	1908	194	84.0	.150	12.59						100
	1909	282	84.0	.138	11.61						100
14 plants.....	1910	672	84.0	.152	12.77						100
15 plants.....	1911	417	84.0	.149	12.50						100
	1912	468	82.2	.152	12.58					15	85
13 plants.....	1913	469	82.1	.168	13.88					16	84
	1914	360	82.0	.167	13.76					17	83
9 plants.....	1915	148	82.4	.176	14.48					14	86
3 plants.....	1917	56	84.0	.270	22.68						100
4 plants.....	1919	72	82.2	.436	35.84						69
6 plants.....	1920	249	67.1	.568	38.35		42			23	35
<b>Top fillers:</b>											
8 plants.....	1907	66	84.0	.177	14.86						100
	1908	44	84.0	.168	14.15						100
	1909	50	84.0	.161	13.56						100
13 plants.....	1910	142	82.8	.169	13.85		4				96
14 plants.....	1911	92	82.2	.171	13.84		7				93
	1912	96	80.0	.175	13.81		6			19	75
	1913	98	80.3	.191	15.19		6			16	78
13 plants.....	1914	80	80.1	.199	15.71		8			15	78
8 plants.....	1915	44	79.0	.213	16.44		14			9	77
3 plants.....	1917	22	84.0	.257	21.57						100
4 plants.....	1919	28	76.7	.468	35.90		21				57
6 plants.....	1920	74	71.2	.573	39.72		27			24	49
<b>Larrymen:</b>											
11 plants.....	1907	132	84.0	.195	16.41						100
	1908	86	84.0	.184	15.48						100
	1909	135	84.0	.186	15.64						100
21 plants.....	1910	231	84.0	.196	16.47						100
	1911	203	82.9	.194	15.99					9	91
23 plants.....	1912	241	78.2	.190	15.46		15			14	71
	1913	238	82.3	.217	17.77					14	86
27 plants.....	1914	192	78.6	.215	16.88					43	53
	1915	212	78.6	.211	16.61					43	53
14 plants.....	1917	183	77.2	.327	25.14					55	4
18 plants.....	1919	286	80.4	.542	43.58		6			9	12
24 plants.....	1920	369	73.8	.586	42.65		17			21	36

TABLE A (1).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BLAST FURNACES—Continued.

Occupation and number of plants.	Year.	Number of Employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—					
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 84 and under 84.
<b>Larrymen's helpers:</b>											
10 plants	1907	115	84.0	\$0.159	\$13.35						100
	1908	79	84.0	.152	12.80						100
	1909	135	84.0	.149	12.53						100
19 plants	1910	278	84.0	.165	13.88						100
	1911	294	82.6	.168	13.89				12		88
23 plants	1912	359	79.6	.172	13.64	10			14		76
	1913	352	82.6	.191	15.78				11		89
27 plants	1914	250	78.6	.187	14.67				43	3	54
	1915	275	78.3	.185	14.43			(1)	46	3	51
12 plants	1917	161	79.6	.292	23.20				34	5	60
18 plants	1919	310	79.3	.491	38.94		10		9	13	68
19 plants	1920	517	73.9	.531	39.09		8		10	16	55
<b>Skip operators:</b>											
11 plants	1907	86	84.0	.193	16.19						100
	1908	64	84.0	.184	15.49						100
	1909	94	84.0	.183	15.40						100
19 plants	1910	125	84.0	.197	16.56						100
	1911	124	83.8	.198	16.60				2		98
20 plants	1912	138	79.3	.206	16.19		13		9		78
22 plants	1913	158	82.9	.217	17.97				9		91
28 plants	1914	139	79.5	.214	16.98				35	6	60
	1915	152	79.4	.215	17.03				36	5	59
13 plants	1917	118	77.3	.343	26.52				56		74
19 plants	1919	169	80.4	.536	43.09		5		15	6	44
22 plants	1920	217	73.4	.594	43.30		18		28	26	28
<b>Blowers:</b>											
18 plants	1907	78	84.0	.300	25.17						100
	1908	68	84.0	.283	23.74						100
	1909	86	84.0	.286	24.04						100
32 plants	1910	181	83.5	.286	24.74			2			98
33 plants	1911	123	82.9	.305	25.21				9		91
34 plants	1912	139	80.3	.315	25.01		6		16		78
	1913	154	82.2	.332	27.21				15		85
38 plants	1914	143	80.7	.333	26.74				1	25	5
	1915	149	80.6	.336	26.93				1	26	5
18 plants	1917	84	77.8	.485	37.50				49	7	44
24 plants	1919	134	79.8	.755	60.25		7		10	14	68
28 plants	1920	198	73.2	.868	62.87	5	15		22	34	24
<b>Blowing engineers:</b>											
20 plants	1907	100	84.0	.242	20.30						100
	1908	85	84.0	.235	19.77						100
	1909	103	84.0	.230	19.35						100
34 plants	1910	153	84.0	.243	20.39						100
35 plants	1911	137	82.9	.244	20.15				9		91
	1912	142	80.6	.249	19.93		4		18		77
	1913	156	82.0	.260	21.28				17		83
38 plants	1914	147	79.3	.262	20.64				37	6	57
	1915	153	79.1	.262	20.64				39	6	56
18 plants	1917	122	76.1	.391	29.61				64		36
24 plants	1919	143	80.0	.628	50.24		7		12	10	71
28 plants	1920	164	73.7	.720	52.50		16		29	25	30
<b>Blowing engineers' assistants:</b>											
11 plants	1907	67	84.0	.203	17.02						100
	1908	51	84.0	.199	16.72						100
	1909	74	84.0	.191	16.08						100
18 plants	1910	94	84.0	.297	17.38						100
	1911	61	83.2	.295	17.06				7		93
	1912	108	80.4	.211	16.85				10		81
	1913	94	83.2	.225	18.67		8		6		94
21 plants	1914	99	79.0	.223	17.57				36	12	52
	1915	96	78.3	.223	17.41				42	13	46
17 plants	1919	130	79.1	.565	44.69		7		17	15	61
22 plants	1920	189	71.7	.632	45.24		20		30	25	25

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

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

TABLE A (1).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BLAST FURNACES—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	Over 72 and under 84.	84		
<b>Stove tenders:</b>												
20 plants.....	1907	140	84.0	\$0.192	\$16.10							100
	1908	96	84.0	.185	15.52							100
	1909	140	84.0	.181	15.22							100
34 plants.....	1910	200	84.0	.183	16.21							100
35 plants.....	1911	180	82.7	.190	15.68							89
36 plants.....	1912	214	79.5	.195	15.38		8		11			74
35 plants.....	1913	220	81.9	.211	17.30				17			83
38 plants.....	1914	183	79.7	.209	16.56				33	7		61
	1915	186	79.4	.208	16.46				35	6		58
24 plants.....	1919	204	80.3	.528	42.40		4		14	15		67
28 plants.....	1920	297	73.7	.592	43.38		19		21	34		26
<b>Keepers:</b>												
20 plants.....	1907	146	84.0	.218	18.34							100
	1908	96	84.0	.210	17.68							100
	1909	141	84.0	.205	17.26							100
34 plants.....	1910	201	84.0	.215	18.09							100
35 plants.....	1911	184	82.7	.217	17.95				11			89
36 plants.....	1912	218	79.6	.223	17.59		8		17			74
35 plants.....	1913	230	82.0	.235	19.28				17			83
38 plants.....	1914	184	79.6	.233	18.47				34	7		60
	1915	187	79.4	.232	18.33				35	6		58
18 plants.....	1917	162	77.4	.344	26.55				52	7		41
24 plants.....	1919	203	80.6	.562	45.30		4		11	14		70
28 plants.....	1920	280	73.7	.635	46.45		18		24	34		25
<b>Keepers' helpers:</b>												
20 plants.....	1907	616	84.0	.165	13.89							100
	1908	409	84.0	.160	13.41							100
	1909	596	84.0	.155	13.04							100
34 plants.....	1910	877	84.0	.168	14.13							100
35 plants.....	1911	742	83.1	.167	13.84				8			92
36 plants.....	1912	870	80.2	.173	13.75		8		14			78
35 plants.....	1913	950	82.2	.186	15.31				15			85
38 plants.....	1914	734	80.6	.185	14.83				28	7		66
	1915	727	80.1	.182	14.48				30	5		65
18 plants.....	1917	392	77.6	.292	22.59				55	9		36
24 plants.....	1919	650	80.2	.480	38.50		6		13	10		71
28 plants.....	1920	1,168	74.5	.522	38.60		15		3	22		30
<b>Iron handlers and loaders:</b>												
9 plants.....	1907	203	73.2	.193	14.20			60			6	34
	1908	163	73.0	.190	13.95			60			9	32
	1909	242	73.6	.177	13.05			57			7	36
18 plants.....	1910	305	74.2	.194	14.36			59			6	35
19 plants.....	1911	308	73.0	.195	14.17			1	61		6	31
	1912	406	73.1	.206	15.11			6	49	9	4	32
	1913	446	72.5	.220	16.07		2	8	47	9	4	29
16 plants.....	1914	333	71.5	.222	16.09		5	4	11	37	8	34
	1915	323	74.0	.204	15.22			2	3	53	2	39
4 plants.....	1917	106	71.4	.243	17.44				85	6		9
	1919	94	72.9	.361	26.32				2	71		16
8 plants.....	1920	260	72.2	.443	32.00			3	1	60	15	21
<b>Pig-machine men:</b>												
9 plants.....	1907	193	84.0	.167	14.03							100
	1908	157	83.9	.163	13.69							98
	1909	152	83.9	.162	13.57							98
16 plants.....	1910	291	83.9	.169	14.14			(1)	(1)			99
17 plants.....	1911	267	82.4	.169	13.98			(1)	(1)		12	87
	1912	275	81.9	.171	13.97			(1)	(1)		17	83
19 plants.....	1913	308	81.9	.192	15.72			(1)	(1)		17	83
21 plants.....	1914	259	79.2	.192	15.15			(1)	(1)		36	8
	1915	245	79.6	.190	15.07			(1)	(1)	1	32	7
10 plants.....	1917	154	77.9	.300	23.21						50	3
18 plants.....	1919	370	80.5	.477	38.40			9			4	7
21 plants.....	1920	390	72.2	.552	39.63			25			23	25

1 Less than 1 per cent.

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

TABLE A (1).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BLAST FURNACES—Concluded.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
Cinder men:												
20 plants.....	1907	262	83.6	\$0.173	\$14.46				2		10	88
	1908	245	82.6	.156	12.88				8		10	82
	1909	380	82.2	.150	12.34				1	9	13	78
32 plants.....	1910	482	82.9	.163	13.56			(1)	7		4	89
	1911	339	81.3	.158	12.84				10	10	2	78
	1912	397	75.2	.164	12.20		17	6	11	9	(1)	56
33 plants.....	1913	380	79.9	.179	14.27			1	12	15	7	64
31 plants.....	1914	286	78.3	.176	13.78			3	13	27	(1)	57
	1915	251	78.6	.174	13.64		4	2	9	24		62
13 plants.....	1917	168	78.4	.286	22.31					44		56
21 plants.....	1919	295	77.2	.473	36.52			14		7	9	60
23 plants.....	1920	287	68.4	.557	37.85	3	34		2	24	13	25
Laborers:												
20 plants.....	1907	957	75.8	.146	11.13			11	37	(1)	5	47
	1908	718	72.8	.140	10.24			20	38		15	27
	1909	757	73.0	.138	10.17			13	50	2	7	28
34 plants.....	1910	1,423	74.7	.150	11.23			19	28	2	21	30
35 plants.....	1911	937	73.3	.151	11.14			21	31	3	14	31
	1912	1,049	73.1	.152	11.15			20	30	10	9	31
	1913	1,273	72.5	.171	12.43		(1)	22	34	10	4	29
37 plants.....	1914	1,096	70.8	.177	12.52		(1)	35	12	21	7	25
	1915	885	71.3	.171	12.20		2	29	16	19	7	26
17 plants.....	1917	698	75.3	.281	21.23			16	12	22	6	44
24 plants.....	1919	2,184	77.9	.457	35.60		4	8	11	5	15	57
27 plants.....	1920	1,770	72.3	.474	34.60		11	8	24	7	33	17

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

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

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings are presented in Table B (1) for each of the principal productive occupations in blast furnaces for the years 1907 to 1920. These are simply percentages computed from the averages of Table A (1), with the average for 1913 as the base, or 100 per cent, as an aid in making comparisons of the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A (1).

For index numbers for this department as a whole (all selected occupations combined), see page 3.

TABLE B (1).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1907 TO 1920—BLAST FURNACES.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Stockers:</b>				<b>Skip operators—Concld.</b>			
1907.....	104	89	92	1917.....	93	158	148
1908.....	101	82	83	1919.....	97	247	240
1909.....	104	82	85	1920.....	89	274	241
1910.....	102	85	88	<b>Blowers:</b>			
1911.....	102	88	89	1907.....	102	90	98
1912.....	101	89	90	1908.....	102	85	87
1913.....	100	100	100	1909.....	102	86	88
1914.....	96	98	93	1910.....	102	89	91
1915.....	96	98	93	1911.....	101	92	93
1917.....	99	154	152	1912.....	98	95	92
1919.....	100	242	242	1913.....	100	100	100
1920.....	97	274	265	1914.....	98	100	98
<b>Bottom fillers:</b>				1915.....	98	101	99
1907.....	102	95	97	1917.....	95	146	138
1908.....	102	89	91	1919.....	97	227	221
1909.....	102	82	84	1920.....	89	261	231
1910.....	102	90	92	<b>Blowing engineers:</b>			
1911.....	102	89	90	1907.....	102	93	95
1912.....	100	90	90	1908.....	102	90	93
1913.....	100	100	100	1909.....	102	88	91
1914.....	100	99	99	1910.....	102	93	96
1915.....	100	105	104	1911.....	101	94	95
1917.....	102	161	163	1912.....	98	96	94
1919.....	100	260	258	1913.....	100	100	100
1920.....	82	338	276	1914.....	97	101	97
<b>Top fillers:</b>				1915.....	96	101	97
1907.....	105	93	98	1917.....	93	150	139
1908.....	105	88	93	1919.....	98	242	236
1909.....	105	84	89	1920.....	90	277	247
1910.....	103	88	91	<b>Blowing engineers' assist-</b>			
1911.....	102	90	91	<b>ants:</b>			
1912.....	100	92	91	1907.....	101	90	91
1913.....	100	100	100	1908.....	101	88	90
1914.....	100	104	103	1909.....	101	85	86
1915.....	98	112	108	1910.....	101	92	93
1917.....	105	135	142	1911.....	100	91	91
1919.....	96	245	236	1912.....	97	94	90
1920.....	89	300	261	1913.....	100	100	100
<b>Larrymen:</b>				1914.....	95	99	94
1907.....	102	90	92	1915.....	94	99	93
1908.....	102	85	87	1919.....	95	251	239
1909.....	102	86	88	1920.....	86	281	242
1910.....	102	90	93	<b>Stove tenders:</b>			
1911.....	101	89	90	1907.....	103	91	93
1912.....	95	92	87	1908.....	103	88	90
1913.....	100	100	100	1909.....	103	86	88
1914.....	96	99	95	1910.....	103	91	94
1915.....	96	97	93	1911.....	101	90	91
1917.....	94	151	141	1912.....	97	92	89
1919.....	98	250	245	1913.....	100	100	100
1920.....	90	270	240	1914.....	97	99	96
<b>Larrymen's helpers:</b>				1915.....	97	99	95
1907.....	102	83	86	1919.....	98	250	245
1908.....	102	80	81	1920.....	90	281	251
1909.....	102	78	79	<b>Keepers:</b>			
1910.....	102	86	88	1907.....	102	93	95
1911.....	100	88	88	1908.....	102	89	92
1912.....	96	90	87	1909.....	102	87	90
1913.....	100	100	100	1910.....	102	91	94
1914.....	95	98	93	1911.....	101	92	93
1915.....	95	97	91	1912.....	97	95	91
1917.....	96	153	147	1913.....	100	100	100
1919.....	96	257	247	1914.....	97	99	96
1920.....	89	278	248	1915.....	97	99	95
<b>Skip operators:</b>				1917.....	94	146	138
1907.....	101	89	90	1919.....	98	239	235
1908.....	101	85	87	1920.....	90	270	241
1909.....	101	84	86	<b>Keepers helpers:</b>			
1910.....	101	91	92	1907.....	102	89	91
1911.....	101	91	92	1908.....	102	86	88
1912.....	96	95	90	1909.....	102	93	85
1913.....	100	100	100	1910.....	102	90	92
1914.....	96	99	94	1911.....	101	90	90
1915.....	96	99	95	1912.....	98	93	90

TABLE B (1).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1907 TO 1920—BLAST FURNACES—Concl'd.

Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.
Keepers helpers—Concl'd.				Pig machine men—Con.			
1913.....	100	100	100	1917.....	95	156	148
1914.....	98	99	97	1919.....	98	248	244
1915.....	97	98	95	1920.....	88	238	232
1917.....	94	157	148	Cinder men:			
1919.....	98	258	251	1907.....	105	97	101
1920.....	91	281	252	1908.....	103	87	90
Iron handlers and loaders:				1909.....	103	84	86
1907.....	101	88	88	1910.....	104	91	95
1908.....	101	86	87	1911.....	102	88	90
1909.....	102	80	81	1912.....	94	92	85
1910.....	102	88	89	1913.....	100	100	100
1911.....	101	89	88	1914.....	98	98	97
1912.....	101	94	94	1915.....	98	97	96
1913.....	100	100	100	1917.....	98	160	156
1914.....	99	101	100	1919.....	97	264	256
1915.....	102	93	95	1920.....	86	311	265
1917.....	98	110	109	Laborers:			
1919.....	101	164	164	1907.....	105	85	90
1920.....	100	201	199	1908.....	100	82	82
Pig machine men:				1909.....	101	81	82
1907.....	103	87	89	1910.....	103	88	90
1908.....	102	85	87	1911.....	101	88	90
1909.....	102	84	86	1912.....	101	89	90
1910.....	102	88	90	1913.....	100	100	100
1911.....	101	88	89	1914.....	98	104	101
1912.....	100	89	89	1915.....	98	100	98
1913.....	100	100	100	1917.....	104	164	171
1914.....	97	100	96	1919.....	107	267	286
1915.....	97	99	96	1920.....	100	277	278

The customary working time per week of employees in the blast-furnace department has been classified and the number and per cent of employees under each classification are shown in Table C (1).

The number of employees reported in 1920 includes some duplications, or repeated employees, as stated in the general explanation of Table C (p. 14). In the 6,887 employees reported in the selected occupations for all districts combined there were 31 duplications, leaving 6,856 actually engaged, and the total of 12,170 employees shown for all occupations represents 12,083 individuals.

The gross number of employees reported, together with the net number of actual employees, for selected occupations and for all occupations, in each district and all districts combined, are shown in Table 8.

TABLE 8.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS, 1920—BLAST FURNACES.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Eastern.....	329	None.	329	642	None.	642
Pittsburgh.....	2,913	30	2,883	4,916	39	4,877
Great Lakes and Middle West.....	1,969	1	1,968	3,871	32	3,839
Southern.....	1,676	None.	1,676	2,741	16	2,725
Total.....	6,887	31	6,856	12,170	87	12,083

While the blast-furnace process is a continuous operation, the amount of 7-day work among the employees varies according to the prevalence of systems for relieving men one day in each week. These systems came into force actively in 1910 but were interrupted by the war. The percentage of 7-day workers in the combined selected occupations was 95 in 1910, 81 in 1913, 59 in 1915, and 80 in 1919. However, the percentage of 7-day workers in 1920 was reduced to 54, with an additional 25 per cent working seven days in alternate weeks.

The greatest reduction in seven-day workers in 1920 was found in the Pittsburgh district, where 23 per cent worked seven days regularly and 49 per cent seven days in alternate weeks. The Eastern and Southern districts each showed 84 per cent working seven days in 1920 and the Great Lakes and Middle West district showed 68 per cent working seven days regularly and 16 per cent seven days in alternate weeks.

When all occupations were taken into consideration in the four districts combined the percentage of regular 7-day workers was the same in 1915 and 1920, although the percentage working seven days in alternate weeks in the latter year was 17 in place of the 4 per cent so employed in 1915.

TABLE C (1).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1907 TO 1920—BLAST FURNACES.

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees. <sup>1</sup>	Number of employees whose customary working time per week was—				Per cent of employees whose customary working time per week was—			
				6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	7 days.	6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	7 days.
EASTERN.											
Selected occupations...	1907	2	320	33	.....	.....	287	10	.....	.....	90
	1908	2	235	43	.....	.....	192	18	.....	.....	82
	1909	2	328	11	.....	.....	317	3	.....	.....	97
	1910	6	1,436	79	.....	.....	1,357	6	.....	.....	95
	1911	6	779	118	2	.....	659	15	(2)	.....	85
	1912	6	660	134	2	.....	524	20	(2)	.....	79
	1913	6	811	185	.....	.....	626	23	.....	.....	77
	1914	6	604	161	.....	.....	443	27	.....	.....	73
	1915	6	421	86	.....	.....	335	20	.....	.....	80
	1917	3	385	177	14	.....	194	46	4	.....	50
1919	3	351	.....	.....	.....	351	.....	.....	.....	100	
1920	3	329	51	.....	.....	278	16	.....	.....	84	
All occupations.....	1914	6	1,078	354	46	.....	678	33	4	.....	63
	1915	6	794	256	5	.....	533	32	1	.....	67
	1920	3	647	137	.....	.....	505	21	.....	.....	79
PITTSBURGH.											
Selected occupations...	1907	6	1,731	74	.....	.....	1,657	4	.....	.....	96
	1908	6	1,161	87	.....	.....	1,074	7	.....	.....	93
	1909	6	1,683	66	.....	.....	1,617	4	.....	.....	96
	1910	9	2,302	111	.....	.....	2,191	5	.....	.....	95
	1911	9	2,127	127	.....	.....	2,000	6	.....	.....	94
	1912	9	2,415	101	.....	.....	2,314	4	.....	.....	96
	1913	10	2,640	65	.....	.....	2,575	2	.....	.....	98
	1914	10	2,061	853	267	.....	941	41	13	.....	46
	1915	10	1,980	860	204	.....	916	43	10	.....	46
	1917	5	1,129	199	157	.....	773	18	14	.....	68
	1919	8	3,100	221	284	.....	2,595	7	9	.....	84
	1920	8	2,913	826	1,415	.....	4,672	28	49	.....	23

<sup>1</sup> The figures in this column for the years 1907 to 1917 represent the number of jobs and for the years 1919 and 1920 the actual number of men employed.

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

<sup>3</sup> Including 396 men who worked a week of 7 turns every 4½ weeks.

<sup>4</sup> Including 354 men who were relieved 1 turn on completion of 14 turns.

TABLE C (1).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1907 TO 1920—BLAST FURNACES—Concluded.

District.	Year.	Number of plants.	Number of employees. <sup>1</sup>	Number of employees whose customary working time per week was—				Per cent of employees whose customary working time per week was—			
				6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	7 days.	6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	7 days.
<b>PITTSBURGH—conclcd.</b>											
All occupations.....	1914	10	3,298	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
<b>GREAT LAKES AND MIDDLE WEST.</b>											
Selected occupations...	1907	6	1,310	14	.....	.....	1,296	1	.....	.....	99
	1908	6	947	27	.....	.....	920	3	.....	.....	97
	1909	6	1,163	44	.....	.....	1,119	4	.....	.....	96
	1910	9	2,103	116	.....	.....	1,987	6	.....	.....	94
	1911	10	1,387	343	.....	.....	1,044	25	.....	.....	75
	1912	10	1,722	607	.....	.....	1,115	35	.....	.....	65
	1913	10	1,928	660	.....	.....	1,268	34	.....	.....	66
	1914	11	1,650	873	.....	.....	777	53	.....	.....	47
	1915	11	1,408	796	.....	.....	612	57	.....	.....	43
	1917	5	838	757	.....	.....	81	90	.....	.....	10
	1919	7	1,964	439	339	.....	1,186	22	17	.....	60
1920	9	1,969	318	311	.....	† 1,340	16	16	.....	68	
All occupations.....	1914	11	3,172	1,883	.....	3	1,286	59	.....	( <sup>2</sup> )	41
	1915	11	2,761	1,643	.....	3	1,115	60	.....	( <sup>2</sup> )	40
	1920	9	3,871	743	648	.....	‡ 2,480	19	17	.....	64
<b>SOUTHERN.</b>											
Selected occupations...	1907	6	917	.....	.....	.....	917	.....	.....	.....	100
	1908	6	685	.....	.....	.....	685	.....	.....	.....	100
	1909	6	930	8	.....	.....	922	1	.....	.....	99
	1910	10	1,209	37	.....	.....	1,172	3	.....	.....	97
	1911	10	1,043	2	.....	.....	1,041	( <sup>2</sup> )	.....	.....	100
	1912	11	1,304	265	.....	.....	1,039	20	.....	.....	80
	1913	9	1,257	347	.....	.....	910	28	.....	.....	72
	1914	11	997	52	.....	.....	945	5	.....	.....	95
	1915	11	1,105	67	.....	.....	1,038	6	.....	.....	94
	1917	5	515	127	31	.....	357	25	6	.....	69
	1919	6	900	.....	.....	.....	900	.....	.....	.....	100
1920	8	1,676	261	.....	.....	1,415	16	.....	.....	84	
All occupations.....	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
<b>TOTAL.</b>											
Selected occupations...	1907	20	4,278	121	.....	.....	4,157	3	.....	.....	97
	1908	20	3,028	157	.....	.....	2,871	5	.....	.....	95
	1909	20	4,104	129	.....	.....	3,975	3	.....	.....	97
	1910	34	7,050	343	.....	.....	6,707	5	.....	.....	95
	1911	35	5,336	590	2	.....	4,744	11	( <sup>2</sup> )	.....	89
	1912	36	6,101	1,107	2	.....	4,992	18	( <sup>2</sup> )	.....	82
	1913	35	6,636	1,257	.....	.....	5,379	19	.....	.....	81
	1914	38	5,312	1,939	267	.....	3,106	37	5	.....	58
	1915	38	4,914	1,809	204	.....	2,901	37	4	.....	59
	1917	18	2,867	1,260	202	.....	1,405	44	7	.....	49
	1919	24	6,315	660	623	.....	5,032	10	10	.....	80
1920	28	6,887	*1,456	1,726	.....	† 3,705	21	25	.....	54	
All occupations.....	1914	38	9,253	3,901	451	3	4,898	42	5	( <sup>2</sup> )	53
	1915	38	8,563	3,599	321	3	4,640	42	4	( <sup>2</sup> )	54
	1920	28	12,170	‡ 3,534	2,121	.....	† 6,515	29	17	.....	54

<sup>1</sup> The figures in this column for the years 1907 to 1917 represent the number of jobs and for the years 1919 and 1920 the actual number of men employed.

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

<sup>3</sup> Including 396 men who worked a week of 7 turns every 4½ weeks.

<sup>4</sup> Including 469 men who worked a week of 7 turns every 4½ weeks.

<sup>5</sup> Including 844 men who were relieved 1 turn on completion of 14 turns.

<sup>6</sup> Including 102 men who were relieved 1 turn on completion of 18 turns.

<sup>7</sup> Including 198 men who were relieved 1 turn on completion of 18 turns.

<sup>8</sup> Including 354 men who were relieved 1 turn on completion of 14 turns and 102 men who were relieved 1 turn on completion of 18 turns.

<sup>9</sup> Including 844 men who were relieved 1 turn on completion of 14 turns and 198 men who were relieved 1 turn on completion of 18 turns.

<sup>10</sup> Including 844 men who were relieved 1 turn on completion of 14 turns and 198 men who were relieved 1 turn on completion of 18 turns.

Table D (1) presents the most significant facts relative to customary and actual working time, total actual earnings, and earnings per hour of employees in 28 blast furnace plants, by occupations and districts, for the year 1920. In addition, for each occupation are given the number of positions and the number of employees actually working during the pay-roll period and also the time and earnings of the same employees during the same period at occupations other than the occupation specified.

Referring to the occupation of stockers, by way of illustration: 1,112 positions were filled by a total of 1,624 men during the pay-roll period scheduled. The average customary full time of the men working in these positions was 6.6 turns per week, 11.5 hours per turn, and 75.5 hours per week. In the distribution of the customary working time of the 1,624 actual employees, 318, or 20 per cent, worked 84 hours per week, while 794, or 49 per cent, worked over 72 and under 84 hours. The average hourly earnings of stockers ranged from 41.4 cents in the Southern district to 56.5 cents in the Great Lakes and Middle West district, with an average of 52.7 cents for all districts combined. The range for average full-time weekly earnings was from \$30.93 in the Southern district to \$42.91 in the Pittsburgh district and the average for all districts was \$39.68. Owing to the fact that a large number of the employees worked in more than one occupation during the pay-roll period, and in order to give the complete hours and earnings for such employees, separate figures are given which include all occupations at which they worked. While 1,624 men working as stockers averaged 122.6 hours per pay-roll period, they also averaged 16.9 hours at other work, making a total of 139.5 average hours per pay-roll period in "specified [stocker] and other occupations." During the 122.6 hours they worked as stockers they earned an average of \$65.05, or 52.7 cents per hour. When the work of these men in all occupations is considered, they earned \$73.62—that is, \$8.57 was earned in some other occupation than stocker.

The average earnings per hour in the principal productive occupations in this department in 1920 ranged from 44.3 cents for iron handlers and loaders to 86.8 cents for blowers and the average actual hours worked per pay-roll period ranged from 90.7 hours for laborers to 134.2 for blowers. Employees who worked as blowing engineers' assistants were the ones who earned the greatest amount at "other occupations" during the pay-roll period of one-half month. These employees earned an average of \$72.76 as assistant blowing engineers and an additional \$24.61 at other work.





G. L. and M. W.	9	75	6.7	9.9	66.3	112				15	21	19	42.23	107.2	68.28	.637	135.2	85.31	.631		
Southern	8	36	6.6	12.0	78.7	56				25	31	31	37.15	123.7	58.40	.472	167.2	77.72	.465		
Total	28	201	6.6	11.2	73.7	297				61	101	78	43.38	120.2	70.85	.592	154.7	89.82	.585		
Keepers:																					
Eastern	3	10	7.0	12.0	84.0	12						12	44.18	154.3	81.16	.526	178.7	92.92	.520		
Pittsburgh	8	78	6.4	12.0	77.3	108				19	73	16	52.87	134.0	91.59	.684	169.9	117.93	.694		
G. L. and M. W.	9	75	6.7	9.9	66.3	108				21	22	15	45.22	109.6	74.73	.682	147.3	97.84	.664		
Southern	8	38	6.5	12.0	78.3	52				26	22	26	36.17	140.0	64.74	.462	169.8	77.04	.454		
Total	28	201	6.6	11.2	73.7	280				66	95	69	46.45	126.6	79.65	.635	161.6	101.51	.630		
Keeper's helpers:																					
Eastern	3	35	7.0	12.0	84.0	41						41	41.08	164.9	80.62	.489	177.8	86.77	.488		
Pittsburgh	8	272	6.4	12.1	77.3	430				78	294	58	44.37	119.2	68.44	.574	156.4	89.13	.570		
G. L. and M. W.	9	216	6.7	9.8	65.6	334		174		56	51	53	39.43	98.6	59.25	.601	133.9	80.07	.598		
Southern	8	218	6.7	11.8	78.4	363				36	123	204	30.73	112.4	44.11	.392	139.1	54.31	.390		
Total	28	741	6.6	11.3	74.5	1,168		174		36	257	345	38.60	112.8	58.68	.522	145.3	75.63	.519		
Iron handlers and loaders:																					
Eastern	1	1	7.0	10.0	70.0	10				10				31.64	10.2	4.63	.452	151.9	67.60	.445	
G. L. and M. W.	2	20	7.0	10.4	72.1	25		8		2				42.97	123.8	73.81	.596	157.9	96.15	.609	
Southern	5	161	6.9	10.5	72.3	225				145	38			40	30.80	115.5	49.15	.426	123.0	51.79	.421
Total	8	182	6.9	10.5	72.2	260		8		2	157	38		55	32.00	112.2	49.81	.443	127.5	56.66	.440
Pig machine men:																					
Eastern	3	48	7.0	12.0	84.0	54						54	40.74	168.5	81.72	.485	177.3	85.99	.485		
Pittsburgh	7	106	6.4	12.0	77.5	149				50	85	14	43.09	131.1	72.88	.596	151.7	84.23	.555		
G. L. and M. W.	8	123	6.8	9.1	61.6	147		98		26	11	12	37.58	118.4	72.21	.610	130.8	79.39	.607		
Southern	3	28	6.6	12.0	78.9	40				14		26	32.74	134.4	55.78	.415	152.9	66.14	.433		
Total	21	305	6.7	10.8	72.2	390		98		90	96	106	39.63	131.8	72.10	.552	147.5	80.79	.552		
Cinder men:																					
Eastern	3	18	7.0	11.9	83.2	20				1		19	40.52	155.1	75.52	.487	169.5	82.38	.486		
Pittsburgh	5	54	6.3	12.0	75.2	75				44	31		40.83	122.8	66.64	.543	143.5	77.86	.543		
G. L. and M. W.	9	125	6.7	9.2	61.3	157		10	97	1	24	5	20	37.27	107.7	65.50	.608	116.3	71.39	.614	
Southern	6	19	7.0	11.7	81.8	35				3			32	32.56	92.5	36.83	.398	127.1	50.49	.397	
Total	23	216	6.6	10.4	68.4	287		10	97	5	68	36	71	37.85	113.1	63.00	.557	128.4	71.30	.560	
Laborers:																					
Eastern	3	51	6.2	10.1	62.8	60			42	14		1	3	27.88	113.3	50.32	.444	120.0	53.52	.446	
Pittsburgh	8	348	6.4	11.8	75.9	752		37	33	20	107	487	68	39.85	84.4	44.32	.525	129.6	70.00	.540	
G. L. and M. W.	8	249	6.7	10.4	69.4	388		150	12	40	2	103	81	38.10	106.3	58.38	.549	133.5	74.77	.560	
Southern	8	309	6.9	10.6	72.4	570			54	353	14		149	25.99	86.1	30.89	.359	108.8	39.70	.365	
Total	27	957	6.6	10.9	72.3	1,770		187	141	427	123	591	301	34.60	90.7	43.28	.474	123.4	60.73	.485	

Keepers and laborers were the occupations selected in the blast furnace department for which to show classified earnings per hour. Table E (1) shows for each of these occupations, by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings per hour fell in each group of classified earnings per hour.

It will be observed that the range of the classified earnings in these two occupations was almost identical. The range for keepers was from 35 cents to \$1, and for laborers from "Under 30 cents" to \$1.

The largest number of keepers in any one group was found in that at "60 and under 70 cents," and was 59 per cent of the total number. The largest number of laborers in any one group received from 50 cents to 60 cents and represented 50 per cent of all laborers.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (1).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—BLAST FURNACES.

[For explanation of this table, see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Number of employees whose earnings per hour were—								
			Under 30 cents.	30 and under 35 cents.	35 and under 40 cents.	40 and under 45 cents.	45 and under 50 cents.	50 and under 60 cents.	60 and under 70 cents.	70 and under 80 cents.	80 and under 90 cents.
<b>KEEPERS.</b>											
Eastern.....	12	Cents. 52.6						12			
Pittsburgh.....	108	68.4							98	10	
Great Lakes and Middle West.....	198	68.2						3	66	15	23
Southern.....	52	46.2		6	11	30	5				1
<b>Total.....</b>	<b>380</b>	<b>63.5</b>			6	13	30	20	164	25	23
<b>LABORERS.</b>											
Eastern.....	60	44.4				54	6				
Pittsburgh.....	752	52.5				7	95	648	2		
Great Lakes and Middle West.....	388	54.9				3	30	232	80	30	1
Southern.....	670	35.9	1	329	103	136	1				3
<b>Total.....</b>	<b>1,770</b>	<b>47.4</b>	<b>1</b>	<b>329</b>	<b>103</b>	<b>200</b>	<b>132</b>	<b>886</b>	<b>82</b>	<b>39</b>	<b>1</b>

The customary turns per week, hours per turn, and full-time hours per week in the blast furnace department are shown in detail, by districts and for all districts combined, for the year 1920, in Table F (1).

This table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in more than one occupation, and part 2, relating to those employees who worked at two or more combinations of customary turns or hours in the period scheduled.

The information for the blast-furnace department was obtained from 28 plants and covers 12,083 actual employees, 11,664 in part 1 of the table and 419 in part 2. However, the sum of the figures in this table would show 12,515 persons, due to 432 duplications, or repeated employees, appearing in part 2.

From the nature of the blast-furnace process, Sunday work in this department is necessary, and 10,568 of the employees included in

part 1 and 728 (including duplications) of those in part 2, or a total of 11,296 were Sunday workers. Of this number 6,059 employees, or 54 per cent, worked every Sunday, 3 per cent worked every other Sunday, and the remaining 43 per cent were relieved one Sunday out of every three or some such period. A total of 28 employees worked fewer hours on Sunday than on the regular Monday to Friday turns and 257 worked a smaller number of hours on Saturday.

Of the 11,664 employees reported working at one combination of hours and turns, 8,914 employees, or 76 per cent, alternated from day to night work weekly, 22 per cent worked days only, and the remaining 2 per cent worked nights only. Of the 8,914 employees alternating from day to night work 5,044 or 57 per cent, worked 7 turns either day or night, 22 per cent worked either 6 days and 7 nights or 7 days and 6 nights, and 21 per cent worked on a 6-turn basis either day or night.

The 12-hour turn was most common among these employees, 3,483, or 39 per cent, working on 12-hour shifts. The 8-hour turn was also well represented, 1,952, or 22 per cent, being on a 3-shift basis. The length of the day turn is not always the same as that of the night turn, as shown by the fact that 3,376, or 38 per cent of the total number of alternating employees, worked turns of different lengths, 3,105 working 11 hours when on day turn and 13 hours when on night turn.

Of the 2,554 men who worked days only 56 per cent worked 6 days per week, 41 per cent worked 7 days, and 3 per cent alternated from 6 days one week to 7 days the next. Among the day workers a 10-hour workday predominated, as 69 per cent of the 7-day workers and 59 per cent of those working 6 days were found on shifts of that length. Practically 50 per cent of the 86 alternating employees worked 11 hours each day, the other half varying from a turn of 10 hours to one of 12 hours.

A total of 117, or 60 per cent of the 196 employees, reported as working night turns only, worked 7 nights per week, and out of that number 74, or 63 per cent, were on a 12-hour shift. Those whose working time per week was 6 nights numbered 78 and of that total 49, or the same percentage as that of the 7-night workers, worked 12 hours per turn. Only 1 employee alternated weekly from 6 to 7 turns and he was on duty 13 hours each night.

The 851 employees (including duplications) presented in part 2 of the table were divided into the following classes: Those alternating from day to night, numbering 416, or 49 per cent; those working days only, numbering 347, or 41 per cent; and those working nights only, numbering 88, or 10 per cent. Out of the 416 employees who worked days one week and nights the next, 294, or 71 per cent, worked 7 turns each week, 89, or 21 per cent, worked 6 turns, and 33, or 8 per cent, worked 6 days and 7 nights or 7 days and 6 nights. The customary length of turn for 289, or 69 per cent of the alternating employees, was 12 hours either day or night, and 100, or 24 per cent, alternated from an 11-hour day to a 13-hour night. A total of 196, or 56 per cent of those working days only, worked 7 turns per week, 140, or 40 per cent, worked 6 turns, and 11, or 3 per cent, alternated from 6 to 7 days per week. Two hundred and thirty-four of these men, or 67 per cent, worked 10 hours per day. The working time of those who were employed nights only was either 6 nights or 7 nights per week, 84 per cent working 7 nights. A total of 63 employees, or 72 per cent of those working nights only, worked 12 hours per night.

TABLE F (1).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BLAST FURNACES.

[For explanation of this table see p. 15.]

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

Customary turns and hours worked.										Number of employees who worked each specified combination of customary turns and hours, by districts.				
Day turns.					Night turns.									
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.					

Employees who worked day turns.

7	12	12	12	84						30	32	7	51	120
6	12	12	12	72							12			12
6	12	12	12	84										
6	12	12		72							2			2
7	12	12	12	84							8			8
7	12	10	10	80							14		3	67
7	11	11	11	77						50				
6	11	11	11	66							1			1
7	11	11	11	77										
7	11	11	11	77							41			41
6	11	11		66										
7	11	11	6	72							1			1
6	11	11		66										
7	11	11	10	76							1			1
7	10½	10½	10½	73½						9				11
7	10	10	10	70						59	15	17	631	722
6	10	10	10	60							3			3
7	10	10	10	70										
7	10	10	10	70							26			26
7	10	10		60										
7	10	10	6	66									8	8
7	10	10	5	65									6	6
7	10	9	10	69							14			14
7	8	8	8	56								86	2	88
7	8	8	5	53								1		1
7	8	5	5	50								1		1
6	12	12	12	72							12	6	91	109
6	12	12	6	66								1		1
6	12	12		72						9	23	60	13	105
6	12	11		71								2		2
6	11½	11½	11½	69								9		9
6	11½	11½		69								2		2
6	11	11	11	66							8	27		35
6	11	11		66							7	14		21
6	11	10		65							3	1		4
6	11	5		60								1		1
6	10½	10½		63						2		3		5
6	10	10	10	60							3	10	174	187
6	10	10	10	60						80	265	116	193	654
6	10	9	10	59							20			20
6	10	9		59							58	71	1	130
6	10	5		55						26		1	1	28
6	9½	9½		57								1	5	6
6	9	9		54							1		1	2
6	9	5		50								1		1
6	8	8	8	48							1			1
6	8	8	8	48						9	6	45	22	82
6	8	5		45						11				11
6	8	4		44							2	3		5

TABLE F (1).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BLAST FURNACES—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.									Number of employees who worked each specified combination of customary turns and hours, by districts.								
Day turns.				Night turns.				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	13	13	13	91	1	2	.....	.....	3			
.....	.....	.....	.....	.....	7	13	13	13	91	.....	.....	.....	.....	1			
.....	.....	.....	.....	.....	6	13	13	.....	83	.....	1	.....	.....	1			
.....	.....	.....	.....	.....	7	12	12	5	84	.....	.....	3	65	74			
.....	.....	.....	.....	.....	7	11½	11½	11½	80½	15	.....	.....	.....	15			
.....	.....	.....	.....	.....	7	10	10	10	70	1	.....	.....	20	21			
.....	.....	.....	.....	.....	7	8	8	8	56	.....	.....	3	.....	3			
.....	.....	.....	.....	.....	6	13	13	13	78	.....	2	.....	.....	2			
.....	.....	.....	.....	.....	6	12	12	12	72	.....	1	3	40	44			
.....	.....	.....	.....	.....	6	12	12	.....	72	.....	3	2	.....	5			
.....	.....	.....	.....	.....	6	11½	11½	11½	69	.....	.....	15	.....	15			
.....	.....	.....	.....	.....	6	11½	11½	.....	69	.....	.....	9	.....	9			
.....	.....	.....	.....	.....	6	10	10	10	60	.....	.....	.....	1	1			
.....	.....	.....	.....	.....	6	8	8	.....	48	.....	.....	.....	2	2			

Employees who worked night turns.

Employees who alternated weekly from day to night turns.<sup>1</sup>

7	12	12	12	84	7	12	12	12	84	252	720	347	613	1,932
7	12	12	12	84	6	12	12	.....	72	.....	9	.....	.....	9
6	12	12	.....	72	7	12	12	12	84	.....	.....	.....	.....	.....
7	12	12	12	84	7	10	10	10	70	.....	10	.....	.....	10
6	12	12	.....	72	6	10	10	.....	60	.....	.....	.....	.....	.....
7	12	12	12	84	7	10	10	10	70	.....	63	.....	.....	63
7	11½	11½	11½	80½	7	11½	11½	11½	80½	1	.....	.....	.....	5
7	11	11	11	77	7	13	13	13	91	68	907	73	.....	1,048
7	11	11	11	77	6	13	13	13	78	.....	3	.....	.....	3
7	10½	10½	10½	73½	7	13½	13½	13½	94½	.....	.....	6	.....	6
7	10	10	10	70	7	14	14	14	98	.....	89	.....	.....	89
7	10	10	10	70	7	13	13	13	91	7	.....	.....	.....	7
7	10	10	10	70	7	10	10	10	70	2	5	.....	2	9
7	8	8	8	56	7	8	8	8	56	.....	15	1,762	3	1,780
7	8	8	8	56	7	8	8	8	56	.....	.....	157	1	158
6	12	12	12	72	7	12	12	12	84	.....	8	615	.....	623
6	12	12	12	72	6	12	12	12	72	.....	128	275	504	907
6	12	12	.....	72	6	12	12	.....	72	.....	2	7	.....	9
6	12	12	.....	72	6	12	.....	12	72	.....	.....	3	.....	3
6	11	11	11	66	7	13	13	13	91	.....	1,260	.....	.....	1,260
6	11	11	.....	66	7	13	13	13	91	.....	24	.....	.....	24
6	11	11	11	66	6	13	13	13	78	.....	770	.....	.....	770
6	10	10	.....	60	7	12	12	12	84	.....	.....	2	.....	2
6	10	9	.....	59	7	12	12	12	84	.....	13	2	.....	15
6	10	10	.....	60	7	10	10	10	70	.....	2	.....	.....	2
6	10	10	10	60	6	13	13	13	78	.....	3	.....	.....	3
6	10	10	10	60	6	12	12	12	72	.....	78	.....	.....	78
6	10	10	.....	60	6	12	12	.....	72	.....	61	.....	.....	61
6	10	10	10	60	6	10	10	10	60	.....	.....	.....	24	24
6	8	8	8	48	6	8	8	8	48	.....	.....	12	.....	12
6	8	8	8	48	6	8	8	.....	48	.....	.....	.....	.....	12
6	8	8	.....	48	6	8	8	.....	48	.....	.....	.....	2	2

<sup>1</sup> In the Pittsburgh district out of 1,042 employees who worked 6 days and 6 nights per week alternately 42 per cent worked one extra turn every 4½ weeks; out of 1,750 employees who worked 7 days and 7 nights per week alternately, 32 per cent were relieved one turn on completion of 14 turns. In the Great Lakes and Middle West district out of 2,345 employees who worked 7 days and 7 nights per week alternately, 8 per cent were relieved one turn on completion of 18 turns.

TABLE F (1).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BLAST FURNACES—Concluded.

## PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

Customary turns and hours worked.									Number of employees who worked each specified combination of customary turns and hours, by districts.				
Day turns.					Night turns.				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.					

## Employees who worked day turns.

7	12	18	12	90								1	1
7	12	12	12	84					1	3	2	15	21
6	12	12	12	72						3			3
7	12	12	12	84					2				2
7	11½	11½	11½	80½						1			1
7	11	11	11	77					1	1		1	3
7	11	11	11	77						3			3
6	11	11		66					1				1
7	10½	10½	10½	73½									1
7	10	10	10	70							4	161	165
6	10	10		60						5			5
7	10	10	10	70									2
7	10	9		79					2				2
6	12	12	12	72					5	9	1		6
6	12	12		72						7		1	17
6	12		12	72						3			3
6	11½	11½		69						2			2
6	11½	11½		69						2			2
6	11	11	11	66						4	4		8
6	11	11		66					2	4			6
6	10	10	10	60								10	10
6	10	10		60					21	15		18	54
6	10	9	10	69						4			4
6	10	9		59						21	7		28

## Employees who worked night turns.

					7	13	13	13	91		3	1		4
					7	12	12	12	84				59	59
					7	10	10	10	70				11	11
					6	13	13	13	78		3			3
					6	12	12	12	72			3		3
					6	12	12		72			1		1
					6	11½	11½		69			4		4
					6	10	10	10	60				2	2
					6	10	10		60		1			1

Employees who alternated weekly from day to night turns.<sup>2</sup>

7	12	18	12	90	7	12	6	12	78				37	37
7	12	12	12	84	7	12	12	12	84	3	20	9	172	204
7	11½	11½	11½	80½	7	11½	11½	11½	80½		1			1
7	11	11	11	77	7	13	13	13	91		30	11		41
7	10	10	10	70	7	14	14	14	98		11			11
6	12	12	12	72	7	12	12	12	84		1	1		2
6	12	12		72	7	12	12	12	84			29		29
6	12	12		72	7	12	7	12	79			2		2
6	12	12	12	72	6	12	12	12	72			3	13	16
6	12	12		72	6	12	12		72			1		1
6	11	11	11	66	6	13	13	13	78		58			58
6	11	11		66	6	13		13	78			1		1
6	10	10	10	60	6	12	12	12	72		4			4
6	10	9	10	69	6	13	13	13	78		1			1
6	10	9		59	6	12	12		72		8			8

<sup>2</sup> In the Pittsburgh district out of 62 employees who worked 7 days and 7 nights per week alternately, 60 per cent were relieved 1 turn on completion of 14 turns; out of 72 men who worked 6 days and 6 nights per week alternately, 17 per cent worked 1 extra turn every 4½ weeks.

## BESSEMER CONVERTERS.<sup>1</sup>

In 1920 the average full-time hours per week for selected occupations as a whole in Bessemer converting plants were 4 per cent higher than in 1919, 1 per cent lower than in 1913, and 3 per cent lower than in 1907. The increase in hours in 1920 over 1919 was largely due to the fact that one plant which was on a 6-day basis in 1919 was operating 7 days per week in 1920. Average earnings per hour in 1920 showed an increase of 16 per cent as compared with 1919, 141 per cent as compared with 1913, and 184 per cent as compared with 1907. Average full-time weekly earnings also advanced—17, 154, and 195 per cent, respectively—during the same periods (see index numbers, Table 1, p. 3).

The most significant facts concerning average earnings and average hours in each of the principal productive occupations in this department for the years 1907 to 1920 are shown in Table A (2). The data for 1920 cover 11 plants, representing 1,486 employees, in 19 selected occupations, and 1,402 in all other occupations, making a total of 2,888 employees in all occupations. The average earnings per hour in 1920 for the department as a whole, including all occupations, selected and others, were 67.7 cents.

When the average full-time hours of the 19 selected occupations are compared with similar data for former years, increases appear in a few of the occupations although in the majority of cases hours had decreased. The average full-time hours per week of stockers in 1920 were 68.0, which marks the highest point of any year from 1907 to 1920 in that occupation, the next highest hours being 64.9 in 1910. The lowest point was reached in 1917, when they were 55.3. The full-time hours of cinder pitmen also were higher in 1920 than in previous years. Their weekly hours in 1920 were 72.8, as compared with 72.0 in 1915 and 1917, the next highest periods. The lowest hours, 65.9, were recorded in 1908. The full-time hours of laborers were higher in 1920 than any year since 1913, but when compared with years prior to 1913 a decrease is noted in each instance except that of 1911 when an increase of 0.3 of an hour is shown.

Average hourly earnings in 1920 were higher than in any year of the period under consideration. An idea of the changes that have taken place in average hourly earnings from year to year in the Bessemer converting department can be gained from a study of the occupation of stopper setters. The average earnings per hour in this occupation in 1907, a year of high production, were 63.0 cents. During the years 1908 to 1915 the averages fluctuated between 34.3 and 57.7 cents, following the vagaries of production for those years. In 1917, however, the war demands had not only stimulated production but tonnage rates as well, and the average earnings per hour were 81.5 cents. This advance continued through the next two years, 1919 and 1920, to \$1.092 and \$1.225, respectively, or to a figure in 1920 over three and one-half times that of the average in 1908.

<sup>1</sup> Summary figures relating to the Bessemer converting department are given with figures for other departments of the iron and steel industry on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

Average full-time weekly earnings in 1920 were increased over those of other years in all occupations except that of blowers. In that occupation a decrease in weekly earnings appeared only when compared with those of 1919. While the rate per hour of blowers increased from \$1.225 in 1919 to \$1.249 in 1920, the hours per week decreased during the same period from 63.4 to 59.7. This caused a reduction in full-time weekly earnings, from \$77.73 in 1919 to \$74.66 in 1920.

Long hours per week in this department were most prevalent in 1910, as shown by the percentage distribution of full-time hours per week. In that year each of the 19 selected occupations showed employees working 84 hours per week, ranging from 5 per cent in the occupations of stopper setters and ladle liner helpers to 41 per cent of the laborers. In 1920 only 3 occupations worked 84 hours per week—stockers, cinder pitmen, and laborers. Twenty-nine per cent of the cinder pitmen, 26 per cent of the laborers, and 13 per cent of the stockers were reported as on an 84-hour basis.

TABLE A (2).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BESSEMER CONVERTERS.

[For explanation of this table see p. 13.]

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	
Stockers:													
9 plants.....	1907	371	62.5	\$0.246	\$14.27	46	5	.....	8	7	22	12	
	1908	260	58.3	.275	14.93	58	11	.....	.....	10	10	12	
	1909	266	63.6	.264	15.31	43	6	.....	2	12	23	15	
10 plants.....	1910	352	64.9	.266	16.03	32	9	8	.....	19	6	26	6
	1911	241	61.7	.233	13.60	46	6	1	.....	24	11	12	
	1912	280	62.1	.306	17.38	45	9	1	6	8	15	16	
	1913	337	62.5	.331	19.05	23	21	1	9	27	13	6	
6 plants.....	1914	167	55.5	.351	18.59	63	6	1	1	22	7	.....	
	1915	157	55.6	.313	16.70	61	5	4	1	20	8	.....	
3 plants.....	1917	144	55.3	.599	31.45	69	.....	.....	.....	31	.....	.....	
6 plants.....	1919	196	64.6	.637	41.15	27	.....	.....	8	65	.....	.....	
10 plants.....	1920	351	68.0	.699	47.33	18	2	.....	17	46	4	13	
Cupola melters:													
7 plants.....	1907	15	65.2	.509	31.67	40	.....	.....	13	20	13	13	
	1908	15	64.7	.350	22.20	40	.....	.....	13	20	13	13	
	1909	15	64.7	.419	26.09	40	.....	.....	13	20	13	13	
	1910	16	60.6	.447	25.85	38	19	.....	.....	19	13	13	
8 plants.....	1911	17	65.2	.386	24.62	35	.....	.....	12	29	12	12	
	1912	18	61.6	.409	23.82	50	.....	.....	11	17	11	11	
	1913	19	62.4	.477	28.23	32	16	.....	11	21	11	11	
6 plants.....	1914	15	59.5	.390	23.00	20	40	.....	13	13	13	.....	
	1915	15	59.3	.449	25.90	20	40	.....	.....	27	13	.....	
3 plants.....	1917	7	61.7	.760	45.24	43	.....	.....	.....	57	.....	.....	
4 plants.....	1919	9	62.2	.993	61.76	33	.....	.....	.....	67	.....	.....	
6 plants.....	1920	22	61.7	1.063	65.85	.....	45	.....	.....	32	23	.....	
Cupola tappers:													
8 plants.....	1907	50	60.5	.379	22.16	54	.....	.....	8	18	12	8	
	1908	43	59.3	.335	19.67	56	.....	.....	5	30	5	5	
	1909	43	61.5	.340	19.74	56	.....	.....	.....	12	19	14	
	1910	56	58.9	.362	20.30	64	.....	.....	.....	13	14	9	
9 plants.....	1911	45	60.4	.314	18.36	53	.....	.....	.....	33	4	9	
	1912	48	60.6	.369	20.94	56	.....	.....	4	10	21	8	
	1913	69	59.5	.393	22.25	30	26	.....	6	23	14	.....	
4 plants.....	1914	34	56.9	.286	16.47	.....	71	.....	.....	29	.....	.....	
	1915	24	55.8	.332	18.43	.....	75	.....	.....	25	.....	.....	
2 plants.....	1917	16	54.0	.677	34.85	75	.....	.....	.....	25	.....	.....	
	1919	29	60.2	.751	47.02	41	.....	.....	17	41	.....	.....	
5 plants.....	1920	38	54.8	.979	53.76	.....	68	.....	.....	18	13	.....	

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

TABLE A (2).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BESSEMER CONVERTERS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	
<b>Blowers:</b>													
9 plants.....	1907	20	65.4	.619	39.55	30	.....	10	50	10	.....		
	1908	19	68.8	.466	32.41	16	.....	11	63	11	.....		
	1909	19	68.8	.486	33.29	16	.....	11	63	11	.....		
	1910	20	69.8	.536	37.00	15	.....	.....	60	15	.....	10	
10 plants.....	1911	20	72.0	.493	35.48	.....	.....	10	90	.....	.....		
	1912	21	69.1	.529	36.36	14	.....	10	67	10	.....		
	1913	23	63.3	.598	37.33	26	13	9	35	7	.....		
12 plants.....	1914	27	64.1	.545	34.43	22	11	7	52	7	.....		
	1915	27	64.0	.561	35.61	22	11	7	52	7	.....		
8 plants.....	1917	18	64.0	.784	48.77	33	.....	.....	67	.....	.....		
	1919	18	63.4	1.226	77.73	33	.....	6	50	11	.....		
11 plants.....	1920	29	59.7	1.249	74.66	32	.....	17	21	10	.....		
<b>Regulators, first:</b>													
9 plants.....	1907	26	62.3	.437	27.28	46	.....	8	31	8	8	8	
	1908	25	64.7	.266	17.78	36	.....	16	32	8	8	8	
	1909	25	64.8	.344	22.97	36	.....	8	40	8	8	8	
10 plants.....	1910	31	62.1	.408	25.45	19	29	.....	39	.....	.....	13	
	1911	24	66.8	.377	24.79	25	.....	.....	50	.....	.....	8	
	1912	25	64.7	.411	26.24	36	.....	.....	32	8	8	8	
11 plants.....	1913	24	67.6	.451	30.28	25	.....	8	33	33	.....		
	1914	24	63.8	.328	20.71	38	.....	17	21	25	.....		
	1915	26	64.7	.351	22.91	35	.....	.....	35	31	.....		
8 plants.....	1917	17	66.8	.630	42.28	29	.....	.....	71	.....	.....		
10 plants.....	1919	25	69.2	.864	59.79	16	.....	12	52	20	.....		
11 plants.....	1920	36	61.5	1.002	61.63	22	19	8	14	36	.....		
<b>Regulators, second:</b>													
6 plants.....	1907	18	65.3	.427	27.81	33	.....	11	33	22	.....		
	1908	14	73.5	.269	19.64	.....	.....	29	43	29	.....		
	1909	14	73.8	.365	26.80	.....	.....	14	57	29	.....		
8 plants.....	1910	22	67.5	.378	25.52	27	.....	9	45	.....	18		
	1911	21	65.0	.333	21.41	29	.....	19	52	.....	18		
9 plants.....	1912	24	67.0	.381	25.63	25	.....	17	33	25	.....		
10 plants.....	1913	28	68.3	.394	26.81	21	.....	14	29	36	.....		
11 plants.....	1914	25	66.5	.289	18.90	24	.....	16	28	32	.....		
	1915	26	66.6	.324	21.64	23	.....	8	46	23	.....		
8 plants.....	1917	19	67.4	.516	34.62	42	.....	.....	58	.....	.....		
10 plants.....	1919	35	66.3	.754	49.99	14	9	11	66	.....	.....		
9 plants.....	1920	31	61.1	.966	58.84	42	10	10	19	19	.....		
<b>Vessel men:</b>													
9 plants.....	1907	23	58.5	.793	44.58	52	13	.....	9	17	9	9	
	1908	22	61.1	.528	31.27	41	14	.....	18	18	9	9	
	1909	22	61.2	.630	37.19	41	14	.....	18	18	9	9	
10 plants.....	1910	26	57.8	.685	38.18	46	23	.....	15	.....	.....	15	
	1911	25	59.1	.580	32.45	48	12	.....	24	8	8	8	
	1912	26	53.3	.688	38.60	35	35	.....	8	15	8	8	
12 plants.....	1913	26	57.8	.744	41.52	23	46	.....	15	15	.....		
	1914	31	55.6	.499	27.64	29	48	.....	16	6	.....		
	1915	32	56.0	.554	30.87	28	47	.....	19	6	.....		
8 plants.....	1917	30	61.9	.894	53.29	40	.....	.....	60	.....	.....		
9 plants.....	1919	21	60.2	1.114	67.06	48	.....	5	38	10	.....		
11 plants.....	1920	34	56.3	1.273	71.00	26	56	6	.....	12	.....		
<b>Vessel men's helpers:</b>													
9 plants.....	1907	47	57.0	.566	31.84	51	19	.....	9	17	4	4	
	1908	45	59.5	.376	21.65	40	20	.....	18	18	4	4	
	1909	45	59.6	.484	28.24	40	20	.....	18	18	4	4	
10 plants.....	1910	53	56.5	.506	28.22	45	28	.....	15	.....	.....	11	
	1911	51	57.6	.421	23.48	47	18	.....	24	8	4	4	
	1912	53	56.5	.467	25.70	45	28	.....	8	15	4	4	
	1913	53	56.4	.528	29.15	34	40	8	11	8	.....		
12 plants.....	1914	57	54.3	.342	18.42	37	42	7	14	.....	.....		
	1915	56	55.5	.383	21.18	32	43	.....	25	.....	.....		
8 plants.....	1917	45	56.5	.654	35.94	60	.....	.....	40	.....	.....		
11 plants.....	1919	71	62.4	.875	54.60	35	6	11	38	10	.....		
	1920	75	58.7	.984	56.86	24	40	16	9	11	.....		
<b>Cinder pitmen:</b>													
8 plants.....	1907	118	67.9	.206	13.32	20	.....	37	32	3	7	7	
	1908	71	65.9	.173	11.27	30	.....	17	39	14	.....		
	1909	92	68.4	.178	11.88	23	.....	25	33	11	9	9	

TABLE A (2).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BESSEMER CONVERTERS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—					
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.
<b>Cinder pitmen—Concluded.</b>											
9 plants.....	1910	85	67.6	\$0.211	\$13.69	7	18	.....	54	12	9
	1911	62	69.8	.199	13.55	10	.....	26	55	10	.....
	1912	99	66.1	.200	13.23	21	.....	.....	46	30	2
	1913	113	67.3	.238	15.56	24	.....	.....	42	32	2
	1914	52	71.9	.213	15.30	.....	.....	35	58	8	.....
	1915	48	72.0	.214	15.42	.....	.....	13	79	8	.....
5 plants.....	1917	62	72.0	.325	23.40	.....	.....	.....	100	.....	.....
10 plants.....	1919	100	69.7	.578	40.29	8	3	3	80	6	.....
9 plants.....	1920	144	72.8	.562	43.11	9	.....	2	5	28	27
<b>Bottom makers:</b>											
9 plants.....	1907	17	73.4	.386	28.10	.....	.....	12	65	24	.....
	1908	17	72.4	.288	20.45	.....	.....	24	65	12	.....
	1909	16	73.1	.351	25.57	.....	.....	13	69	19	.....
10 plants.....	1910	19	73.4	.346	25.28	.....	.....	.....	79	11	11
	1911	19	71.8	.337	24.18	.....	.....	21	79	.....	.....
	1912	20	72.5	.345	24.96	.....	.....	20	70	10	.....
	1913	20	73.8	.384	28.05	.....	.....	20	50	20	10
12 plants.....	1914	22	73.0	.283	21.34	.....	.....	18	64	9	9
	1915	22	73.0	.332	24.02	.....	.....	18	64	9	9
8 plants.....	1917	16	72.0	.510	36.73	.....	.....	.....	100	.....	.....
11 plants.....	1919	21	67.1	.781	52.41	14	10	10	62	.....	5
	1920	25	64.8	.911	59.57	20	8	.....	28	44	.....
<b>Bottom makers' helpers:</b>											
9 plants.....	1907	30	73.5	.257	18.82	.....	.....	27	47	27	.....
	1908	27	72.2	.204	14.75	.....	.....	26	67	7	.....
	1909	29	73.1	.224	17.08	.....	.....	28	52	21	.....
10 plants.....	1910	34	72.8	.235	17.10	.....	.....	.....	88	6	6
	1911	31	72.2	.234	16.88	.....	.....	32	65	.....	3
	1912	39	72.4	.224	16.19	.....	.....	31	59	10	.....
	1913	40	73.1	.255	18.59	.....	.....	30	45	20	5
12 plants.....	1914	39	72.4	.225	16.29	.....	.....	31	54	10	5
	1915	38	72.6	.239	17.30	.....	.....	16	68	11	5
8 plants.....	1917	30	72.0	.377	27.13	.....	.....	.....	100	.....	.....
11 plants.....	1919	49	69.6	.602	41.90	10	4	12	65	.....	8
	1920	60	66.2	.695	46.27	25	.....	37	38	.....	.....
<b>Ladle liners:</b>											
9 plants.....	1907	21	65.1	.454	28.95	29	.....	5	10	48	10
	1908	21	65.6	.305	19.78	29	.....	5	19	38	10
	1909	21	65.1	.392	25.22	29	.....	5	10	48	10
10 plants.....	1910	25	66.8	.378	25.05	24	.....	4	.....	56	8
	1911	24	68.3	.342	22.85	13	.....	4	17	67	.....
	1912	24	68.9	.369	24.95	13	.....	4	17	58	8
	1913	22	68.7	.418	28.22	14	.....	5	18	45	18
12 plants.....	1914	25	68.6	.304	20.77	.....	12	4	16	60	8
	1915	26	68.8	.344	23.47	.....	12	4	15	62	8
8 plants.....	1917	15	71.2	.583	41.45	.....	.....	7	93	.....	.....
11 plants.....	1919	28	69.8	.779	54.37	7	11	7	50	25	.....
	1920	31	65.0	.929	59.85	29	.....	16	39	16	.....
<b>Ladle liners' helpers:</b>											
9 plants.....	1907	39	68.2	.255	16.65	15	.....	3	26	51	5
	1908	31	67.5	.209	13.79	19	.....	3	32	39	.....
	1909	39	68.5	.230	15.26	15	.....	3	26	46	10
10 plants.....	1910	39	68.7	.236	15.73	15	.....	3	.....	67	10
	1911	34	69.1	.233	15.75	9	.....	3	41	47	.....
	1912	34	69.6	.228	15.43	9	.....	3	41	41	6
9 plants.....	1913	38	70.9	.247	17.09	8	.....	3	37	21	32
11 plants.....	1914	34	69.1	.222	15.24	.....	9	3	41	41	6
	1915	34	69.5	.233	15.91	.....	9	3	24	59	6
8 plants.....	1917	34	71.3	.365	26.03	.....	.....	6	94	.....	.....
11 plants.....	1919	76	71.7	.551	39.51	3	5	8	66	18	.....
10 plants.....	1920	43	69.9	.680	47.68	5	.....	7	26	49	14
<b>Stopper makers:</b>											
9 plants.....	1907	10	72.8	.316	23.01	.....	.....	20	.....	40	30
	1908	9	72.9	.223	16.10	.....	.....	22	.....	44	11
	1909	9	71.6	.270	19.22	.....	.....	22	22	22	11
10 plants.....	1910	12	73.0	.260	19.14	.....	.....	8	.....	75	.....
	1911	10	72.0	.273	19.53	.....	.....	20	.....	60	.....
	1912	10	70.8	.272	18.91	.....	.....	30	.....	50	20
	1913	10	70.6	.302	21.25	.....	.....	10	10	80	.....
	1914	12	70.2	.251	17.60	.....	.....	8	33	58	.....
	1915	12	69.7	.263	18.13	.....	.....	17	8	75	.....

TABLE A (2).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BESSEMER CONVERTERS—Concluded.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	72	Over 72 and under 84.	84.		
Stopper makers—Concl'd.													
8 plants.....	1917	10	67.8	\$0.433	\$29.15	.....	20	30	50	.....	.....	.....	.....
11 plants.....	1919	15	69.6	.660	45.94	13	7	7	53	7	.....	13	.....
	1920	12	65.0	.718	46.73	25	8	8	50	8	.....	.....	.....
Stopper setters:													
9 plants.....	1907	45	51.5	.630	31.79	87	.....	.....	9	4	.....	.....	.....
	1908	40	54.3	.343	18.50	75	.....	.....	20	5	.....	.....	.....
	1909	34	55.4	.552	29.36	71	.....	.....	24	6	.....	.....	.....
10 plants.....	1910	39	52.6	.577	29.81	69	15	.....	10	.....	.....	5	.....
	1911	39	55.3	.498	26.08	69	.....	.....	31	.....	.....	.....	.....
	1912	42	51.7	.496	25.36	86	.....	.....	10	5	.....	.....	.....
	1913	43	51.6	.563	28.01	86	.....	.....	9	5	.....	.....	.....
12 plants.....	1914	44	50.7	.376	19.03	68	20	.....	11	.....	.....	.....	.....
	1915	42	51.5	.423	21.76	71	14	.....	14	.....	.....	.....	.....
8 plants.....	1917	40	49.6	.815	40.03	90	.....	.....	10	.....	.....	.....	.....
11 plants.....	1919	46	53.7	1.092	58.64	67	9	.....	2	.....	.....	7	.....
	1920	50	51.0	1.225	61.45	88	.....	.....	15	8	.....	4	.....
Steel pourers:													
9 plants.....	1907	29	55.4	.693	36.39	72	.....	.....	14	14	.....	.....	.....
	1908	28	57.4	.439	24.25	64	.....	.....	21	14	.....	.....	.....
	1909	28	57.5	.576	31.61	94	.....	.....	21	14	.....	.....	.....
10 plants.....	1910	32	55.6	.617	32.74	66	9	.....	13	.....	.....	13	.....
	1911	30	55.1	.535	27.91	70	.....	.....	30	.....	.....	.....	.....
	1912	34	55.7	.570	30.65	71	.....	.....	18	12	.....	.....	.....
	1913	34	55.7	.640	34.39	71	.....	.....	18	12	.....	.....	.....
12 plants.....	1914	37	52.5	.444	23.42	57	24	.....	19	.....	.....	.....	.....
	1915	35	53.5	.525	27.96	60	17	.....	23	.....	.....	.....	.....
8 plants.....	1917	27	52.7	.849	43.62	78	.....	.....	22	.....	.....	.....	.....
10 plants.....	1919	30	56.3	1.110	62.72	63	.....	.....	3	27	7	.....	.....
11 plants.....	1920	38	52.9	1.326	69.30	79	.....	.....	16	5	.....	.....	.....
Mold cappers:													
8 plants.....	1907	48	54.5	.347	18.02	75	.....	.....	17	8	.....	.....	.....
	1908	39	53.7	.196	10.57	77	.....	.....	18	5	.....	.....	.....
	1909	43	54.0	.271	14.26	77	.....	.....	14	9	.....	.....	.....
9 plants.....	1910	52	57.0	.314	16.96	23	46	.....	19	4	.....	8	.....
	1911	37	64.2	.282	17.36	32	.....	.....	62	5	.....	.....	.....
10 plants.....	1912	52	61.5	.301	17.23	46	.....	.....	12	27	15	.....	.....
	1913	61	59.5	.360	20.28	54	.....	.....	10	23	13	.....	.....
	1914	39	60.8	.260	15.67	38	8	.....	54	.....	.....	.....	.....
	1915	40	60.9	.294	17.53	38	8	.....	10	45	.....	.....	.....
5 plants.....	1917	29	54.6	.631	33.01	72	.....	.....	28	.....	.....	.....	.....
9 plants.....	1919	55	61.5	.688	42.31	29	20	.....	36	15	.....	.....	.....
	1920	70	58.0	.755	43.56	64	.....	.....	29	7	.....	.....	.....
Ingot strippers:													
9 plants.....	1907	29	67.4	.310	19.60	31	.....	.....	21	21	21	14	.....
	1908	28	68.4	.238	16.34	21	.....	.....	21	21	36	.....	.....
	1909	28	70.2	.264	18.17	21	.....	.....	14	21	21	.....	.....
10 plants.....	1910	31	68.1	.303	19.69	10	19	.....	32	19	19	.....	.....
	1911	27	70.4	.282	19.26	.....	11	.....	22	44	22	.....	.....
	1912	28	68.8	.320	20.90	11	11	.....	14	29	36	.....	.....
	1913	28	69.9	.334	22.81	.....	21	.....	7	21	50	.....	.....
12 plants.....	1914	29	66.0	.313	20.11	21	10	.....	7	28	28	7	.....
	1915	31	66.2	.332	21.39	19	10	.....	.....	39	32	.....	.....
8 plants.....	1917	33	68.7	.479	31.71	.....	18	.....	64	6	12	.....	.....
10 plants.....	1919	36	65.3	.726	47.41	8	25	.....	14	47	6	.....	.....
11 plants.....	1920	34	59.1	.892	52.56	41	24	.....	6	29	.....	.....	.....
Laborers:													
9 plants.....	1907	801	78.0	.155	12.12	.....	(2)	3	21	33	42	.....	.....
	1908	425	76.2	.155	11.80	.....	6	8	31	22	34	.....	.....
	1909	564	76.9	.151	11.62	.....	2	4	25	39	30	.....	.....
10 plants.....	1910	786	77.8	.163	12.09	.....	3	2	35	20	41	.....	.....
	1911	593	74.6	.166	12.39	.....	5	4	43	36	12	.....	.....
	1912	626	75.7	.167	12.64	.....	(2)	3	5	39	28	.....	.....
	1913	681	75.1	.192	14.38	.....	1	6	40	33	20	.....	.....
12 plants.....	1914	546	74.0	.193	14.27	.....	(2)	7	8	47	13	.....	.....
	1915	496	74.3	.193	14.31	.....	8	9	45	10	28	.....	.....
8 plants.....	1917	493	73.4	.298	21.92	.....	2	2	67	29	.....	.....	.....
11 plants.....	1919	691	70.8	.489	34.62	.....	5	5	24	34	31	.....	.....
10 plants.....	1920	726	74.9	.537	40.17	.....	4	2	25	19	24	.....	.....

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

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

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings are presented in Table B (2) for each of the principal productive occupations in Bessemer converting plants for the years 1907 to 1920. These are simply percentages computed from the averages of Table A (2), with the average for 1913 as the base, or 100 per cent, as an aid in making comparisons of the exact differences appearing from year to year in the actual averages, some of which differences are noted in the text preceding Table A (2).

For index numbers for this department as a whole (all selected occupations combined), see page 3.

TABLE B (2).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1907 TO 1920—*BESSEMER CONVERTERS*.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Stockers:</b>				<b>Regulators, first:</b>			
1907.....	100	74	75	1907.....	92	97	90
1908.....	93	83	78	1908.....	96	59	59
1909.....	102	80	80	1909.....	96	76	76
1910.....	104	80	84	1910.....	92	90	84
1911.....	99	70	71	1911.....	99	84	82
1912.....	99	92	91	1912.....	96	91	87
1913.....	100	100	100	1913.....	100	100	100
1914.....	89	106	98	1914.....	94	73	68
1915.....	89	95	88	1915.....	96	78	76
1917.....	88	181	165	1917.....	99	140	140
1919.....	103	192	216	1919.....	102	192	197
1920.....	109	211	248	1920.....	91	222	204
<b>Cupola melters:</b>				<b>Regulators, second:</b>			
1907.....	104	107	112	1907.....	96	108	104
1908.....	104	73	79	1908.....	108	68	73
1909.....	104	88	92	1909.....	108	93	100
1910.....	97	94	92	1910.....	99	96	95
1911.....	104	81	87	1911.....	95	85	80
1912.....	99	86	84	1912.....	98	97	96
1913.....	100	100	100	1913.....	100	100	100
1914.....	95	82	81	1914.....	97	73	70
1915.....	95	94	92	1915.....	98	82	81
1917.....	99	159	160	1917.....	99	131	129
1919.....	100	208	219	1919.....	97	191	186
1920.....	99	223	233	1920.....	89	245	219
<b>Cupola tappers:</b>				<b>Vessel men:</b>			
1907.....	102	96	100	1907.....	101	107	107
1908.....	100	85	88	1908.....	106	71	75
1909.....	103	87	89	1909.....	106	85	90
1910.....	99	92	91	1910.....	100	92	92
1911.....	102	80	83	1911.....	102	78	78
1912.....	102	94	94	1912.....	101	92	93
1913.....	100	100	100	1913.....	100	100	100
1914.....	96	73	74	1914.....	96	67	67
1915.....	94	84	83	1915.....	97	74	74
1917.....	91	172	157	1917.....	107	120	128
1919.....	101	199	211	1919.....	104	150	162
1920.....	92	249	242	1920.....	97	171	171
<b>Blowers:</b>				<b>Vessel men's helpers:</b>			
1907.....	103	104	106	1907.....	101	107	109
1908.....	109	78	87	1908.....	105	71	74
1909.....	109	81	89	1909.....	106	92	97
1910.....	110	90	98	1910.....	100	96	97
1911.....	114	82	95	1911.....	102	80	81
1912.....	109	88	97	1912.....	100	88	88
1913.....	100	100	100	1913.....	100	100	100
1914.....	101	91	92	1914.....	96	65	63
1915.....	101	94	95	1915.....	98	73	73
1917.....	101	131	131	1917.....	100	124	123
1919.....	100	205	208	1919.....	111	166	187
1920.....	94	209	200	1920.....	104	186	195

TABLE B (2).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1907 TO 1920—*BESSEMER CONVERTERS*—Concluded.

Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.
<b>Cinder pitmen:</b>				<b>Stopper makers—Concl'd.</b>			
1907.....	101	87	86	1913.....	100	100	100
1908.....	98	73	72	1914.....	99	83	83
1909.....	102	75	76	1915.....	99	87	85
1910.....	100	89	88	1917.....	96	143	137
1911.....	104	84	87	1919.....	99	219	216
1912.....	101	84	85	1920.....	92	238	220
1913.....	100	100	100	<b>Stopper setters:</b>			
1914.....	107	89	98	1907.....	100	114	113
1915.....	107	90	99	1908.....	105	62	66
1917.....	107	137	150	1909.....	107	100	105
1919.....	104	243	259	1910.....	102	104	106
1920.....	108	249	277	1911.....	107	90	93
<b>Bottom makers:</b>				1912.....	100	90	91
1907.....	99	101	100	1913.....	100	100	100
1908.....	98	74	73	1914.....	98	68	68
1909.....	99	91	91	1915.....	100	76	78
1910.....	99	90	90	1917.....	96	147	143
1911.....	97	88	86	1919.....	104	197	209
1912.....	98	90	89	1920.....	99	222	219
1913.....	100	100	100	<b>Steel pourers:</b>			
1914.....	99	76	76	1907.....	99	108	106
1915.....	99	86	86	1908.....	103	69	71
1917.....	98	133	131	1909.....	103	90	92
1919.....	91	203	187	1910.....	100	96	95
1920.....	88	237	212	1911.....	99	84	81
<b>Bottom makers' helpers:</b>				1912.....	100	89	89
1907.....	101	101	101	1913.....	100	100	100
1908.....	99	80	79	1914.....	94	69	68
1909.....	100	92	92	1915.....	96	82	81
1910.....	100	92	92	1917.....	95	133	127
1911.....	99	92	91	1919.....	101	173	182
1912.....	99	88	87	1920.....	95	207	202
1913.....	100	100	100	<b>Mold cappers:</b>			
1914.....	99	88	88	1907.....	92	96	89
1915.....	99	94	93	1908.....	90	54	52
1917.....	99	148	146	1909.....	91	75	70
1919.....	95	236	225	1910.....	96	87	84
1920.....	91	273	249	1911.....	108	78	86
<b>Ladle liners:</b>				1912.....	103	84	85
1907.....	95	110	103	1913.....	100	100	100
1908.....	95	74	70	1914.....	102	72	77
1909.....	95	95	89	1915.....	102	82	86
1910.....	97	91	89	1917.....	92	175	163
1911.....	99	83	81	1919.....	103	191	209
1912.....	100	89	88	1920.....	97	210	215
1913.....	100	100	100	<b>Ingot strippers:</b>			
1914.....	100	73	74	1907.....	96	93	86
1915.....	100	83	83	1908.....	98	71	72
1917.....	104	141	147	1909.....	100	79	80
1919.....	102	188	193	1910.....	97	91	86
1920.....	95	224	212	1911.....	101	84	84
<b>Ladle liners' helpers:</b>				1912.....	88	96	92
1907.....	96	103	97	1913.....	100	100	100
1908.....	95	85	81	1914.....	94	94	88
1909.....	97	93	89	1915.....	95	99	94
1910.....	97	96	92	1917.....	98	143	139
1911.....	97	94	92	1919.....	93	217	208
1912.....	98	92	90	1920.....	85	267	230
1913.....	100	100	100	<b>Laborers:</b>			
1914.....	97	90	89	1907.....	104	81	84
1915.....	98	94	93	1908.....	101	81	82
1917.....	101	148	152	1909.....	102	79	81
1919.....	101	223	231	1910.....	104	85	88
1920.....	99	275	279	1911.....	99	86	86
<b>Stopper makers:</b>				1912.....	101	87	88
1907.....	103	105	108	1913.....	100	100	100
1908.....	103	74	76	1914.....	99	101	99
1909.....	101	89	90	1915.....	99	101	100
1910.....	103	86	90	1917.....	98	155	152
1911.....	102	90	92	1919.....	94	255	241
1912.....	100	90	89	1920.....	100	280	279

The customary working time per week of employees in the Bessemer converting department for the years 1907 to 1920 has been classified, and the number and percentages of employees under each classification are shown in Table C (2).

The number of employees reported in 1920 includes some duplications, or repeated employees, as stated in the general explanation of Table C (p. 14). In the 1,623 employees reported in selected occupations for all districts combined there were 137 duplications, leaving 1,486 actually engaged, and the total of 3,159 employees shown for all occupations represents 2,888 individuals.

The gross number of employees reported, together with the net number of actual employees, for selected occupations and all occupations, in each district and all districts combined, are shown in Table 9.

TABLE 9.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS, 1920—*BESSEMER CONVERTERS.*

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Pittsburgh.....	1,038	74	964	1,900	134	1,766
Great Lakes and Middle West.....	585	63	522	1,259	137	1,122
Total.....	1,623	137	1,486	3,159	271	2,888

The working time of employees in the Bessemer converting department does not show as wide a variation of days or turns per week as most of the other departments, practically all of the employees working either 6 days, 7 days, or 6 days and 7 days alternately. The heading, "6 days and 7 days alternately," indicates that the plants were running 6 days and 7 nights or 7 days and 6 nights each week, being shut down one day or one night each week, and that the employees reported under this heading worked 6 turns one week and 7 turns the next.

The greatest number of the employees in this department in 1920 worked 6 days, although the percentage was somewhat smaller than in other years since 1910. In 1919, 79 per cent of the employees in selected occupations worked 6 days per week, while in 1920, 64 per cent were 6-day workers. In 1907, the first year in which data were secured, 61 per cent of the employees were on a 6-day basis, but in 1910 the percentage had decreased to 58. In 1913 it rose again to 73, and in 1915 advanced to 80.

In all occupations combined, in 1914 and 1915, 80 per cent of the employees were on duty 6 days, but in 1920 this was reduced to 59 per cent. The reduction in 6-day work was accompanied by an increase in 7-day work, which was due in part to the change in working time in four occupations in the Pittsburgh district and the complete change in working time of one plant in the Great Lakes and Middle West district.

TABLE C (2).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1907 TO 1920—BESSEMER CONVERTERS.

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—				Per cent of employees whose customary working time per week was—					
				6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 6 days, and 7 days in rotation.	7 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 6 days, and 7 days in rotation.	7 days.	
<b>PITTSBURGH.</b>													
Selected occupations.	1907	6	1,325	999	53	.....	.....	273	75	4	.....	.....	21
	1908	6	896	727	42	.....	.....	127	81	5	.....	.....	14
	1909	6	992	778	44	.....	.....	170	78	4	.....	.....	17
	1910	6	1,248	827	18	.....	.....	325	66	1	.....	.....	26
	1911	6	950	765	36	.....	.....	146	81	4	.....	.....	15
	1912	6	1,037	803	54	.....	.....	159	77	5	.....	.....	15
	1913	6	1,176	890	52	.....	.....	153	76	4	.....	.....	13
	1914	7	914	674	29	.....	.....	148	74	3	.....	.....	16
	1915	7	889	638	21	.....	.....	153	73	2	.....	.....	18
	1917	5	826	668	102	.....	.....	50	81	12	.....	.....	6
	1919	6	1,119	872	175	.....	.....	72	78	16	.....	.....	6
	1920	6	1,038	734	23	.....	.....	250	71	2	.....	.....	24
All occupations.....	1914	7	1,500	1,061	75	.....	.....	291	71	5	.....	.....	19
	1915	7	1,463	1,044	65	.....	.....	287	71	4	.....	.....	20
	1920	6	1,900	1,136	138	.....	.....	584	60	7	.....	.....	31
<b>GREAT LAKES AND MIDDLE WEST.</b>													
Selected occupations.	1907	3	432	74	177	18	12	151	17	41	4	3	35
	1908	3	283	88	71	18	12	94	31	25	6	4	33
	1909	3	360	63	142	18	12	125	18	39	5	3	35
	1910	4	482	173	48	18	12	231	36	10	4	3	48
	1911	4	409	275	44	18	12	51	69	11	5	3	13
	1912	4	457	225	136	.....	.....	76	49	30	4	.....	17
	1913	4	485	325	114	.....	.....	26	67	24	4	.....	5
	1914	5	345	343	2	.....	.....	.....	99	1	.....	.....	.....
	1915	5	318	316	2	.....	.....	.....	99	1	.....	.....	.....
	1917	3	259	259	.....	.....	.....	.....	100	.....	.....	.....	.....
	1919	5	432	353	.....	.....	.....	5	82	.....	.....	.....	.....
	1920	5	585	299	97	43	19	127	51	17	7	3	22
All occupations.....	1914	5	767	757	4	.....	.....	6	99	1	.....	.....	1
	1915	5	755	740	2	.....	.....	13	98	(2)	.....	.....	2
	1920	5	1,259	714	192	60	52	241	57	15	5	4	19
<b>TOTAL.</b>													
Selected occupations.	1907	9	1,757	1,073	230	18	12	424	61	13	1	1	24
	1908	9	1,179	815	113	18	12	221	69	10	2	1	19
	1909	9	1,352	841	186	18	12	295	62	14	1	1	22
	1910	10	1,730	1,000	66	.....	.....	556	58	4	6	1	32
	1911	10	1,350	1,040	80	.....	.....	197	77	6	2	1	15
	1912	10	1,494	1,028	190	.....	.....	235	69	13	2	1	16
	1913	10	1,661	1,215	166	.....	.....	179	73	10	5	1	11
	1914	12	1,259	1,017	31	.....	.....	148	81	2	5	(2)	12
	1915	12	1,187	954	23	.....	.....	153	80	2	4	1	13
	1917	8	1,085	927	102	.....	.....	50	85	9	1	.....	5
	1919	11	1,551	1,225	175	.....	.....	77	79	11	5	.....	5
	1920	11	1,623	1,033	120	.....	.....	377	64	7	5	1	23
All occupations.....	1914	12	2,267	1,818	79	.....	.....	297	80	3	3	(2)	13
	1915	12	2,218	1,784	67	.....	.....	300	80	3	3	(2)	14
	1920	11	3,159	1,850	330	102	52	825	59	10	3	2	26

1 Worked 5 days, 6 days, and 7 days in rotation.

2 Less than 1 per cent.

3 Including 4 employees who worked 7 days every fourth week.

4 Including 27 employees who worked 5 days, 5 days, and 6 days in rotation.

5 Worked 5 days, 7 days, and 7 days in rotation.

6 Including 188 employees who worked 5 days, 5 days, and 6 days in rotation.

7 Including 8 employees who worked 7 days every fourth week.

8 Including 78 who worked 5 days, 6 days, and 7 days in rotation.

Table D (2) presents the most significant facts relative to customary and actual working time, actual earnings, and earnings per hour of employees in this department, by occupations and districts for the year 1920.

Referring to the occupation of vessel men, by way of illustration: 28 positions were filled by 34 men during the scheduled pay-roll period of one-half month. The average customary full time of the men working as vessel men was 6.3 turns per week, 8.9 hours per turn, and 56.3 hours per week. Of the 34 actual employees, 28, or 82 per cent, customarily worked less than 60 hours per week. The average hourly earnings for vessel men in the Pittsburgh and Great Lakes and Middle West districts combined were \$1.273, while the full-time weekly earnings were \$67.96 in the Pittsburgh district and \$76.57 in the Great Lakes and Middle West district.

Owing to the fact that a large number of the employees worked in more than one occupation during the pay-roll period and in order to give the complete hours and earnings for such employees, separate figures are presented which include all occupations at which they worked. While 34 men working as vessel men averaged 94.7 hours per pay-roll period, they also averaged 8.1 hours at other work, making a total of 102.8 average hours per pay-roll period in "specified [vessel men] and other occupations." During the 94.7 hours they worked as vessel men they earned an average of \$120, or \$1.273 per hour. When the work of these men in all occupations in which they were engaged is considered, they earned \$125.66, that is \$5.66 was earned in some occupation other than vessel men, and their hourly average earnings in all occupations dropped from \$1.273 to \$1.222.

The average earnings per hour in the occupations of this department range from 53.7 cents for laborers to \$1.326 for steel pourers, and the average actual hours worked per pay-roll period range from 69.7 for mold cappers to 134.2 for stopper makers.







Blowers and vessel men were the occupations selected in the Bessemer converting department for which to show classified earnings per hour.

Table E (2) shows for each of these occupations, by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings per hour fell in each group of classified earnings per hour.

The range of the classified earnings was considerably wider in the Pittsburgh district than in the Great Lakes and Middle West district in each occupation. Blowers in the Pittsburgh district earned between 90 cents and \$2.50 and vessel men between 60 cents and \$2.25. The average for blowers in both districts combined was \$1.249 per hour, and for vessel men, \$1.273 per hour.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (2).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—*BESSEMER CONVERTERS*.

[For explanation of this table see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Number of employees whose earnings per hour were—								
			60 and under 70 cts.	70 and under 80 cts.	90 cts. and under \$1.	\$1 and under \$1.25.	\$1.25 and under \$1.50.	\$1.50 and under \$1.75.	\$1.75 and under \$2.	\$2 and under \$2.25.	\$2.25 and under \$2.50.
<b>BLOWERS.</b>											
Pittsburgh.....	17	\$1.250	.....	.....	3	3	3	6	.....	1	1
Great Lakes and Middle West.....	12	1.247	.....	.....	2	4	3	3	.....	.....	.....
Total.....	29	1.249	.....	.....	5	7	6	9	.....	1	1
<b>VESSEL MEN.</b>											
Pittsburgh.....	22	1.297	1	3	.....	7	8	1	1	1	.....
Great Lakes and Middle West.....	12	1.229	.....	.....	.....	5	7	.....	.....	.....	.....
Total.....	34	1.273	1	3	.....	12	15	1	1	1	.....

The customary turns per week, hours per turn, and full-time hours per week in the Bessemer converting department are shown in detail for each of the two districts in which data were secured and for both districts combined, for the year 1920, in Table F (2).

The table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the Bessemer converting department was obtained from 11 plants and covers 2,888 actual employees—2,479 in part 1 of the table and 409 in part 2. However, the sum of the figures in this table would show 3,362 persons, due to the 474 duplications, or repeated employees, appearing in part 2.

The Bessemer converting process is not necessarily a continuous operation, although some plants customarily operate 7 days per week. A majority of the Bessemer converting plants, however, are producing

steel 6 days only each week, and 57 per cent of all of the employees shown in Table F (2) worked that number of turns. Sunday work in this department is quite common, owing to the fact that practically all of the 6-day plants close down on the completion of the Saturday day turn and start up again at the beginning of the night turn on Sunday. Of the 3,362 employees (including duplications) reported in Table F (2), a total of 2,798—2,090 of the employees included in part 1 of the table and 708 of those in part 2—were Sunday workers. Of this number 47 per cent worked every other Sunday only; 37 per cent worked every Sunday; and the remaining 16 per cent were relieved one Sunday out of every three or some such period. Also a total of 460 employees worked fewer hours on Saturday than on the regular Monday to Friday turns and 102 worked a smaller number of hours on Sunday. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turn, the night turns usually being of equal length.

Of the 2,479 employees reported as working at one combination of hours and turns, 83 per cent alternated weekly from day to night work and 15 per cent worked days only, while the remaining 2 per cent worked nights only. Of the 2,058 employees alternating from day to night work, 57 per cent worked 6 turns either day or night, 24 per cent worked 7 turns each week, and 19 per cent worked 7 days and 6 nights in alternate weeks.

The 12-hour turn was most common among these alternating employees, 1,182, or 57 per cent, working on 12-hour shifts. The 8-hour turn was also well represented, 397, or 19 per cent, being on a 3-shift basis. The length of the day turn is not always the same as that of the night turn, as shown by the fact that 418, or 20 per cent, of the total number of alternating employees, worked turns of different lengths, 167 working 10 hours when on day turn and 14 hours when on night turn, while 120 worked 11 hours on day turn and 13 hours on night turn.

Of the 369 persons who worked days only, 80 per cent worked 6 days per week, 19 per cent worked 7 days, and the remaining one employee alternated from 6 days one week to 7 the next. The length of turn among the day workers covered a wide range of hours, 128 working 12 hours per day, 102 working 10 hours, and the remainder varying from a turn of 8 hours to one of 11½ hours. The one alternating employee worked 12 hours per turn each week.

A total of 27, or 52 per cent, of the 52 employees, reported as working night turns only, worked 6 nights per week, and of that number 11 worked 14 hours per night, 8 worked 12 hours, and 8 worked 11 hours. Those whose working time per week was 7 nights numbered 23, and of that total 22 worked 12 hours per turn. Only 2 employees alternated weekly from 6 to 7 turns and each was on duty 12 hours per night.

The 883 employees (including duplications) presented in Part 2 of the table are divided into the following classes: Those alternating from day to night, numbering 830, or 94 per cent; those working days only, numbering 32, or 4 per cent; and those working nights only, numbering 21, or 2 per cent. Out of the 830 employees who worked days one week and nights the next, 482, or 58 per cent, worked 6 turns each week, 244, or 29 per cent, worked 7 turns, and 104, or 13 per cent, worked 7 days and 6 nights. The customary length of turn for 423, or 51 per cent, of the alternating employees, was 12 hours

either day or night, and 222, or 27 per cent, were on an 8-hour basis. A total of 18, or 56 per cent, of those working days only, worked 6 turns per week and the remaining 14, or 44 per cent, worked 7 turns. The length of turn varied from 8 to 12 hours per day, the largest percentage in any group (34 per cent) being found on an 11-hour shift. The working time of those employed nights only was 6 nights or 7 nights per week, 95 per cent working 7 nights. All of the employees worked 12 hours per night.

TABLE F (2).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BESSEMER CONVERTERS.

[For explanation of this table see p. 15.]

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

Customary turns and hours worked.										Number of employees who worked each specified combination of customary turns and hours, by districts.		
Day turns.					Night turns.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.			

Employees who worked day turns.

7	12	12	12	84						26	8	34
7	12	12	12	84						1		1
6	12	12	12	72						1		1
7	12	12	10	82						1		1
7	11½	11½	11½	80½						17		17
7	11	11	11	77						4		4
7	10½	10½	10½	73½						6		6
7	10	10	10	70						1		1
7	10	9	10	69						1		1
7	8	8	5	63						1		1
7	8	8	8	56							6	6
6	12	12	12	72							1	1
6	12	12		72						11	81	92
6	11½	11½		69							30	30
6	11½	10½		68							1	1
6	11	11	11	66						1		1
6	11	11		66						2	6	8
6	11	10		65							6	6
6	10½	10½		63							1	1
6	10½	9½		62							2	3
6	10	11½		61½						1		1
6	10	10	10	60						1		1
6	10	10		60						46	20	66
6	10	9		59						1	23	24
6	9	9		54							3	3
6	9	8		53							1	1
6	8	8		48						2	54	56

Employees who worked night turns.

					7	12	12	12	84	14	8	22
					7	12	12	12	84			
					6	12		12	72	2		2
					7	11	11	11	77			1
					6	14		14	84	11		11
					6	12	12	13	73	1		1
					6	12	12		72		1	1
					6	12		12	72	1	5	6
					6	11		11	66	8		8

TABLE F (2).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BESSEMER CONVERTERS—Contd.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.			

Employees who alternated weekly from day to night turns.

7	12	12	12	84	7	12	12	12	84	224	119	343
7	12	12	12	84	6	12	12	12	72	3		3
6	12	12	12	72	7	12	12	12	84			4
7	12	12	12	84	6	12	12	12	72		4	4
7	12	12	12	84	6	12	12	12	72	29	13	42
7	12	10	12	82	7	12	12	12	84	15		1
7	11½	11½	11½	80½	7	11½	11½	11½	80½	1		15
7	11	11	11	77	7	13	13	13	91	18		18
7	11	11	11	77	6	13	13	13	78			13
6	11	11	11	66	7	13	13	13	91	13		13
7	11	11	11	77	7	11	11	11	77	42		42
7	11	11	11	77	6	13	13	13	78	38		38
7	11	11	5	71	6	13	13	13	78	4		4
7	11	9	11	75	6	13	13	13	78	3		3
7	10½	10½	10½	73½	7	13½	13½	13½	94½	3		3
7	10½	9½	10	72	6	13½	13½	13½	81	3		3
7	10	10	10	70	7	14	14	14	98	51		51
7	8	8	12	60	7	8	8	12	60		2	2
6	8	5		45								
6	8		12	52	6	8	12		52		1	1
7	8	12	12	64	7	8	8	8	56		5	5
7	8	8	8	56	7	8	8	8	56			
7	8	8	8	56	7	8	8	8	56	4	14	18
7	8	8	8	56	6	8	8		48		17	17
7	8	8	8	56								
7	8	8	8	56	6	8	8		48		21	21
6	8	8	8	48								
7	8	7½	8	49½	6	8	8		48			
6	8		2	48	6	8		8	48	7		7
6	12	1	24	84	7	12	12	12	84	18		18
6	12	12	12	72	7	12	12	12	84		165	165
6	12	12	12	72	6	12	12	12	72		6	6
6	12	12	12	72	6	12	12	14	74	2		2
6	12	12	12	72	6	12	12	12	72		4	4
6	12	12	12	72	6	12	12	14	74	10		10
6	12	12	11	71	6	12	12	14	74	11		11
6	12	12		72	6	12	12	12	72		19	19
6	12	12		72	6	12	12		72		54	54
6	12	12		72	6	12	12	12	72	161	186	347
6	12	12		72	6	12	9		69		2	2
6	12	11		71	6	12		14	74	10		10
6	12	10		70	6	12		14	74	16		16
6	12	10		70	6	12		12	72	25		25
6	12	8		68	6	12		14	74	98		98
6	12	4		64	6	12		14	74	2		2
6	11½	11½		69	6	12	12	13	73	63		63
6	11	11		66	7	13	13	13	91	1		1
6	11	11		66	6	13		19	84	13		13
6	11	11		66	6	13		14	79	2		2
6	11	11		66	6	13		13	78	28		28
6	11	11		66	6	12		13	73	29		29
6	11	11		66	6	11		13	68	4		4
6	10½	10½		63	7	13½	12	14½	94	1		1
6	10½	10½		63	6	13½		14½	82	16		16
6	10½	10½		63	6	13½		13½	81	5		5
6	10½	10½		63	6	13½	13½		81		4	4
6	10½	9½		62	7	13½	13	13½	94	1		1

¹Including 12 hours worked Saturday night.

TABLE F (2).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—*BESSEMER CONVERTERS*—Contd.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.										Number of employees who worked each specified combination of customary turns and hours, by districts.		
Day turns.					Night turns.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.			

Employees who alternated weekly from day to night turns—Concluded.

6	10½	9½	.....	62	6	13½	.....	13½	81	6	.....	6
6	10	10	.....	60	7	14	.....	14	98	4	.....	2
6	10	10	.....	60	6	14	.....	15	85	2	.....	4
6	10	10	.....	60	6	14	.....	14	84	109	.....	109
6	10	4	.....	54	6	14	.....	15	85	1	.....	1
6	8	9½	.....	49½	7	8	.....	10	57	8	.....	8
6	8	8	.....	48	7	8	.....	10	55	7	.....	7
6	8	9½	.....	49½	7	8	.....	5	55	7	.....	7
6	8	8	.....	48	6	8	.....	8	48	3	.....	3
6	8	9½	.....	49½	6	8	.....	8	48	3	.....	3
6	8	8	.....	47	6	8	.....	8	48	16	.....	16
6	8	9½	.....	49½	6	8	.....	8	48	16	.....	16
6	8	8	.....	45	6	8	.....	8	48	20	.....	20
6	8	8	.....	48	7	8	.....	6	54	20	.....	20
6	8	8	.....	48	6	8	.....	8	48	.....	68	68
6	8	8	.....	48	6	8	.....	8	48	.....	133	133
6	8	8	.....	48	6	8	.....	8	48	15	.....	15
6	8	8	.....	48	6	8	.....	8	48	13	.....	13
6	8	6	.....	46	6	8	.....	8	48	.....	26	26
6	8	8	.....	48	6	8	.....	8	48	.....	10	10
6	8	5	.....	45	6	8	.....	8	48	.....	10	10
6	8	8	.....	48	6	8	.....	8	48	.....	7	7
6	8	2	.....	42	6	8	.....	8	48	.....	7	7

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

Employees who worked day turns.

7	12	12	12	84	.....	.....	.....	.....	.....	2	.....	2
7	11	11	11	77	.....	.....	.....	.....	.....	10	.....	10
7	10	10	10	70	.....	.....	.....	.....	.....	1	.....	1
7	8	8	8	56	.....	.....	.....	.....	.....	.....	1	1
6	12	12	.....	72	.....	.....	.....	.....	.....	3	.....	3
6	11	10	.....	65	.....	.....	.....	.....	.....	.....	1	1
6	10	11½	.....	61½	.....	.....	.....	.....	.....	2	.....	2
6	10	10	.....	60	.....	.....	.....	.....	.....	.....	2	2
6	10	9	.....	59	.....	.....	.....	.....	.....	.....	3	3
6	8	8	.....	48	.....	.....	.....	.....	.....	.....	2	2

Employees who worked night turns.

.....	.....	.....	.....	.....	7	12	12	12	84	20	.....	20
.....	.....	.....	.....	.....	6	12	12	13	73	1	.....	1

TABLE F (2).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—*BESSEMER CONVERTERS*—Concl'd.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.										Number of employees who worked each specified combination of customary turns and hours, by districts.		
Day turns.					Night turns.					Pitts- burgh.	Great Lakes and Middle West..	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.			

Employees who alternated weekly from day to night turns.

7	12	12	12	84	7	12	12	12	84	90	80	170
7	11½	11½	11½	80½	7	11½	11½	11½	80½	15	.....	15
7	11	11	11	77	7	11	11	11	77	57	.....	57
7	11	11	11	77	6	13	.....	13	78	3	.....	3
7	11	9	11	75	6	13	.....	13	78	1	.....	1
6	8	12	.....	52	6	8	.....	12	52	.....	5	5
6	8	12	12	64	8	12	.....	12	64	.....	2	2
7	8	8	8	56	7	8	8	8	56	.....	5	5
6	8	8	5	45	7	8	8	8	60	.....	28	28
7	8	8	12	60	6	8	8	.....	48	.....	32	32
7	8	8	8	56	6	8	8	.....	48	.....	10	10
7	8	8	8	56	6	12	12	12	84	10	.....	12
7	8	8	8	56	7	12	12	12	84	6	.....	17
6	8	8	8	48	6	12	12	14	74	18	.....	18
6	12	12	.....	72	6	12	12	.....	72	.....	44	44
6	12	12	11	71	6	12	.....	12	72	68	6	74
6	12	12	.....	72	6	12	9	.....	69	.....	10	10
6	12	12	.....	72	6	12	.....	14	74	3	.....	3
6	12	10	.....	70	6	12	.....	14	74	15	.....	15
6	12	10	.....	70	6	12	.....	12	72	18	.....	18
6	12	8	.....	68	6	12	.....	14	74	28	.....	28
6	12	6	.....	66	6	12	.....	15	75	2	.....	2
6	12	4	.....	64	6	12	.....	14	74	14	.....	14
6	11½	11½	.....	69	6	12	12	13	73	63	.....	63
6	11	11	.....	66	6	13	.....	13	78	3	.....	3
6	11	11	.....	66	6	12	.....	13	73	33	.....	33
6	11	11	.....	66	6	11	.....	13	68	3	.....	3
6	10½	10½	.....	63	6	13½	.....	14½	82	5	.....	5
6	10	10	.....	60	6	14	.....	15	85	1	.....	1
6	10	4	.....	54	6	14	.....	15	85	1	.....	1
6	8	.....	7	47	6	8	.....	8	48	13	.....	13
6	8	9½	.....	49½	6	8	.....	8	48	7	.....	7
6	8	8	5	45	6	8	.....	8	48	.....	3	3
6	8	9½	.....	49½	6	8	.....	8	48	.....	25	25
6	8	8	8	48	6	8	.....	8	48	.....	32	32
6	8	8	8	48	6	8	.....	8	48	2	.....	2
6	8	5	.....	45	6	8	8	.....	48	.....	18	18
6	8	8	.....	48	6	8	.....	8	48	.....	16	16
6	8	8	8	48	6	8	.....	8	48	12	.....	12
6	8	6	.....	46	6	8	.....	8	48	.....	22	22
6	8	8	8	48	6	8	.....	8	48	.....	.....	.....
6	8	2	.....	42	6	8	.....	8	48	.....	.....	.....

1 Including 12 hours worked Saturday night.

## OPEN-HEARTH FURNACES.<sup>8</sup>

The year 1920 marked the highest point of earnings per hour and per week in the open-hearth furnace department for the period 1910 to 1920, while average full-time hours per week decreased during the same period. Considering the combined principal productive occupations as a whole in 1920, average earnings per hour were 18 per cent greater than in 1919, 182 per cent greater than in 1913, and 217 per cent greater than in 1910; full-time hours per week had decreased 9 per cent as compared with 1919 and 11 per cent as compared with 1913; and full-time weekly earnings were 8 per cent greater than in 1919, 153 per cent greater than in 1913, and 194 per cent greater than in 1910 (see index numbers, Table 1, p. 3).

The most significant facts concerning average earnings and average hours in each of the principal productive occupations in this department for 1920 and previous years are summarized in Table A (3). Data for 1920 cover 19 plants, representing 4,879 employees in 15 selected occupations and 3,128 in all other occupations, making a total of 8,007 employees in all occupations. The average earnings per hour in 1920 for the department as a whole, including all occupations, selected and others, were 67.1 cents.

Average full-time hours per week for each of the 15 selected occupations were lower in 1920 than in any other year for which data are available.

Average hourly and full-time weekly earnings for 1920 made substantial increases in all selected occupations over any other year of the period under consideration. The range of earnings per hour in 1910 was from 10.1 cents for door operators to 41.6 cents for melters' first helpers, and full-time weekly earnings ranged from \$7.72 to \$32.27 for the same occupations. In 1920, however, door operators averaged 40.2 cents per hour and \$26.27 per week and melters' first helpers \$1.089 per hour and \$75.09 per week, respectively.

A good idea of the changes that have taken place from year to year in hourly and weekly earnings in the open-hearth furnace department may be gained by a study of the occupation of charging-machine operators. In 1910 the average hourly earnings for this occupation were 29.4 cents. Between the years 1911 and 1915, inclusive, the average varied only a few cents each year but in 1917 a decided increase occurred, the average in that year being 46.7 cents. Another large increase in earnings occurred in 1919, the average having advanced to 75.3 cents per hour. This increase was continued in a lesser degree in 1920, the average in that year being 89.5 cents. The increase in weekly earnings, while large, was not so marked as that in hourly earnings, owing to the fact that hours per week decreased as hourly earnings increased.

In 1910 the percentage of employees working 84 hours per week in the different selected occupations varied from 7 for stopper setters

<sup>8</sup> Summary figures relating to the open-hearth furnace department are given with figures for other departments of the iron and steel industry on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

to 40 for stock cranemen. In 1920 84-hour week work had been abandoned to such an extent that in 12 of the 15 occupations 10 per cent or less of the employees were on that basis, in one 11 per cent, in one 21 per cent, and in one there was no 84-hour work.

TABLE A (3).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—*OPEN-HEARTH FURNACES.*

[For explanation of this table see p. 13.]

Occupation, and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Stockers:</b>												
17 plants.....	1910	448	76.8	\$0.177	\$13.69				13	24	34	28
	1911	419	74.4	.172	12.73			3	26	24	28	19
	1912	413	77.0	.176	13.51				7	25	40	28
	1913	417	77.8	.197	15.30				8			31
22 plants.....	1914	409	77.0	.204	15.66			(1)	8	21	48	23
	1915	366	77.3	.199	15.41			2	8	21	38	30
13 plants.....	1917	243	77.4	.296	22.92					38	33	29
17 plants.....	1919	476	75.7	.506	38.30		10			22	50	18
19 plants.....	1920	573	70.9	.573	40.18		26		9	17	39	10
<b>Stock cranemen:</b>												
13 plants.....	1910	75	78.8	.223	17.60				3	16	40	40
	1911	70	75.6	.207	15.61		1			23	10	43
	1912	72	78.9	.228	18.02					11	47	42
14 plants.....	1913	84	79.1	.238	18.85				5	10	45	40
15 plants.....	1914	98	78.4	.237	18.58				4	12	49	35
20 plants.....	1915	94	77.4	.253	19.77				4	23	47	26
	1917	64	77.4	.338	26.11					38	34	28
11 plants.....	1919	115	75.2	.556	41.81		10			22	55	13
15 plants.....	1920	150	67.8	.686	47.02		35		12	11	35	7
<b>Charging-machine operators:</b>												
17 plants.....	1910	73	76.8	.294	22.52				8	34	27	30
	1911	72	74.7	.287	21.37				25	25	33	17
	1912	72	75.8	.312	23.67				14	36	25	25
	1913	76	78.0	.335	26.12				13	16	32	39
22 plants.....	1914	86	77.4	.307	23.66				5	33	33	30
	1915	86	77.7	.330	25.55				5	30	33	33
13 plants.....	1917	64	77.1	.467	35.91					44	28	28
17 plants.....	1919	98	75.3	.753	56.70		10			24	48	17
19 plants.....	1920	137	67.2	.895	59.83		38		4	14	42	2
<b>Door operators:</b>												
15 plants.....	1910	165	75.9	.101	7.72				12	38	22	28
	1911	160	75.5	.100	7.53				21	24	31	24
	1912	157	76.0	.102	7.72				20	28	21	31
	1913	160	76.9	.112	8.68				20	19	28	34
19 plants.....	1914	170	77.0	.109	8.35				14	24	32	31
	1915	176	76.5	.111	8.43				14	25	38	24
15 plants.....	1919	165	73.8	.321	23.69		14			41	24	22
15 plants.....	1920	264	66.1	.402	26.27		45		10	13	28	4
<b>Melters' helpers, first:</b>												
17 plants.....	1910	341	77.7	.416	32.27				7	22	40	31
	1911	338	75.3	.400	30.12				17	21	49	19
	1912	347	76.5	.417	31.89				2	24	55	19
	1913	364	77.1	.440	33.89				3	16	55	26
22 plants.....	1914	404	75.6	.420	31.60				9	14	62	15
	1915	422	75.5	.437	32.80		10			13	63	14
13 plants.....	1917	273	76.3	.586	44.36					54	13	33
17 plants.....	1919	402	74.9	.966	72.35		11			34	33	22
19 plants.....	1920	620	69.4	1.089	75.09		33			6	60	2
<b>Melters' helpers, second:</b>												
17 plants.....	1910	339	76.6	.272	20.87				8	38	22	31
	1911	335	74.5	.263	19.62				35	21	21	23
	1912	347	75.8	.274	20.77				20	37	14	29
	1913	360	76.7	.292	22.36				19	29	14	37
22 plants.....	1914	402	74.7	.278	20.70			9		15	25	22
	1915	420	74.5	.291	21.57		10		14	24	31	21
13 plants.....	1917	272	75.9	.397	29.93					54	20	26
17 plants.....	1919	410	74.4	.693	51.56		12			33	39	17
19 plants.....	1920	721	69.1	.781	53.80		34		3	7	55	1

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

<sup>2</sup> Including less than 1 per cent whose full-time hours per week were 89.

TABLE A (3).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—*OPEN-HEARTH FURNACES*—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	
<b>Melters' helpers, third:</b>													
17 plants.....	1910	393	76.5	\$0.196	\$14.97				8	36	30	27	
	1911	394	73.9	.185	13.67				20	37	36	8	
	1912	414	75.4	.199	15.01				7	30	46	16	
16 plants.....	1913	458	77.9	.214	16.64				1	25	38	36	
21 plants.....	1914	442	77.4	.207	15.98					39	30	31	
	1915	454	77.7	.212	16.44					38	29	33	
11 plants.....	1917	268	77.5	.328	25.26					44	20	36	
17 plants.....	1919	602	76.6	.532	40.75		6			30	36	28	
19 plants.....	1920	970	67.8	.645	43.64		38		2	12	46	1	
<b>Stopper setters:</b>													
10 plants.....	1910	30	76.2	.313	23.63					37	57	7	
	1911	29	73.5	.313	23.11					28	21	72	
	1912	29	75.8	.329	24.92					21	72	7	
9 plants.....	1913	30	77.3	.325	25.10					13	80	7	
10 plants.....	1914	32	75.0	.287	21.46					63	25	13	
	1915	32	74.6	.296	21.96					25	38	25	13
8 plants.....	1917	36	75.3	.414	30.90					67	11	22	
10 plants.....	1919	45	73.8	.684	50.48		16			36	27	22	
12 plants.....	1920	71	68.4	.778	53.17		34			13	42	11	
<b>Steel pourers:</b>													
14 plants.....	1910	47	75.3	.308	23.05				11	49	17	23	
	1911	44	73.7	.304	22.32					23	27	41	9
15 plants.....	1912	50	76.5	.321	24.57				20	24	28	28	
16 plants.....	1913	56	77.0	.370	28.46				4	25	46	25	
21 plants.....	1914	70	76.4	.339	25.94				11	37	29	23	
	1915	70	75.7	.356	26.99				11	43	29	17	
12 plants.....	1917	48	76.0	.466	35.60					54	25	21	
17 plants.....	1919	69	73.2	.796	58.27		16			32	42	10	
18 plants.....	1920	112	68.0	.929	62.31		36			13	50	2	
<b>Mold cappers:</b>													
8 plants.....	1910	40	76.5	.217	16.49					55	15	30	
	1911	38	74.0	.215	15.78				21	26	42	11	
9 plants.....	1912	52	79.3	.228	18.00				15	8	27	50	
12 plants.....	1913	68	78.6	.255	20.04				6	12	41	41	
13 plants.....	1914	70	77.7	.232	17.96				11	26	31	31	
	1915	72	76.1	.254	19.24				11	42	28	19	
6 plants.....	1917	38	76.7	.364	28.16					58	5	37	
11 plants.....	1919	97	74.3	.588	43.69		11			25	60	4	
7 plants.....	1920	73	70.0	.635	44.65		23			4	73		
<b>Ladle cranimen:</b>													
16 plants.....	1910	90	77.2	.294	22.76				9	28	31	32	
	1911	86	74.6	.287	21.32				24	34	23	19	
	1912	90	76.2	.317	24.22				10	32	31	27	
17 plants.....	1913	90	77.2	.341	26.34				9	18	44	29	
22 plants.....	1914	104	76.5	.305	23.34				6	24	47	23	
	1915	107	76.0	.327	24.92				6	29	47	19	
13 plants.....	1917	82	76.4	.466	35.64					51	24	24	
17 plants.....	1919	119	75.6	.733	55.41		6			30	51	13	
19 plants.....	1920	146	68.3	.837	56.63		36		3	17	42	2	
<b>Ingot strippers:</b>													
15 plants.....	1910	46	73.7	.275	19.88		7			22	30	17	24
	1911	51	71.9	.256	18.06				6	8	63	20	4
	1912	55	72.9	.278	19.99				5		69	18	7
	1913	61	74.5	.296	21.85				5		46	30	20
18 plants.....	1914	47	75.8	.292	21.72				6		30	47	17
	1915	48	76.3	.303	22.76				6		29	42	23
13 plants.....	1917	39	70.9	.449	30.85		23			36	16	26	
15 plants.....	1919	48	69.9	.749	52.36		33			17	46	4	
16 plants.....	1920	71	69.3	.790	54.21		1	34		11	32	21	
<b>Engineers, locomotive:</b>													
14 plants.....	1910	107	77.3	.244	18.92					6	23	45	26
15 plants.....	1911	114	74.3	.247	18.32					38	19	35	8
	1912	117	75.8	.262	19.86					14	10	67	9
16 plants.....	1913	119	76.6	.295	22.55					12	19	52	17
21 plants.....	1914	137	76.5	.281	21.51					10	20	48	21
	1915	138	77.1	.279	21.57					6	21	49	24
17 plants.....	1919	166	75.6	.666	50.35		4			40	40	16	
18 plants.....	1920	214	69.6	.732	50.83		27		22	11	37	3	

TABLE A (3).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—*OPEN-HEARTH FURNACES*—Concluded.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Switchmen:</b>												
14 plants.....	1910	109	77.3	\$0.185	\$14.29				6	22	44	28
15 plants.....	1911	117	74.4	.186	13.85				38	19	34	9
	1912	118	75.2	.199	14.92				15	19	56	10
16 plants.....	1913	127	76.3	.230	17.55				13	23	49	16
21 plants.....	1914	149	76.5	.226	17.99				11	23	44	22
	1915	150	77.0	.225	17.33				5	25	45	25
17 plants.....	1919	194	76.2	.555	42.29		2			40	39	19
18 plants.....	1920	297	69.3	.617	42.84		27		19	11	41	2
<b>Laborers:</b>												
17 plants.....	1910	1,038	74.5	.157	11.69		4	6	20	13	35	22
	1911	806	73.2	.161	11.78		4	7	24	15	37	14
	1912	948	74.7	.164	12.21		6	5	13	17	39	20
	1913	1,109	76.2	.187	14.24		4	4	6	25	31	30
22 plants.....	1914	805	69.5	.185	12.84	( <sup>1</sup> )	11	27	14	4	34	9
	1915	723	70.8	.186	13.19		8	21	22	6	30	13
13 plants.....	1917	653	74.4	.292	21.73				22	20	38	20
17 plants.....	1919	1,266	76.2	.468	35.66		3	6	7	7	56	20
18 plants.....	1920	1,393	68.5	.525	36.21		27	2	22	3	43	2

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

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings are presented in Table B (3), for each of the principal productive occupations in the open-hearth furnace department for the years 1910 to 1920. These are simply percentages computed from the averages of Table A (3), with the average for 1913 as the base, or 100 per cent, as an aid in making comparison of the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A.

For index numbers for this department as a whole (all selected occupations combined), see page 3.

TABLE B (3).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—*OPEN-HEARTH FURNACES*.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Stockers:</b>			<b>Stock cranemen:</b>				
1910.....	99	90	89	1910.....	100	94	93
1911.....	96	87	83	1911.....	96	87	83
1912.....	99	89	88	1912.....	100	96	96
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	104	102	1914.....	99	100	99
1915.....	99	101	101	1915.....	98	106	105
1917.....	99	150	150	1917.....	98	142	139
1919.....	97	257	250	1919.....	95	234	222
1920.....	91	291	263	1920.....	86	288	249

TABLE B (3).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—OPEN-HEARTH FURNACES—Concluded.

Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.
<b>Charging-machine operators:</b>				<b>Steel pourers—Concid.</b>			
1910.....	96	88	86	1914.....	99	92	91
1911.....	96	86	82	1915.....	98	96	95
1912.....	97	93	91	1917.....	99	126	125
1913.....	100	100	100	1919.....	95	215	205
1914.....	99	92	91	1920.....	88	251	219
1915.....	100	99	98	<b>Mold cappers:</b>			
1917.....	99	139	137	1910.....	97	85	82
1919.....	97	225	217	1911.....	94	84	79
1920.....	86	267	229	1912.....	101	89	90
<b>Door operators:</b>				1913.....	100	100	100
1910.....	99	99	89	1914.....	99	91	90
1911.....	98	89	87	1915.....	97	109	96
1912.....	99	91	89	1917.....	98	143	141
1913.....	100	109	109	1919.....	95	231	218
1914.....	100	97	96	1920.....	89	249	223
1915.....	99	99	97	<b>Ladle cranimen:</b>			
1919.....	96	287	273	1910.....	100	86	86
1920.....	86	359	303	1911.....	97	84	81
<b>Melters helpers, first:</b>				1912.....	99	93	92
1910.....	101	95	95	1913.....	100	100	100
1911.....	98	91	89	1914.....	99	89	89
1912.....	99	95	94	1915.....	98	96	95
1913.....	100	100	100	1917.....	99	137	135
1914.....	98	95	93	1919.....	98	215	210
1915.....	98	99	97	1920.....	88	245	215
1917.....	99	133	131	<b>Ingot strippers:</b>			
1919.....	97	220	213	1910.....	99	93	91
1920.....	90	248	222	1911.....	97	86	83
<b>Melters helpers, second:</b>				1912.....	98	94	92
1910.....	100	98	93	1913.....	100	100	100
1911.....	97	90	88	1914.....	102	99	99
1912.....	98	94	93	1915.....	102	102	104
1913.....	100	100	100	1917.....	95	152	144
1914.....	97	95	93	1919.....	94	253	240
1915.....	97	100	97	1920.....	93	267	248
1917.....	99	136	134	<b>Engineers, locomotive:</b>			
1919.....	97	287	281	1910.....	101	83	84
1920.....	90	267	241	1911.....	97	84	81
<b>Melters helpers, third:</b>				1912.....	99	89	88
1910.....	98	92	89	1913.....	100	100	100
1911.....	95	86	82	1914.....	100	95	95
1912.....	97	93	90	1915.....	101	95	96
1913.....	100	100	100	1919.....	99	226	223
1914.....	99	97	96	1920.....	91	248	225
1915.....	100	99	99	<b>Switchmen:</b>			
1917.....	99	153	152	1910.....	101	80	81
1919.....	98	249	245	1911.....	98	81	79
1920.....	87	301	262	1912.....	99	87	85
<b>Stopper setters:</b>				1913.....	100	100	100
1910.....	99	96	94	1914.....	100	98	99
1911.....	95	96	92	1915.....	101	98	99
1912.....	98	101	99	1919.....	100	241	241
1913.....	100	100	100	1920.....	91	268	244
1914.....	97	88	86	<b>Laborers:</b>			
1915.....	97	91	88	1910.....	98	84	82
1917.....	97	127	123	1911.....	96	86	83
1919.....	95	210	201	1912.....	98	88	86
1920.....	88	239	212	1913.....	100	100	100
<b>Steel pourers:</b>				1914.....	91	99	90
1910.....	98	83	81	1915.....	93	99	93
1911.....	96	82	78	1917.....	98	156	153
1912.....	99	87	86	1919.....	100	250	250
1913.....	100	100	100	1920.....	90	281	254

The customary working time per week of employees in the open-hearth furnace department for the years 1910 to 1920 has been classified and the number and percentages of employees under each classification are shown in Table C (3).

The number of employees reported in 1920 includes some duplications, or repeated employees, as stated in the general explanation of

Table C (p. 14). In the 4,968 employees reported in selected occupations for all districts combined there were 89 duplications, leaving 4,879 actually engaged, and the total of 8,170 employees shown for all occupations represents 8,007 individuals.

The gross number of employees reported, together with the net number of actual employees for selected occupations and all occupations in each district and all districts combined, are shown in Table 10.

TABLE 10.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS, 1920—OPEN-HEARTH FURNACES.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Eastern.....	451	19	432	955	25	930
Pittsburgh.....	1,994	50	1,944	3,190	101	3,089
Great Lakes and Middle West.....	1,828	20	1,808	3,067	34	3,033
Southern.....	695	None.	695	958	3	955
Total.....	4,968	89	4,879	8,170	163	8,007

The working time of employees in the open-hearth department shows a wide variation of days or turns per week—5 days, 6 days, and 7 days, with the many combinations thereof. However, nearly all of the employees were found working 6 days, 7 days, or 6 days and 7 days alternately, with only a few scattering employees found in the other classifications. The heading, "6 days and 7 days alternately," indicates that the plants are running 7 days and 6 nights or 6 days and 7 nights each week, being shut down for one day or one night each week, and that the employees reported under this heading work 7 turns one week and 6 turns the next.

A study of the table will show very little change in the working time of employees in selected occupations between 1919 and 1920, but when 1920 is compared with other years the changes are somewhat more marked. Six-day work decreased from 34 per cent in 1910 to 28 per cent in 1913, but rose again to 33 per cent in 1915. During the period 1915 to 1919 it decreased to 26 per cent and the decrease was continued in 1920 to 25 per cent. The percentage of those working 6 days and 7 days alternately was higher in 1920 than in any other year except 1919, when 46 per cent worked these turns as compared with 42 per cent in 1920. The other years ranged between 28 per cent in 1910 and 36 per cent in 1912. The year 1911 marks the lowest point in 7-day work for any year for which data are presented and 1913 the highest. In 1911, 18 per cent of the employees in selected occupations worked 7 days, and in 1913 34 per cent worked that number of turns. In the other years the percentage ranged between 28 in 1919 and 32 in 1910.

In all occupations combined, in 1920 as compared with 1915, an increase in those working 6 days and 7 days alternately, with a corresponding decrease in 6-day work, is noted, the actual percentages being 27 and 39, respectively, for 1915 and 37 and 27 for 1920. A slight decrease in 7-day work is also noticed, from 34 per cent in 1915 to 33 per cent in 1920. Three-shift work was more common in this department in 1920 than in other years, as shown partially by the increase in the number of employees working 6 days, 7 days, and 7 days in rotation.

TABLE C (3).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—OPEN-HEARTH FURNACES.

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—							Per cent of employees whose customary working time per week was—						
				5 days.	5 days and 6 days alternately.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days.	5 days.	5 days and 6 days alternately.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.
EASTERN.																	
Selected occupations.....	1910	4	583	207	252	16	24			84	36	43	3	4			14
	1911	4	477	83	282		26			86	17	59		6			18
	1912	4	471	55	296		26			94	12	63		6			20
	1913	4	490	62	301		28			99	13	61		6			20
	1914	6	491		248		154			89		51		31			18
	1915	6	516		263		149			104		51		29			20
	1917	2	299	100			88			111	33			29			37
	1919	3	326		213		99			14		65		30			4
	1920	4	451	1	288		127		18	17	( <sup>3</sup> )	64		28		4	4
All occupations.....	1914	6	1,064		635		215			214		60		20			20
	1915	6	1,116	2	655		225	3		229	( <sup>3</sup> )	59		20	( <sup>3</sup> )		21
	1920	4	955	12	630	13	202		18	280	( <sup>3</sup> )	66	1	21		2	8
PITTSBURGH.																	
Selected occupations.....	1910	5	1,491		343		837			311		23		56			21
	1911	5	1,432	32	558	32	636	3		171	2	39		44	( <sup>3</sup> )		12
	1912	5	1,452		225		873	<sup>8</sup> 20	3	331		16		60	1	( <sup>3</sup> )	23
	1913	5	1,571		121		879	<sup>6</sup> 60	7 50	461		8		56	4	3	29
	1914	6	1,532		375		697	10		450		24		45	1		29
	1915	6	1,409		316		668			425		22		47			30
	1917	3	588		259		192	<sup>8</sup> 9		128		44		33	2		22
	1919	5	1,796		389		<sup>9</sup> 1,360			<sup>2</sup> 47		22		76			3
	1920	6	1,994		394		1,409		127	64		20		71		6	3
All occupations.....	1914	6	2,149		468		852	10		<sup>10</sup> 819		22		40	( <sup>3</sup> )		38
	1915	6	2,013		<sup>11</sup> 404		814			<sup>12</sup> 795		20		40			39
	1920	6	3,190		670		2,049		227	<sup>13</sup> 244		21		64		7	8

GREAT LAKES AND MIDDLE WEST.												
Selected occupations.....	1910	6	975	340	63	572	35	7	59			
	1911	6	941	461	263	217	49	28	23			
	1912	6	1,073	477	182	414	45	17	39			
	1913	6	1,171	14 422	168	566	36	14	48			
	1914	7	1,069	394	274	401	37	1	38			
	1915	7	1,122	405	304	413	36	26	37			
	1917	5	953	695	304	258	73	27	27			
	1919	7	1,796	526	322	948	29	18	53			
	1920	6	1,828	50	573	16 1,205	3	31	66			
All occupations.....	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	16 2,060	7	26	67			
SOUTHERN.												
Selected occupations.....	1910	2	292	188	104	64	36					
	1911	2	223	100	58	65	26	29				
	1912	2	250	86	70	88	34	28	35			
	1913	2	266	126	62	72	47	23	27			
	1914	3	333	163	34	130	49	10	39			
	1915	3	311	126	50	135	41	16	43			
	1917	3	239	171	72	68	28	72	28			
	1919	2	354	166	1	188	47	47	53			
	1920	3	695	486	1	208	70	(3)	36			
All occupations.....	1914	3	570	269	38	9	254	47	7	45		
	1915	3	539	226	58	3	252	42	11	47		
	1920	3	958	655	1	302	68	(4)	32	32		

<sup>1</sup> Including 15 employees who worked 7 days every fourth week and 15 employees who worked 7 days every seventh week.

<sup>2</sup> Including 4 employees who were relieved 1 turn every fourth week.

<sup>3</sup> Less than 1 per cent.

<sup>4</sup> Including 10 employees who worked 7 days every sixth week.

<sup>5</sup> Including 14 employees who worked 7 days every sixth week.

<sup>6</sup> Worked 7 days every fourth week.

<sup>7</sup> Including 47 employees who worked 6 days every fourth week.

<sup>8</sup> Worked 5 days, 7 days, and 7 days in rotation.

<sup>9</sup> Including 67 employees who worked 1 turn extra every 5½ weeks.

<sup>10</sup> Including 121 employees who worked 6 days for 3 months of the year, and 16 employees who worked 6 days for 7 weeks and 7 days the eighth week of each 8-week period during 3 months of the year.

<sup>11</sup> Including 10 employees who worked 6 days for 7 weeks and 7 days for 3 weeks during each 10-week period.

<sup>12</sup> Including 131 employees who worked 6 days for 3 months during the year and 16 employees who worked 6 days for 7 weeks and 7 days the eighth week of each 8-week period during 3 months of the year.

<sup>13</sup> Including 21 employees who were relieved 1 turn every fourth week.

<sup>14</sup> Including 6 employees who worked 7 days every sixth week.

<sup>15</sup> Including 62 employees who were relieved 1 turn every fourth week.

<sup>16</sup> Including 63 employees who were relieved 1 turn every fourth week.

TABLE C (3).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—OPEN-HEARTH FURNACES—Concluded.

District	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—							Per cent of employees whose customary working time per week was—							
				5 days.	5 days and 6 days alternately.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days.	5 days.	5 days and 6 days alternately.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.
<b>TOTAL.</b>																		
Selected occupations.....	1910	17	3,341	.....	207	1,123	16	924	.....	.....	1,071	.....	6	34	1	28	.....	32
	1911	17	3,073	.....	115	1,401	32	983	.....	3	539	.....	4	46	1	32	( <sup>3</sup> )	18
	1912	17	3,246	.....	55	1,084	.....	1,151	.....	6 20	927	.....	2	33	.....	36	1	( <sup>3</sup> )
	1913	17	3,498	.....	62	1,970	.....	1,137	.....	17 75	7 56	.....	2	28	.....	33	2	( <sup>3</sup> )
	1914	22	3,425	.....	.....	1,180	.....	1,159	.....	10	6	.....	34	34	.....	34	( <sup>3</sup> )	( <sup>3</sup> )
	1915	22	3,358	.....	.....	1,110	.....	1,171	.....	.....	.....	.....	33	.....	.....	35	.....	32
	1917	13	2,079	.....	100	954	.....	451	.....	9	565	.....	5	46	.....	22	( <sup>3</sup> )	27
	1919	17	4,272	.....	.....	1,128	.....	1,947	.....	.....	1,197	.....	.....	26	.....	46	.....	28
	1920	19	4,968	.....	1	1,218	.....	2,110	.....	.....	145	.....	( <sup>3</sup> )	25	.....	42	.....	30
All occupations.....	1914	22	5,415	.....	.....	4 2,123	.....	9 1,416	.....	10	9	.....	10 1,857	.....	.....	26	( <sup>3</sup> )	( <sup>3</sup> )
	1915	22	5,423	2	2	19 2,131	.....	1,433	.....	3	3	.....	12 1,829	( <sup>3</sup> )	( <sup>3</sup> )	39	( <sup>3</sup> )	( <sup>3</sup> )
	1920	19	8,170	.....	12	12,189	13	3,045	.....	.....	245	.....	( <sup>3</sup> )	( <sup>3</sup> )	( <sup>3</sup> )	37	.....	34

<sup>1</sup> Including 15 employees who worked 7 days every fourth week, and 15 employees who worked 7 days every seventh week.

<sup>3</sup> Less than 1 per cent.

<sup>4</sup> Including 10 employees who worked 7 days every sixth week.

<sup>6</sup> Worked 7 days every fourth week.

<sup>7</sup> Including 47 employees who worked 6 days every fourth week.

<sup>8</sup> Worked 5 days, 7 days, and 7 days in rotation.

<sup>9</sup> Including 67 employees who worked 1 turn extra every 5½ weeks.

<sup>10</sup> Including 121 employees who worked 6 days 3 months of the year, and 16 employees who worked 6 days for 7 weeks and 7 days the eighth week of each 8-week period during 3 months of the year.

<sup>12</sup> Including 131 employees who worked 6 days for 3 months during the year and 16 employees who worked 6 days for 7 weeks and 7 days the eighth week of each 8-week period during 3 months of the year.

<sup>14</sup> Including 6 employees who worked 7 days every sixth week.

<sup>17</sup> Including 60 employees who worked 7 days every fourth week.

<sup>18</sup> Including 81 employees who were relieved 1 turn every fourth week.

<sup>19</sup> Including 14 employees who worked 7 days every sixth week, and 10 employees who worked 6 days for 7 weeks and 7 days for 3 weeks during each 10-week period.

<sup>20</sup> Including 88 employees who were relieved 1 turn every fourth week.

Table D (3) presents the most significant facts relative to customary working time, actual earnings, and earnings per hour of employees in the open-hearth furnace department in 1920, by occupations and districts. In addition, for each occupation are given the number of positions and the number of employees actually working during the pay-roll period, and also the time and earnings of the same employees during the same period at occupations other than the occupation being considered.

Referring to the occupation of charging-machine operators, by way of illustration: In 19 plants the 110 positions were filled by 137 men during the pay-roll period studied. The average customary full time of the men working in the positions was 6.7 turns per week, 10.2 hours per turn, and 67.2 hours per week. In the distribution of the customary working time of the 137 actual employees, 57, the largest number in any one group, were found under the heading "Over 72 and under 84." The next highest number, 52, were under the classification "Over 48 and under 60," which indicates that a considerable number of these employees were on a 3-shift basis. The average hourly earnings of these charging-machine operators ranged from 64.4 cents in the Eastern district to \$1.008 in the Great Lakes and Middle West district, with an average of 89.5 cents for all districts combined. The range for average full-time weekly earnings was from \$47.85 in the Eastern district to \$63.65 in the Pittsburgh district, with an average for all districts of \$59.83.

Owing to the fact that a large number of the employees worked in more than one occupation during the pay-roll period, and in order to give the complete hours and earnings for such employees, separate figures are shown which cover all occupations at which they worked. While 137 men working as charging-machine operators averaged 115 hours per pay-roll period, they also averaged 20.1 hours at other work, making a total of 135.1 average hours per pay period in "Specified [charging-machine operators] and other occupations." During the 115 hours they worked as charging-machine operators they earned an average of \$103.20, or 89.5 cents per hour. When the work of these men in all occupations is considered they earned \$116.81—that is, \$13.61 was earned in some occupation other than charging-machine operators.

The average earnings per hour in the principal productive occupations in this department ranged from 40.2 cents for door operators to \$1.089 for melters' first helpers, and the average actual hours worked per pay-roll period ranged from 77.3 for mold cappers to 127.8 for locomotive engineers. Employees who worked as mold cappers averaged the greatest number of hours at other occupations (48.2), and also received the largest earnings for work in addition to their regular occupation (\$28.60).



<b>Melters' helpers, first:</b>																						
Eastern	4	50	6.5	11.9	77.2	69					69		62.69	115.3	93.61	.812	132.9	104.73	.788			
Pittsburgh	6	184	6.6	11.3	74.4	249				27	222		81.10	108.3	118.04	1.090	138.3	141.79	1.025			
G. L. and M. W.	6	171	6.9	9.1	62.9	229				149	80		74.10	104.6	123.17	1.178	125.0	139.95	1.120			
Southern	3	46	6.7	9.9	65.2	73				26	37		69.44	94.4	100.55	1.065	136.3	129.75	.952			
<b>Total</b>	<b>19</b>	<b>451</b>	<b>6.7</b>	<b>10.4</b>	<b>69.4</b>	<b>620</b>				<b>202</b>	<b>37</b>	<b>371</b>	<b>10</b>	<b>75.09</b>	<b>106.0</b>	<b>115.16</b>	<b>1.089</b>	<b>132.5</b>	<b>135.57</b>	<b>1.025</b>		
<b>Melters' helpers, second:</b>																						
Eastern	4	50	6.2	11.9	74.5	70					21		49	47.83	107.8	69.23	.642	132.6	84.73	.639		
Pittsburgh	6	184	6.6	11.2	74.4	270				34	260		59.59	88.9	71.21	.801	129.0	99.47	.771			
G. L. and M. W.	6	171	6.9	9.2	62.9	274				181	89		51.77	88.4	72.78	.823	124.7	99.29	.796			
Southern	3	45	6.6	9.9	64.8	87				28	49		45.30	75.5	52.78	.699	134.0	86.71	.647			
<b>Total</b>	<b>19</b>	<b>450</b>	<b>6.7</b>	<b>10.4</b>	<b>69.1</b>	<b>721</b>				<b>243</b>	<b>21</b>	<b>49</b>	<b>398</b>	<b>10</b>	<b>53.80</b>	<b>88.9</b>	<b>69.38</b>	<b>.781</b>	<b>128.4</b>	<b>96.43</b>	<b>.753</b>	
<b>Melters' helpers, third:</b>																						
Eastern	4	60	6.1	11.9	73.1	74					16	42	16	39.77	121.0	65.80	.544	133.9	74.31	.555		
Pittsburgh	6	186	6.6	11.3	74.0	321				38			283	50.10	83.5	56.55	.677	120.7	80.41	.666		
G. L. and M. W.	6	287	6.9	9.1	62.1	472				321			151	41.42	82.7	55.24	.667	117.1	17.90	.665		
Southern	3	56	6.3	11.3	70.8	103				10		8	77	36.46	99.3	51.15	.515	140.6	71.40	.508		
<b>Total</b>	<b>19</b>	<b>589</b>	<b>6.6</b>	<b>10.3</b>	<b>67.8</b>	<b>970</b>				<b>369</b>	<b>24</b>	<b>119</b>	<b>450</b>	<b>8</b>	<b>43.64</b>	<b>87.7</b>	<b>56.05</b>	<b>.645</b>	<b>122.1</b>	<b>77.77</b>	<b>.640</b>	
<b>Stopper setters:</b>																						
Pittsburgh	4	18	6.4	11.8	75.8	28						5	23	60.03	93.9	74.38	.792	124.6	94.23	.756		
G. L. and M. W.	5	17	6.9	8.5	58.6	27							7	46.59	85.2	67.76	.795	128.8	97.15	.754		
Southern	3	9	6.8	10.7	72.0	16						4		52.27	90.8	65.88	.726	142.6	94.84	.665		
<b>Total</b>	<b>12</b>	<b>44</b>	<b>6.7</b>	<b>10.3</b>	<b>68.4</b>	<b>71</b>				<b>24</b>		<b>9</b>	<b>30</b>	<b>8</b>	<b>53.17</b>	<b>89.9</b>	<b>69.95</b>	<b>.778</b>	<b>130.3</b>	<b>95.48</b>	<b>.735</b>	
<b>Steel pourers:</b>																						
Eastern	3	6	6.2	12.0	74.0	6						4	2	53.06	161.1	115.49	.717	161.1	115.51	.717		
Pittsburgh	6	30	6.4	11.2	71.4	41				8		3	30	62.40	108.3	94.64	.874	139.6	116.65	.836		
G. L. and M. W.	6	31	6.8	9.3	63.1	53				29		24		62.28	84.2	83.11	.987	133.1	119.90	.901		
Southern	3	9	6.6	10.7	69.3	12				3		7	2	66.74	120.0	115.56	.963	156.8	139.43	.889		
<b>Total</b>	<b>18</b>	<b>76</b>	<b>6.6</b>	<b>10.4</b>	<b>68.0</b>	<b>112</b>				<b>40</b>		<b>14</b>	<b>56</b>	<b>2</b>	<b>62.31</b>	<b>101.0</b>	<b>92.54</b>	<b>.929</b>	<b>139.5</b>	<b>120.57</b>	<b>.866</b>	
<b>Mold cappers:</b>																						
Pittsburgh	5	28	6.3	12.0	75.5	56						3	53	45.90	76.3	46.42	.608	126.1	74.86	.594		
G. L. and M. W.	2	11	7.0	8.0	56.0	17								40.54	80.8	58.51	.724	123.6	87.62	.709		
<b>Total</b>	<b>7</b>	<b>39</b>	<b>6.5</b>	<b>10.8</b>	<b>70.0</b>	<b>73</b>				<b>17</b>		<b>3</b>	<b>53</b>	<b>44.65</b>	<b>77.3</b>	<b>49.23</b>	<b>.635</b>	<b>125.5</b>	<b>77.83</b>	<b>.621</b>		
<b>Ladle cranimen:</b>																						
Eastern	4	18	6.1	12.0	73.1	18						4	10	47.66	159.8	104.19	.652	159.8	104.19	.652		
Pittsburgh	6	48	6.6	11.0	71.8	56				11		4	41	56.72	126.8	100.12	.790	143.5	110.76	.772		
G. L. and M. W.	6	43	6.8	9.2	62.7	52				36			16	59.44	115.8	109.80	.948	133.2	123.03	.924		
Southern	3	16	6.5	10.5	67.5	20				6		11	3	57.11	126.4	106.89	.846	153.6	126.37	.823		
<b>Total</b>	<b>19</b>	<b>125</b>	<b>6.6</b>	<b>10.5</b>	<b>68.3</b>	<b>146</b>				<b>53</b>		<b>4</b>	<b>25</b>	<b>61</b>	<b>3</b>	<b>56.63</b>	<b>126.9</b>	<b>105.00</b>	<b>.837</b>	<b>143.2</b>	<b>116.46</b>	<b>.818</b>



Melters' first helpers and ladle cranemen were the occupations selected in the open-hearth furnace department for which to show classified earnings per hour.

Table E (3) shows for each of these occupations, by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings per hour fell in each group of classified rates per hour.

The average earnings per hour of melters' first helpers were between 40 cents and \$1.625. Sixty-three per cent, however, of the 620 employees earned between 90 cents and \$1.375 per hour. The largest number in any one group earned from \$1 to \$1.125 per hour and was 18 per cent of the total number. This group also covers the average, which was \$1.089.

Ladle cranemen in all districts earned an average of 83.7 cents per hour and the range in classification, which was not so wide as for melters' first helpers, was from 40 cents to \$1.125 per hour. Seventy per cent of the 146 employees earned from 70 cents to \$1 per hour. The largest number in any one group was found in the classification "90 cents and under \$1" and was 28 per cent of the total.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (3).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—OPEN-HEARTH FURNACES.

[For explanation of this table see p. 15.]

Occupation and districts.	Number of employees.	Average earnings per hour.	Number of employees whose earnings per hour were—										
			40 and under 45 cts.	50 and under 60 cts.	60 and under 70 cts.	70 and under 80 cts.	80 and under 90 cts.	90 cts. and under \$1.	\$1 and under \$1.125.	\$1.125 and under \$1.25.	\$1.25 and under \$1.375.	\$1.375 and under \$1.50.	\$1.50 and under \$1.625.
<b>MELTERS' HELPERS, FIRST.</b>													
Eastern.....	69	\$0.812	.....	6	5	19	19	15	1	1	1	.....	2
Pittsburgh.....	249	1.090	.....	.....	19	18	20	47	50	44	46	.....	3
Great Lakes and Middle West.....	229	1.178	.....	1	5	23	14	14	37	40	44	.....	9
Southern.....	73	1.065	2	15	2	1	1	15	21	8	8	.....	.....
Total.....	620	1.089	2	22	31	61	54	91	109	93	99	44	14
<b>LADLE CRANEMEN.</b>													
Eastern.....	18	.652	1	5	8	4	.....	.....	.....	.....	.....	.....	.....
Pittsburgh.....	56	.790	.....	.....	6	33	6	10	1	.....	.....	.....	.....
Great Lakes and Middle West.....	52	.948	.....	.....	.....	.....	11	21	20	.....	.....	.....	.....
Southern.....	20	.846	.....	1	2	3	4	10	.....	.....	.....	.....	.....
Total.....	146	.837	1	6	16	40	21	41	21	.....	.....	.....	.....

The customary turns per week, hours per turn, and full-time hours per week in the open-hearth furnace department are shown in detail by districts and all districts combined, for the year 1920, in Table F (3).

This table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout

the pay-roll period, although they may have been engaged in more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the open-hearth furnace department was obtained from 19 plants and covers 8,007 actual employees—7,672 in part 1 of the table and 335 in part 2. However, the sum of the figures in this table would show 8,356 persons, due to 349 duplications, or repeated employees, appearing in part 2.

The process used in open-hearth furnaces is not necessarily a continuous operation, and a majority of the plants are producing steel 6 days per week only. Sunday work, however, is quite common, owing to the fact that practically all of the 6-day plants close down on the completion of the Saturday day turn and start up again at the beginning of the night turn on Sunday. This brings out the night crew on Sunday night and also causes a considerable number of employees to work a gas or light-up day turn on Sunday only. Therefore, it should be remembered that a large part of the 5,271 employees reported as working every Sunday were not 7-day workers. The extent to which Sunday work in this department is necessary is shown by the fact that 7,082 of the employees included in part 1 of Table F (3) and 586 (including duplications) of those in part 2, or a total of 7,668 were Sunday workers. Of this number 69 per cent worked every Sunday, 24 per cent worked every other Sunday, and the remaining 7 per cent were relieved one Sunday out of every three, or some such period. A total of 801 employees worked fewer hours on Saturday than on the regular Monday to Friday shifts and 378 worked a smaller number of hours on Sunday. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turn, the night turns usually being of equal length.

Of the 7,672 employees reported as working at one combination of hours and turns, 88 per cent alternated weekly from day to night work, 11 per cent worked days only, while the remaining 1 per cent worked nights only. Of the 6,758 employees alternating from day to night work, 41 per cent worked 7 days and 6 nights alternately, 38 per cent worked 7 turns, either day or night, and 19 per cent worked 6 turns each week. The remaining 80 employees worked either 7 days and 5 nights alternately, 6 days and 5 nights alternately, or 6 days and 6 nights with one extra turn every fourth week. The 12-hour turn was most common among all of the alternating employees, except those working 7 turns per week. A total of 782, or 60 per cent of the 6-day workers, and 1,377, or 49 per cent of those working 7 days and 6 nights, alternately worked a 12-hour turn, while 1,970, or 77 per cent of the 7-day workers, worked on turns of 8 hours. The length of the day turn is not always the same as that of the night turn, as shown by the fact that 1,928, or 29 per cent of the total number of employees, worked turns of different lengths, 910 working 11 hours when on day turn and 13 hours when on night turn, and 841 working 10 hours on day turn and 14 hours on night turn.

Of the 868 persons who worked days only, 71 per cent worked 6 days per week, 25 per cent worked 7 days, and 4 per cent alternated from 6 days one week to 7 days the next. A short workday pre-



TABLE F (3).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—OPEN-HEARTH FURNACES—Contd.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.				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.

Employees who worked day turns—Concluded.

7	9½	9½	9½	66½									17	17
7	9½	9½	9	65									15	15
7	9	9	2	56									1	1
7	8	8	8	55							84			84
7	8	8	2½	50½							1			1
6	12	12	12	72						6			9	15
6	12	12		72						15	40		34	89
6	12	12	12	72						1				1
6	12	12	11	71						2				2
6	12	11	12	71						3				3
6	12	10		70						4				4
6	11½	11½		69							3			3
6	11	11	11	66						2			1	3
6	11	11		66					12	16	13			41
6	11	10		65							1			1
6	11	9		64							7			7
6	10	10	10	60						2			7	9
6	10	10		60					18	28	20		32	98
6	10	5		55						1				1
6	10	9½		59½						2				2
6	10	9	10	59							1			1
6	10	9		59							4			4
6	10		9	58					1					1
6	10	8		58						3				3
6	10	5½		55½					57					57
6	9½	9½		57							1		226	227
6	9	9		54									33	33
6	8	8		48							8			8
6	8	4		44						3				3

Employees who worked night turns.

					7	13	13	13	91	1				1
					7	12	12	12	84	5		1		6
					7	8	8	8	56			2		2
					6	14			14		1			1
					6	13	13	13	78		1			1
					6	13		13	78		2			3
					6	12	12	12	72	1				1
					6	12	12		72			3	1	5
					6	12		12	72				2	3
					6	11½	11½		69	3			6	6
					6	11		11	66	17				17

Employees who alternated weekly from day to night turns.<sup>1</sup>

7	12	12	12	84	7	12	12	12	84	29	134	53	105	321
7	12	12	12	84	7	12	12	12	84			63		63
7	12	12	12	84	6	12		12	72					

<sup>1</sup> In the Eastern district out of 200 employees who worked 7 days and 6 nights per week alternately, 12 per cent worked 1 day extra every third week; of the 32 employees who worked 7 days and 7 nights per week alternately, 19 per cent worked 6 days every third week; and out of 445 employees who worked 6 days and 6 nights per week alternately, 7 per cent worked 7 days every fourth week and 1 per cent worked 7 days every seventh week.

In the Pittsburgh district out of 1,721 employees who worked 7 days and 6 nights per week alternately, 4 employees worked one turn extra every fourth week.

In the Great Lakes and Middle West district out of 117 employees who worked 7 days and 7 nights per week alternately, 45 per cent worked 7 days and 6 nights per week alternately every fourth week.

TABLE F (3).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—*OPEN-HEARTH FURNACES*—Contd.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.					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.					

Employees who alternated weekly from day to night turns—Continued.

7	12	12	12	84	6	12	12	72											
6	12	12	12	72	7	12	12	84		15								1	16
7	12	12	12	84	6	12	12	72			1								1
6	12	12	12	72	7	12	12	84		175		133							634
7	12	12	12	84	6	12	12	72			1								1
7	12	8	12	80	7	12	12	84			48								48
7	12	8	12	80	6	12	12	72			23								23
7	12	8	8	76	6	12	12	72			3								3
7	11	11	11	77	7	13	13	91			223								223
7	11	11	11	77	6	13	13	78			2								1
7	11	11	11	77	7	12	12	84			1								2
7	11	11	11	77	7	11	11	77			2								2
7	11	11	10	76	6	13	13	78			4								4
7	11	11	11	77	6	13	13	71			1								1
7	11	9	12	76	6	13	13	78			4								4
7	11	9	9	73	6	13	13	78			2								2
7	11	8	11	74	6	13	13	78			254								254
7	11	8	11	74	6	13	13	78			6								6
7	11	8	11	74	6	13	12	77			2								2
7	10½	10½	10½	73½	7	13½	13½	94½		1									1
7	10½	11	10½	74	6	13½	13½	81		1									1
7	10½	10½	10½	73½	6	13½	13½	81			1								1
7	10	10	12	72	7	14	12	94		2									2
7	10	10	10	70	7	14	14	98			59								59
7	10	10	10	70	6	14	14	84			702								702
7	10	10	10	70	6	13	13	78			40								40
7	10	10	10	70	6	10	10	60			1								1
6	10	10	10	60	7	10	10	70											
7	10	10	10	70	6	10	10	60			10								10
7	10	8	10	68	6	14	14	84		11									11
7	10	10	12	72	5	12	12	60		13									13
7	9½	9½	9½	69½	6	13	13	78			21								21
7	8	8	8	56	7	8	8	56					64						64
7	8	8	8	56	7	8	8	56			1		1,753				152		1,906
7	8	8	8	56	7	8	8	56											
6	8	8	8	48	7	8	8	64			213								213
6	12	12	12	72	6	12	12	72											151
6	12	12	12	72	6	12	12	72											147
6	12	12	10	79	6	12	12	72			42								42
6	12	12	8	80	6	12	12	72			56								56
6	12	12	4	64	6	12	12	72			11								11
6	12	12	12	72	7	12	12	84			27		628						655
6	12	12	12	72	6	12	12	72			10								10
6	12	12	12	72	6	12	12	72											2
6	12	12	12	72	6	12	12	72		231		104	32						367
6	12	10	12	70	6	12	12	72			1								1
6	12	10	11	69	6	12	12	72			4								4
6	12	9	11	68	6	12	12	72			12								12
6	12	8	11	68	6	12	12	72			1								1
6	12	6	11	65	6	12	12	72			26								26
6	12	4	11	63	6	12	12	72			8								8
6	11½	11½	11	69	6	11½	11½	69					3						3
6	11	11	11	66	7	13	13	91			70								70
6	11	11	11	66	6	13	13	78			40								40
6	11	11	11	66	6	13	13	78			44								44
6	11	11	6	61	6	13	13	78			3								3
6	11	11	11	66	7	13	13	91			2								2
6	11	11	11	66	6	13	13	78			2								2
6	11	11	11	66	6	13	13	78		160									160
6	11	11	11	66	6	11	11	66											2
6	11	9	11	64	6	13	14	79			2								2

TABLE F (3).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—OPEN-HEARTH FURNACES—Contd.

## PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.									Number of employees who worked each specified combination of customary turns and hours, by districts.				
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.				
									East-ern.	Pitts-burgh.	Great Lakes and Middle West.	South-ern.	Total.

## Employees who alternated weekly from day to night turns—Concluded.

6	11	8	11	63	6	13	12	13	77		1			1
6	11	8	11	63	6	13	13	13	78		4			4
6	11	8		63	6	13		13	78		23			23
6	11	7	11	62	6	13		13	78		27			27
6	11	3	11	58	6	13		13	78		21			21
6	10½	10½		63	6	10½	10½	10½	63				1	1
6	10	10	10	60	6	10	10	10	60				4	4
6	10	10		60	7	14	14	14	98	13				13
6	10	10		60	6	14		14	84	4				4
6	10	10		60	6	14		13	83	6				6
6	10	10		60	6	13		13	78		2			2
6	10	10		60	6	12		12	72		93			93
6	10	10		60	6	10	10		60		4			4
6	10	9		59	6	14		12	82	6				6
6	10	8		58	6	14		14	84	36				36
6	10	8		58	6	14		15	85	2				2
6	8	8		48		8	8		48			19		19
6	8	8		48	6	8	8		48			1		1
6	8	8		48	5	12			60	4				4

## PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

## Employees who worked day turns.

6	12	12		72							1			1
7	12	12	12	84							1			7
7	10	10	10	70							4		2	2
7	9½	9½	8	65									2	8
7	8	8	8	56							8			8
6	12	12		72						1	18			19
6	11½	11½		69							2			2
6	11	11		66						29	2			31
6	12	10		70						2	2			4
6	10	10		60					1	1	12			14
6	10	9		59							1			1
6	9½	9½		57								2		2
6	8	8		48							3			3

## Employees who worked night turns.

					7	12	12	12	84			2		2
					6	12	12		72		1	4		5
					6	11½	11½		69		1	1		1
					6	11½		11½	69		1			1
					6	11		11	66	2				2

TABLE F (3).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—*OPEN-HEARTH FURNACES*—Concl'd.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.									Number of employees who worked each specified combination of customary turns and hours, by districts.					
Day turns.				Night turns.					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.

Employees who alternated weekly from day to night turns.

7	12	12	12	84	7	12	12	12	84		18		3	21
7	12	12	12	84	6	12	12	12	72	3	10	15		28
7	12	12	8	80	6	12	12	12	72		79			79
7	12	8	8	76	6	12	12	12	72		87			87
7	11	11	11	77	7	13	13	13	91		22			22
7	10	10	10	70	7	14	14	14	98		5			5
7	10	10	10	70	7	13	13	13	91				1	1
7	10	10	10	70	6	14	14	14	84		1			1
7	10	8	10	68	6	14	14	14	84	13	21			34
7	9½	9½	9½	66½	6	14	14	14	84		3			3
7	9½	9½	9½	66½	6	13	13	13	78		22			22
7	8	8	8	64	7	8	8	8	56		21			21
7	8	8	8	56										
7	8	8	8	56	7	8	8	8	56			8	4	12
7	8	8	8	56										
6	11	11		66	7	13	13	13	91	5				5
6	11	11	11	77	6	13	13	13	78					
6	12	12		72	7	12	12	12	84		1	19		20
6	12	12		72	6	12	12	12	72		3			3
6	12	12		72	6	12		12	72		8	14		22
6	11½	11½		69	6	11½		11½	69			2		2
6	11	11	11	66	6	13	13	13	78		5			5
6	11	11		66	6	13	13	13	78	16	9			25
6	10	10		60	6	14	14	14	84	13				13
6	10	10		60	6	12	12	12	72	50	31			81
6	10	8		58	6	14	14	14	84	45				45
6	10	5½		55½	5	12			60	13				13
6	8	8		48										
6	8	8		48	6	8		8	48			8		8

## PUDDLING MILLS.<sup>9</sup>

Considering the principal productive occupations of puddling mills as a whole, average full-time hours per week were 5 per cent greater in 1920 than in 1919 and 3 per cent greater than in 1914. Again comparing the same years, average hourly earnings in 1920 were 4 per cent higher than in 1919 and 179 per cent higher than in 1914, while full-time weekly earnings in 1920 had advanced 13 per cent and 195 per cent over 1919 and 1914, respectively (see Table 1, p. 3).

The most significant facts concerning average hours and average earnings in each of the principal productive occupations of puddling mills for the years 1914, 1915, 1919, and 1920 are presented in Table A (4). The average hourly earnings in 1920 for the department as a whole, including all occupations, both selected and others, were 88.5 cents. This average was over 17 cents above the average of any other department except those of the sheet and tin-plate mills departments which were \$1.039 and 94.9 cents, respectively.

The data for 1920 cover 15 plants, representing 2,676 employees in 21 selected occupations and 586 in all other occupations, making a total of 3,262 employees in all occupations.

The puddling mill produces wrought iron by oxidizing and removing most of the silicon, carbon, manganese, and phosphorus contained in pig iron, the operation being conducted on the hearth of a reverberatory furnace.

Puddlers work in different combinations in various plants, the two most frequent being a puddler with a helper and two puddlers "level-handed." When puddlers work level-handed the earnings are divided equally between the two. Combinations such as two puddlers level-handed with a helper, puddlers three-handed (dividing the earnings equally between the three), puddlers four-handed, and many others also were found, but as such combinations were of local interest only and not general to their district they are not treated in this report.

The work of bushelers and puddlers is practically the same, except that scrap iron is charged into a busheling furnace instead of pig iron.

Rollers and their crews are not reported in Table A (4) for every plant represented. This is due to the fact that in some plants the money for total tonnage rolled was paid in a lump sum to the roller who was responsible for the work, and in such instances it was impossible to get reliable data as to the wages paid individuals of the rolling crew.

On account of the intense heat and heavy labor involved in the puddling operation there are fewer workmen taking up the puddling trade than formerly, as men can earn as much money in other skilled occupations and work under more favorable conditions. This shortage

<sup>9</sup> Summary figures relating to the puddling-mill department are given with figures for other departments of the iron and steel industry on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

of apprentices has led to the combination, "level-handed," which is reflected in the number of furnaces in operation.

In the last few years rapid progress has been made along the line of developing mechanical puddling devices to counteract conditions which have led to the shortage of puddlers. As yet no such method has been devised that will produce wrought iron in large quantities with uninterrupted success.

Puddling mills are usually in operation six days and five nights per week, the hours per turn (day) varying anywhere from 7 to 12 hours, with an average of about 9 hours, in which time usually 4 to 5 heats, varying in size from 560 to 640 pounds each, are produced.

Considering the various occupations separately, and comparing 1920 with 1919, average full-time hours per week showed an increase in 15 occupations out of 21 reported and a decrease in 4 occupations, while 2 remained unchanged. Nine of the 15 occupations showing an increase over 1919 also showed an increase over all other years for which data are presented, while the remaining 6 showed decreases when compared with years other than 1919. The greatest increase occurred in the occupation of roll engineers, the average being 65.2 in 1919 and 72.5 in 1920. The average both in 1914 and 1915 was 66.9 hours per week.

Average hourly earnings increased enormously in all selected occupations in 1920 over the average hourly earnings in 1914 and 1915, and considerably over those in 1919 in all but two occupations. The occupation of heaters' helpers, which was reported in one plant only, showed a decrease in hourly earnings in 1920 as compared with 1919, and that of bloom boys showed no change.

When average full-time weekly earnings are considered, heaters' helpers is the only occupation which did not show an increase in 1920 over all other years and it failed in this respect only as compared with 1919. The occupation of bloom boys showed a very slight increase in 1920 over 1919. The weekly earnings for heaters' helpers advanced from \$15.63 in 1914 to \$31.74 in 1919, and decreased to \$31.12 in 1920.

Table A (4) shows that the hours worked by these employees as a whole were quite generally less than those worked in other departments. Only one occupation, that of roll engineers, shows any employees working over 72 hours per week. Puddlers and bushelers fall entirely in the groups "48 and under," and "Over 48 and under 60," bushelers in 1920 being practically all in the lower group.

## 76 WAGES AND HOURS OF LABOR—IRON AND STEEL INDUSTRY.

TABLE A (4).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1914 TO 1920—PUDDLING MILLS.

[For explanation of this table see p. 13.]

Occupation, and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—														
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84								
<b>Stockers:</b>																				
28 plants.....	1914	300	57.6	\$0.205	\$11.78	12	45	11	30	1										
	1915	304	58.1	.204	11.85	10	42	12	34	1										
11 plants.....	1919	141	59.9	.486	29.11	11	11	15	61	2										
15 plants.....	1920	407	61.3	.504	31.30	1	12	29	55	3										
<b>Puddlers:</b>																				
13 plants.....	1914	458	54.8	.416	22.76	2	98													
	1915	422	52.4	.390	20.45	2	98													
7 plants.....	1919	176	50.9	1.126	57.31	31	69													
8 plants.....	1920	187	49.2	1.311	64.69	37	63													
<b>Puddlers, level-handed:</b>																				
17 plants.....	1914	896	49.3	.416	20.37	49	51													
	1915	924	48.0	.392	18.60	65	35													
9 plants.....	1919	512	48.8	1.101	53.73	26	74													
11 plants.....	1920	860	50.8	1.227	62.25	23	77													
<b>Puddlers' helpers:</b>																				
15 plants.....	1914	475	55.2	.241	13.25	2	98													
	1915	456	52.8	.224	11.78	2	98													
9 plants.....	1919	190	50.6	.695	35.17	33	67													
	1920	209	49.4	.859	42.37	30	70													
<b>Bushelers:</b>																				
4 plants.....	1914	18	50.4	.462	23.14	33	67													
	1915	19	53.6	.413	22.03	16	84													
	1919	41	46.0	.987	45.40	63	37													
2 plants.....	1920	22	44.8	1.104	49.46	95	5													
<b>Bushelers, level-handed:</b>																				
6 plants.....	1914	98	47.1	.418	20.07	53	47													
	1915	67	45.7	.419	19.37	64	36													
	1919	197	41.4	1.573	65.12	99	1													
4 plants.....	1920	179	41.4	1.894	77.85	96	4													
<b>Bushelers, level-handed (with helpers):</b>																				
9 plants.....	1914	274	43.4	.565	23.97	81	19													
	1915	246	44.9	.523	23.16	71	29													
1 plant.....	1919	24	42.7	1.547	66.06	100														
	1920	55	42.7	1.786	76.26	100														
<b>Bushelers' helpers:</b>																				
12 plants.....	1914	112	49.0	.264	12.79	50	50													
	1915	96	50.0	.246	12.09	42	53		5											
5 plants.....	1919	82	42.6	.626	26.67	82	18													
3 plants.....	1920	49	43.5	.754	32.76	98	2													
<b>Heaters:</b>																				
9 plants.....	1914	25	51.0	.709	35.28	48	44		8											
	1915	27	50.9	.730	36.37	44	48		8											
1 plant.....	1919	2	55.0	1.165	64.08	100														
	1920	4	61.8	1.426	88.13				100											
<b>Heaters' helpers:</b>																				
8 plants.....	1914	48	52.3	.311	15.63	50	29		13	8										
	1915	52	52.3	.308	15.53	46	35		12	8										
1 plant.....	1919	2	55.0	.577	31.74	100														
	1920	18	57.0	.546	31.12	100														
<b>Bloom boys:</b>																				
25 plants.....	1914	77	54.3	.201	10.79	16	73	5	6											
	1915	68	53.9	.199	10.62	18	68	3	12											
11 plants.....	1919	26	52.9	.656	34.70	27	54		19											
13 plants.....	1920	38	53.2	.656	34.79	34	53	8	5											
<b>Roll engineers:</b>																				
23 plants.....	1914	47	66.9	.239	15.92		9	11	45	32	4									
	1915	45	66.9	.242	16.14		9	11	40	36	4									
12 plants.....	1919	25	65.2	.535	34.88	12	16	4	32	12	16	8								
	1920	24	72.5	.674	48.79			4	29	38	8									8
<b>Rollers:</b>																				
24 plants.....	1914	66	53.1	.573	29.38	23	68	3	6											
	1915	64	52.4	.583	29.89	25	63	3	9											
12 plants.....	1919	38	47.0	1.843	86.62	53	47													
12 plants.....	1920	31	50.8	2.197	108.15	29	66	3												

**TABLE A (4).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1914 TO 1920—PUDDLING MILLS—Concluded.**

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Roughers:</b>												
20 plants.....	1914	71	51.9	\$0.436	\$22.17	39	44	3	14			
	1915	69	51.8	.426	21.69	41	45	3	12			
8 plants.....	1919	25	45.2	1.298	58.67	64	36					
10 plants.....	1920	33	49.7	1.407	68.75	39	48	12				
<b>Catchers:</b>												
27 plants.....	1914	91	53.4	.362	18.99	21	69	4	5			
	1915	88	52.8	.363	18.89	22	68	5	6			
12 plants.....	1919	34	48.2	1.269	61.17	47	53					
13 plants.....	1920	42	50.7	1.291	64.07	33	62	5				
<b>Hook-ups:</b>												
27 plants.....	1914	97	54.4	.251	13.58	19	60	4	18			
	1915	94	53.8	.233	12.40	19	61	4	16			
12 plants.....	1919	34	51.8	.862	44.65	32	50		18			
13 plants.....	1920	37	56.5	.868	49.64	8	59	5	27			
<b>Roll hands, other:</b>												
8 plants.....	1914	17	51.9	.286	14.75	18	82					
	1915	14	53.6	.295	15.86	21	64		14			
3 plants.....	1919	11	50.7	.624	31.64	45	55					
6 plants.....	1920	15	51.5	.946	48.94	27	73					
<b>Hotbed men:</b>												
26 plants.....	1914	117	54.2	.245	13.10	21	59	3	16			
	1915	112	54.2	.243	12.98	22	54	4	21			
11 plants.....	1919	56	52.0	.655	34.06	27	57		16			
13 plants.....	1920	81	57.0	.666	38.21		69	4	27			
<b>Shearmen:</b>												
19 plants.....	1914	43	57.3	.239	13.70		60	21	19			
	1915	39	57.8	.247	14.40		56	18	26			
11 plants.....	1919	28	57.6	.528	30.41	7	57	18	18			
13 plants.....	1920	45	55.2	.662	36.73	2	71	18	9			
<b>Shearmen's helpers:</b>												
20 plants.....	1914	110	58.0	.192	11.23		60	9	31			
	1915	109	58.1	.196	11.50		58	9	33			
9 plants.....	1919	57	57.6	.473	27.24	12	53		35			
10 plants.....	1920	70	60.9	.527	32.24		30	14	54	1		
<b>Laborers:</b>												
24 plants.....	1914	322	59.5	.173	10.35		36	42	21	1		
	1915	303	57.5	.167	9.66		49	35	16			
12 plants.....	1919	236	64.1	.436	27.95	3	22	14	56	6		
15 plants.....	1920	440	65.3	.457	30.41		9	33	22	35		

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings are presented in Table B (4) for each of the principal productive occupations in puddling mills for the years 1914, 1915, 1919, and 1920. These are simply percentages, computed from the averages of Table A (4), with the average for 1914<sup>10</sup> as the base, or 100 per cent, as an aid in making comparisons of the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A (4).

For index numbers for this department as a whole (all selected occupations combined), see page 3.

<sup>10</sup> Statistics as to wages and hours of labors in puddling mills were not compiled by this bureau for years earlier than 1914, hence the change in the base year from 1913 which was used for other departments.

TABLE B (4).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1914 TO 1920—PUDDLING MILLS.

[For explanation of this table see p. 14. 1914=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Stockers:</b>				<b>Roll engineers:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	101	100	101	1915.....	100	101	101
1919.....	104	237	247	1919.....	97	224	219
1920.....	106	246	266	1920.....	108	282	306
<b>Puddlers:</b>				<b>Rollers:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	96	94	90	1915.....	99	102	102
1919.....	93	271	252	1919.....	89	322	295
1920.....	90	315	284	1920.....	96	363	368
<b>Puddlers, level-handed:</b>				<b>Roughers:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	97	94	91	1915.....	100	98	98
1919.....	99	265	264	1919.....	87	298	265
1920.....	103	295	306	1920.....	96	323	310
<b>Puddlers' helpers:</b>				<b>Catchers:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	96	93	89	1915.....	99	100	99
1919.....	92	288	265	1919.....	90	351	322
1920.....	89	356	320	1920.....	95	357	337
<b>Busshelers:</b>				<b>Hook-ups:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	106	89	95	1915.....	99	93	91
1919.....	91	214	196	1919.....	95	343	329
1920.....	89	239	214	1920.....	104	346	366
<b>Busshelers, level-handed:</b>				<b>Roll hands, other:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	97	100	97	1915.....	103	103	108
1919.....	88	376	324	1919.....	98	218	215
1920.....	88	453	388	1920.....	99	331	332
<b>Busshelers, level-handed (with helpers):</b>				<b>Hot-bed men:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	103	93	97	1915.....	100	99	99
1919.....	98	274	276	1919.....	96	267	260
1920.....	98	316	318	1920.....	105	272	292
<b>Busshelers' helpers:</b>				<b>Shearmen:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	102	93	95	1915.....	101	103	105
1919.....	87	237	209	1919.....	101	221	222
1920.....	89	286	256	1920.....	96	277	268
<b>Heaters:</b>				<b>Shearmen's helpers:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	100	103	103	1915.....	100	102	102
1919.....	108	164	132	1919.....	99	246	243
1920.....	121	201	250	1920.....	105	274	287
<b>Heaters' helpers:</b>				<b>Laborers:</b>			
1914.....	100	100	100	1914.....	100	100	100
1915.....	100	99	99	1915.....	97	97	93
1919.....	105	186	203	1919.....	108	252	270
1920.....	100	176	199	1920.....	116	264	294
<b>Bloom boys:</b>							
1914.....	100	100	100				
1915.....	99	99	98				
1919.....	97	326	322				
1920.....	98	326	322				

The customary working time per week of employees in the puddling mill department has been classified and the number and per cent of employees under each classification are shown in Table C (4) for the years 1914 to 1920.

The number of employees reported in 1920 includes some duplications, or repeated employees, as stated in the general explanation of Table C (p. 14). In the 2,719 employees reported in selected occupations for all districts combined there were 43 duplications, leaving 2,676 actually engaged, and the total of 3,363 employees shown for all occupations represents 3,262 individuals.

The gross number of employees reported, together with the net number of actual employees for selected occupations and for all occupations in each district and all districts combined, are shown in Table 11.

TABLE 11.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS, 1920—PUDDLING MILLS.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Eastern.....	589	None.	589	618	None.	618
Pittsburgh.....	928	4	924	1,099	9	1,090
Great Lakes and Middle West.....	730	25	705	997	70	927
Southern.....	472	14	458	649	22	627
Total.....	2,719	43	2,676	3,363	101	3,262

The statement in the text preceding Table A (4), that puddle mills are most commonly in operation six days and five nights per week is borne out by the percentages of Table C (4) for 1920 in the column headed "5 days and 6 days alternately," there being in that group 65 per cent in selected occupations and 60 per cent in all occupations combined. The increase in 1920 in the number working "6 days" and the corresponding decrease in the number working "5 days, 5 days, and 6 days in rotation" was due to a change in the working time of some plants, formerly working three shifts, to one shift of 6 days.

## 80 WAGES AND HOURS OF LABOR—IRON AND STEEL INDUSTRY.

TABLE C (4).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1914 TO 1920—PUDDLING MILLS.

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—					Per cent of employees whose customary working time per week was—						
				5 days	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	6 days	6 days and 7 days alternately.	7 days	5 days	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	6 days	6 days and 7 days alternately.	7 days
EASTERN.															
Selected occupations.	1919	3	474	.....	312	1 142	13	5	2	.....	66	30	3	1	( <sup>2</sup> )
	1920	4	589	1	525	.....	60	.....	3	( <sup>2</sup> )	89	10	.....	1	1
All occupations.	1914	9	1,656	<sup>3</sup> 388	987	.....	239	16	26	23	60	.....	14	1	2
	1915	9	1,506	<sup>4</sup> 882	402	.....	200	16	6	59	27	.....	13	1	( <sup>2</sup> )
	1920	4	618	1	542	.....	71	.....	4	( <sup>2</sup> )	88	.....	11	.....	1
PITTSBURGH.															
Selected occupations.	1919	3	614	.....	580	8	23	3	.....	94	1	4	( <sup>2</sup> )	.....	
	1920	5	928	1	797	51	77	2	( <sup>2</sup> )	86	5	8	( <sup>2</sup> )	( <sup>2</sup> )	
All occupations.	1914	7	1,580	7	1,342	36	174	4	17	( <sup>2</sup> )	85	2	11	( <sup>2</sup> )	1
	1915	7	1,640	5	1,265	204	147	2	17	( <sup>2</sup> )	77	12	9	( <sup>2</sup> )	1
	1920	5	1,099	6	920	53	114	.....	6	1	84	5	10	.....	1
P. L. & M. W.															
Selected occupations.	1919	4	713	.....	254	304	155	.....	.....	36	43	22	.....	.....	
	1920	3	730	6	255	275	191	2	1	1	35	38	26	( <sup>2</sup> )	( <sup>2</sup> )
All occupations.	1914	8	913	.....	446	329	132	6	.....	49	36	14	1	.....	
	1915	8	850	.....	453	293	98	6	.....	53	34	12	1	.....	
	1920	3	997	6	337	377	267	2	8	1	34	38	27	( <sup>2</sup> )	1
SOUTHERN.															
Selected occupations.	1919	2	277	4	200	.....	73	.....	.....	1	72	.....	26	.....	
	1920	3	472	.....	189	.....	278	.....	5	.....	40	.....	59	.....	1
All occupations.	1914	5	457	205	114	.....	136	.....	2	45	25	.....	30	.....	( <sup>2</sup> )
	1915	5	476	206	118	.....	150	.....	2	43	25	.....	32	.....	( <sup>2</sup> )
	1920	3	649	3	216	.....	413	.....	17	( <sup>2</sup> )	33	.....	64	.....	3
TOTAL.															
Selected occupations.	1919	12	2,078	4	1,346	1 454	264	8	2	( <sup>2</sup> )	65	22	13	( <sup>2</sup> )	( <sup>2</sup> )
	1920	15	2,719	8	1,766	326	606	2	11	( <sup>2</sup> )	65	12	22	( <sup>2</sup> )	( <sup>2</sup> )
All occupations.	1914	29	4,606	<sup>3</sup> 600	2,889	365	681	26	45	13	63	9	15	1	1
	1915	29	4,472	<sup>1</sup> 093	2,238	497	595	24	25	24	50	11	13	1	1
	1920	15	3,303	16	2,015	430	865	2	35	( <sup>2</sup> )	60	13	26	( <sup>2</sup> )	1

1 Includes 5 employees who worked 5 days, 6 days, and 6 days in rotation.

2 Less than 1 per cent.

3 Includes 247 employees who worked 5 days and 6 days per week alternately for 5 months of the year.

4 Includes 216 employees who worked 5 days and 6 days per week alternately 5 months of the year.

Table D (4) presents the most significant facts relative to customary and actual working time, total actual earnings, and earnings per hour of employees in puddling mills, by occupations and districts, for the year 1920.

Referring to the occupation of puddlers, level-handed, by way of illustration: Seven hundred and twelve positions were filled by a total of 860 men during the pay-roll period of one-half month. The average customary full time of the men working in these positions was 5.5 turns per week, 9.2 hours per turn, and 50.8 hours per week. In the distribution of the customary working time of the 860 actual employees, 194 worked 48 hours per week or under, and 666 worked over 48 and under 60 hours. Puddling mills as a whole usually operate 6 days and 5 nights per week, making an average of 5.5 turns per week, but some deviations from this custom appear in the several occupations as shown in this table. The average hourly earnings for puddlers, level-handed, ranged from \$1.024 in the Eastern district to \$1.44 in the Great Lakes and Middle West district, with an average of \$1.227 for all districts combined. The range for average full-time weekly earnings was from \$58.68 in the Eastern district to \$63.05 in the Pittsburgh district, the average for all districts being \$62.25. This is the smallest variation shown for any occupation.

Owing to the fact that a large number of the employees worked in more than one occupation during the pay-roll period, and in order to give the complete hours and earnings for such employees, separate figures are shown for each occupation which cover all occupations in which the employees were engaged. While, for example, 407 men working as stockers averaged 82.7 hours during the pay-roll period, they also averaged 22.6 hours in other occupations, making a total average of 105.3 hours per pay-roll period in "Specified (stocker) and other occupations." During the 82.7 hours they worked as stockers they earned an average of \$41.64, or 50.4 cents per hour. When the work of these men in all occupations is considered they earned \$53.58—that is, \$11.94 was earned in some other occupation than stocker.

The average earnings per hour in this department range from 45.7 cents for laborers to \$2.197 for rollers. The average for all the selected occupations combined was 94.7 cents per hour, which is about 18 cents higher than the similar average in any other department except the sheet and tin-plate mills departments, which are considerably higher still.







<b>Hotbed men:</b>																				
Eastern.....	3	16	5.5	10.6	58.5	21	21							40.66	88.9	61.80	.695	88.9	61.80	.695
Pittsburgh.....	4	20	5.5	9.2	50.6	23	23							34.10	90.0	60.67	.674	95.1	64.02	.673
G. L. and M. W.....	3	12	5.6	11.4	63.3	15		3	12					49.44	99.4	77.63	.781	101.6	81.83	.805
Southern.....	3	15	5.6	10.6	58.9	22	12		10					32.51	71.4	39.40	.552	104.5	46.05	.479
<b>Total.....</b>	<b>13</b>	<b>63</b>	<b>5.5</b>	<b>10.3</b>	<b>57.0</b>	<b>81</b>	<b>56</b>	<b>3</b>	<b>22</b>					<b>38.21</b>	<b>86.4</b>	<b>58.33</b>	<b>.666</b>	<b>97.3</b>	<b>61.86</b>	<b>.651</b>
<b>Shearmen:</b>																				
Eastern.....	3	6	5.7	9.1	51.5	7	6	1						33.94	92.7	61.10	.659	92.7	61.10	.659
Pittsburgh.....	4	12	5.5	9.8	54.1	18	18							39.66	74.8	54.84	.733	85.2	60.72	.713
G. L. and M. W.....	3	6	5.7	11.1	62.7	9		5	4					42.76	75.5	51.51	.682	98.6	62.90	.638
Southern.....	3	7	5.9	9.2	54.0	11	1	8	2					28.78	60.4	32.21	.533	117.5	65.10	.554
<b>Total.....</b>	<b>13</b>	<b>31</b>	<b>5.6</b>	<b>9.8</b>	<b>55.2</b>	<b>45</b>	<b>1</b>	<b>32</b>	<b>8</b>	<b>4</b>				<b>36.73</b>	<b>74.2</b>	<b>49.62</b>	<b>.662</b>	<b>96.9</b>	<b>62.29</b>	<b>.650</b>
<b>Shearmen's helpers:</b>																				
Eastern.....	2	4	6.0	9.6	57.5	4	2	2						28.75	122.5	61.25	.500	125.2	62.48	.499
Pittsburgh.....	2	8	5.5	10.1	55.6	10	9	1						37.42	90.0	60.57	.673	90.0	60.57	.673
G. L. and M. W.....	3	30	5.6	11.5	64.0	43		38	1					34.43	87.5	47.09	.538	123.5	67.19	.544
Southern.....	3	10	6.0	9.5	57.1	13		10	3					22.10	74.5	28.83	.387	108.4	46.95	.433
<b>Total.....</b>	<b>10</b>	<b>52</b>	<b>5.7</b>	<b>10.8</b>	<b>60.9</b>	<b>70</b>	<b>21</b>	<b>10</b>	<b>32</b>	<b>1</b>				<b>32.24</b>	<b>87.5</b>	<b>46.43</b>	<b>.527</b>	<b>116.0</b>	<b>62.22</b>	<b>.539</b>
<b>Laborers:</b>																				
Eastern.....	4	46	6.0	10.3	61.8	51	16	18	17					27.87	119.0	53.69	.451	121.4	55.00	.453
Pittsburgh.....	5	57	5.7	11.4	65.1	64		20	35	9				34.44	106.1	56.13	.529	114.4	61.11	.534
G. L. and M. W.....	3	120	6.0	11.8	70.4	205		12	46	147				36.68	71.8	37.41	.521	118.3	62.48	.528
Southern.....	3	79	6.0	10.0	59.7	120		24	96					18.63	71.9	22.44	.312	90.8	31.16	.343
<b>Total.....</b>	<b>15</b>	<b>302</b>	<b>5.9</b>	<b>11.0</b>	<b>65.3</b>	<b>440</b>	<b>40</b>	<b>146</b>	<b>98</b>	<b>156</b>				<b>30.41</b>	<b>82.3</b>	<b>37.93</b>	<b>.457</b>	<b>110.6</b>	<b>52.87</b>	<b>.470</b>

Level-handed puddlers and rollers were the occupations selected in the puddling department for which to show classified earnings per hour.

Table E (4) shows for these occupations, by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings fell in each group of classified rates per hour.

The range of classified earnings for puddlers, level-handed, was a wide one—from 60 cents per hour in both the Pittsburgh and Southern districts to \$2.25 in the Pittsburgh district—but nearly half of the 860 men earned between \$1 and \$1.25 per hour, and 80 per cent of the total earned between \$1 and \$1.50. The average for all districts was \$1.227.

There was also an extremely wide range in the earnings of rollers—from 52.5 cents per hour for one in the Eastern district, who worked only 6 hours, to \$5.296 per hour for one in the Great Lakes and Middle West district, who worked full time on a 3-shift basis. The average for all districts was \$2.197 per hour.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (4).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—PUDDLING MILLS.

[For explanation of this table see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Number of employees whose earnings per hour were—								
			60 and under 70 cents.	70 and under 80 cents.	80 and under 90 cents.	90 cents and under \$1.	\$1 and under \$1.25.	\$1.25 and under \$1.50.	\$1.50 and under \$1.75.	\$1.75 and under \$2.	\$2 and under \$2.25.
<b>PUDDLERS, LEVEL-HANDED.</b>											
Eastern.....	138	\$1.024	.....	.....	2	32	104	.....	.....	.....	.....
Pittsburgh.....	587	1.286	1	10	3	17	271	239	35	9	2
Great Lakes and Middle West.....	56	1.440	.....	.....	.....	.....	4	29	22	1	.....
Southern.....	79	1.146	1	2	2	13	44	17	.....	.....	.....
<b>Total.....</b>	<b>860</b>	<b>1.227</b>	<b>2</b>	<b>12</b>	<b>7</b>	<b>62</b>	<b>423</b>	<b>285</b>	<b>57</b>	<b>10</b>	<b>2</b>
			Under 90 cents.	90 cents and under \$1.	\$1 and under \$1.50.	\$1.50 and under \$2.	\$2 and under \$2.50.	\$2.50 and under \$3.	\$3.75 and under \$4.	\$4.25 and under \$4.50.	\$4.75 and over.
<b>ROLLERS.</b>											
Eastern.....	9	1.053	3	2	4	.....	.....	.....	.....	.....	.....
Pittsburgh.....	10	2.237	.....	.....	.....	5	1	4	.....	.....	.....
Great Lakes and Middle West.....	8	3.614	.....	.....	1	.....	.....	2	1	1	3
Southern.....	4	1.834	.....	.....	2	.....	2	.....	.....	.....	.....
<b>Total.....</b>	<b>31</b>	<b>2.197</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>3</b>

The customary turns per week, hours per turn, and full-time hours per week in the puddle-mill department are shown in detail, by districts and for all districts combined, for the year 1920, in Table F (4).

This table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in

more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the puddling-mill department was obtained from 15 plants and covers 3,262 actual employees—3,129 in part 1 of the table and 133 in part 2. However, the sum of the figures in this table would show 3,404 persons due to 142 duplications, or repeated employees, appearing in part 2.

Very little Sunday work is recorded in this department, owing to the fact that practically all of the plants are in operation only 6 days and 5 nights per week, and more than two-thirds of the employees reported worked either 6 days and 5 nights alternately or 5 days, 5 days, and 6 days in rotation. A total of 802 employees worked fewer hours on Saturdays than on the regular Monday to Friday shifts, and 5 worked a smaller number of hours on Sundays.

Of the 3,129 employees reported working at one combination of hours and turns 81 per cent of employees alternated weekly from day to night work and 16 per cent worked days only, while the remaining 4 per cent worked nights only. Of the 2,519 employees alternating from day to night work, 76 per cent worked 6 days and 5 nights, 17 per cent worked 5 days, 5 days, and 6 days in rotation, and 7 per cent worked 6 turns either day or night. The remaining 13 employees worked either 7 turns each week or 6 turns and 7 turns alternately.

The 9-hour turn was most common among these employees, 659, or 26 per cent, working on a 9-hour shift. The 8 and 12 hour turns were each represented by 19 per cent of the employees, while the remaining 36 per cent varied from turns of 7 hours either day or night to 11 hours on day turn and 13 hours on night turn.

Of the 499 men who worked days only, 97 per cent worked 6 days per week, the remaining 3 per cent being employed 7 turns. Among these men a 10-hour workday predominated, as 375, or 75 per cent of the day workers, were found on shifts of that length.

A total of 90, or 81 per cent of the 111 employees reported as working night turns only, worked 6 nights per week, and of that number 71, or 64 per cent, worked 10 hours per night. Of the remaining 21 employees 14 worked 5 nights per week and 7 worked 7 nights. The length of turn varied from 8 to 12 hours.

The 275 employees (including duplications) presented in part 2 of the table are divided into the following classes: Those alternating weekly from day to night work, numbering 180, or 65 per cent; those working days only, numbering 79, or 29 per cent; and those working nights only, numbering 16, or 6 per cent. Out of the 180 employees who worked days one week and nights the next, 116, or 64 per cent, worked 6 days and 5 nights alternately, 63, or 35 per cent, worked 6 turns each week, and the remainder (1 employee) worked 5 days, 5 days, and 6 days in rotation. The customary length of turn for 153, or 85 per cent of the alternating employees, was 12 hours either day or night. All of the 79 employees reported as working days only worked 6 turns per week, and the largest number in any group, or 43 employees, worked a 10-hour day. The working time of those employed nights only was 5 nights or 6 nights per week, 81 per cent working 6 nights. A total of 11 employees, or 68 per cent of those working nights only, worked 10 hours per

TABLE F (4).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—PUDDLING MILLS.

[For explanation of this table see p. 15.]

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

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

Employees who worked day turns.

7	12	12	12	84							7	1	8
7	12	12	9	81							1		1
7	11	11	2	68								1	1
7	10	10	10	70					1			1	2
7	10	10	5	65								1	1
7	10	7	10	67								4	4
6	12	12		72					2	16	2	1	21
6	12		12	72								6	6
6	11½	11½		69							2		2
6	11	11		66					16		8		24
6	11	10		65							1		1
6	11	6		61							6		6
6	10	10		60					24	21	60	168	273
6	10	9		59								2	2
6	10	8		58					21			35	53
6	10	7		57								33	33
6	10	5		55					4				4
6	9	9		54						7			7
6	8½	8½		52½								2	2
6	8½	7		61								3	3
6	8½			49½								7	7
6	8	8		48								3	3
6	8	8		48								3	3
6	8	6½		46½							3		3
6												29	29

Employees who worked night turns.

					7	12	13	12	85				2	2
					7	12	12	12	84				2	2
					7	10	10	10	70				3	3
					6	13		13	78				1	1
					6	12	12		72	1			1	1
					6	12		12	72		8		8	16
					6	11		11	66	1				1
					6	10		12	62		3			3
					6	10	10		60				68	63
					5	12			60		3			3
					5	11			55		1			1
					5	10			50	1			1	2
					5	9			45		1			1
					5	8½			42½				1	1
					5	8			40				6	6

Employees who alternated weekly from day to night turns.

7	12	12	12	84	7	12	12	12	84	3	6			9
7	12	12	12	84	6	12	12	12	72			2		2
7	12	12	5	77	7	12	12	12	84				2	2
6	12	12	12	72	6	12	12	12	72		4			4
6	12	12		72	6	12		12	72		6	2	2	10
6	12	12		72	6	12	12		72	1		113		114
6	12	8		68	6	12	12		72			1		1
6	12	12		72	5	12			60	6	59			67
6	12	8		68	5	12			60			263		263
6	11	11		66	5	11			55					6
6	11	10		65	5	13			65	2	4	2		2
6	11	8½		63½	5	11			55	35				35
6	11	8		63	5	11			55	143				143
6	10	10		60	6	10	10		60		26			26

TABLE F (4).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—PUDDLING MILLS—Concluded.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.									Number of employees who worked each specified combination of customary turns and hours by districts.						
Day turns.				Night turns.					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	10	10	.....	60	6	10	.....	10	60	.....	13	.....	.....	.....	13
6	10	10	.....	60	5	10	.....	10	50	5	44	.....	.....	.....	49
6	10	8	.....	58	5	10	.....	10	50	203	.....	.....	.....	.....	203
6	9½	9½	.....	57	5	9½	.....	9½	47½	.....	159	.....	.....	.....	159
6	9	9	.....	54	5	9	.....	9	45	.....	643	.....	.....	.....	643
6	9	7	.....	52	5	9	.....	9	45	16	.....	.....	.....	.....	16
5	8½	8½	.....	51	5	8½	.....	8½	42½	.....	.....	.....	122	.....	122
6	8	8	.....	48	5	8	.....	8	40	.....	7	376	.....	.....	383
6	8	8	.....	48	5	8	.....	8	40	.....	.....	.....	69	.....	69
6	8	6	.....	46	5	8	.....	8	40	132	.....	.....	.....	.....	132
5	7	.....	.....	35	5	.....	.....	.....	.....	.....	46	.....	.....	.....	46
6	7	7	.....	42	5	7	.....	7	35	.....	.....	.....	.....	.....	46

Employees who alternated weekly from day to night turns—Concluded.

6	10	10	.....	60	6	10	.....	10	60	.....	13	.....	.....	.....	13
6	10	10	.....	60	5	10	.....	10	50	5	44	.....	.....	.....	49
6	10	8	.....	58	5	10	.....	10	50	203	.....	.....	.....	.....	203
6	9½	9½	.....	57	5	9½	.....	9½	47½	.....	159	.....	.....	.....	159
6	9	9	.....	54	5	9	.....	9	45	.....	643	.....	.....	.....	643
6	9	7	.....	52	5	9	.....	9	45	16	.....	.....	.....	.....	16
5	8½	8½	.....	51	5	8½	.....	8½	42½	.....	.....	.....	122	.....	122
6	8	8	.....	48	5	8	.....	8	40	.....	7	376	.....	.....	383
6	8	8	.....	48	5	8	.....	8	40	.....	.....	.....	69	.....	69
6	8	6	.....	46	5	8	.....	8	40	132	.....	.....	.....	.....	132
5	7	.....	.....	35	5	.....	.....	.....	.....	.....	46	.....	.....	.....	46
6	7	7	.....	42	5	7	.....	7	35	.....	.....	.....	.....	.....	46

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

Employees who worked day turns.

6	12	.....	12	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
6	11	11	.....	66	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	5
6	11	6	.....	61	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	4
6	10	10	.....	60	.....	.....	.....	.....	.....	1	8	.....	.....	.....	.....	16
6	10	9	.....	59	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
6	10	8	.....	58	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
6	10	5	.....	55	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1
6	9	9	.....	54	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1
6	8½	8½	.....	52½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6
6	8½	8½	.....	51	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12
6	8½	7	.....	49½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
6	8	8	.....	48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
6	8	6½	.....	46½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1

Employees who worked night turns.

.....	.....	.....	.....	.....	6	12	.....	12	72	.....	.....	.....	.....	.....	.....	2
.....	.....	.....	.....	.....	5	10	.....	10	60	.....	.....	.....	.....	.....	.....	11
.....	.....	.....	.....	.....	5	12	.....	.....	60	.....	1	.....	.....	.....	.....	1
.....	.....	.....	.....	.....	5	8½	.....	.....	42½	.....	.....	.....	.....	.....	.....	2

Employees who alternated weekly from day to night turns.

6	12	12	.....	72	6	12	.....	12	72	.....	.....	58	.....	.....	.....	58
6	12	12	.....	72	5	12	.....	12	60	.....	4	.....	.....	.....	.....	25
6	12	8	.....	68	5	12	.....	12	60	.....	.....	70	.....	.....	.....	70
6	11½	6	.....	63½	6	11½	.....	6	63½	.....	.....	2	.....	.....	.....	2
6	11	11	.....	66	5	11	.....	11	55	.....	4	.....	.....	.....	.....	4
6	10	10	.....	60	6	10	.....	10	60	.....	1	.....	.....	.....	.....	1
6	10	10	.....	60	6	10	.....	10	60	.....	2	.....	.....	.....	.....	2
6	10	10	.....	60	5	10	.....	10	50	.....	1	.....	.....	.....	.....	1
6	9	9	.....	54	5	9	.....	9	45	.....	4	.....	.....	.....	.....	4
6	8½	8½	.....	51	5	8½	.....	8½	42½	.....	.....	.....	.....	.....	.....	9
6	8	8	.....	48	5	8	.....	8	40	.....	.....	.....	.....	.....	.....	3
5	8	.....	.....	40	5	.....	.....	.....	40	.....	.....	.....	.....	.....	.....	3
6	8	8	.....	48	5	8	.....	8	40	.....	.....	1	.....	.....	.....	1

## BLOOMING MILLS.<sup>11</sup>

Average earnings per hour and full-time earnings per week in the combined selected occupations of blooming mills in 1920 were, approximately, two and one-fourth times such averages for 1913, and nearly three times such averages for 1910. The average per hour was 6 per cent higher in 1920 than in 1919 and the average per week was 2 per cent higher. Full-time hours per week in 1920 were 5 per cent lower than in 1919, 9 per cent lower than in 1913, and 11 per cent lower than in 1910 (see index numbers, Table 1, p. 3).

The most significant facts concerning average earnings and average hours in each of the principal productive occupations in this department for the years 1910 to 1920 are presented in Table A (5). The data for 1920 cover 1,357 employees in 12 of the principal productive occupations in 20 plants, and 3,571 employees in all occupations of the same plants. The average earnings per hour in 1920 for the department as a whole, including all occupations, selected and others, were 65.9 cents (see p. 12).

Average full-time hours per week in 1920 as compared with the averages in 1919 decreased in every occupation except laborers, in which occupation there was an increase of 1.1 hours per week. Such averages in 1920 compared with 1913 showed a decrease in the various occupations ranging from 8.9 hours for table men to 2.3 hours for laborers, and as compared with 1910 the decreases ranged from 13.1 hours for heaters' helpers to 3 hours for laborers.

Average hourly earnings for 1920 compared with 1919 increased in 9 occupations—the greatest increase being 8.4 cents for rollers—and decreased in 3 occupations—the decrease being less than 1 cent in each instance. The greatest increase in 1920 as compared with 1913 and also with 1910, appeared in the averages for rollers.

Owing to the general decrease in hours per week, weekly earnings increased in 1920 as compared with 1919 in two occupations only, although very large increases are shown when the averages for 1920 are compared with those for the earlier and prewar years. (All these changes are better illustrated by the percentages of Table B (5), p. 93.)

In 1910, in each occupation the greatest per cent of employees working any one classified number of hours was found in the column for 72 hours per week. While this same condition existed in 1913 the percentage working this number of hours was considerably less in nearly every occupation. During the year 1919 there was an increase in some occupations, but in 1920 a decline was shown in every occupation, the percentage working 72 hours per week being less than in any period prior to 1919. The percentage of employees working 48 hours and under was considerably higher in 1920 than in previous years in 8 of the 12 occupations.

<sup>11</sup> Summary figures relating to the blooming-mill department are given with figures for other departments of the iron and steel industry on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

While the percentage of employees working 84 hours per week in 1910 was not great in any occupation except for some of the heating crew, it will be noticed that there was a steady decline in the number of employees working that many hours until 1920, when it became possible to so arrange the work that in no occupation were any workmen required to be on duty so many hours a week, except in that of heaters, in which occupation 2 per cent were working 84 hours per week as compared with 11 per cent in 1919, 15 per cent in 1913, and 22 per cent in 1910, and in that of laborers, in which the number had increased from 11 per cent in 1919 to 15 per cent in 1920, being, however, 9 points less than the percentage in 1910.

TABLE A (5).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—BLOOMING MILLS.

[For explanation of this table see p. 13.]

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	
<b>Pit cranemen:</b>													
18 plants.....	1910	99	69.6	\$0.315	\$21.41		18		11	51	4	16	
	1911	95	68.8	.309	21.01		19		15	49	6	11	
	1912	97	68.7	.328	22.33		19		19	46	6	10	
19 plants.....	1913	115	69.3	.369	25.39		16		12	52	16	4	
23 plants.....	1914	124	66.6	.357	23.29		5	17	3	11	44	16	3
	1915	119	66.7	.375	24.44		5	20	3	5	44	22	1
12 plants.....	1917	71	66.6	.548	35.02		21	9			56	14	
19 plants.....	1919	138	67.2	.816	54.84		6	24		1	46	17	5
20 plants.....	1920	138	62.4	.871	54.07		12	36		6	33	14	
<b>Heaters:</b>													
19 plants.....	1910	51	73.4	.521	37.88		6		4	61	8	22	
	1911	49	73.3	.512	37.50		6	2	8	51	12	20	
	1912	55	72.9	.532	40.14		5	2	7	60	7	18	
	1913	79	71.2	.594	41.86		19		5	38	23	15	
23 plants.....	1914	89	69.3	.542	37.03		24	2	1	46	16	11	
	1915	84	69.9	.584	40.06		21	2	1	42	24	10	
12 plants.....	1917	47	65.7	.756	49.85		19	13		55	9	4	
18 plants.....	1919	94	68.7	1.191	81.82		11	15		49	15	11	
20 plants.....	1920	106	64.8	1.271	81.92		7	29	1	6	33	23	2
<b>Heaters' helpers:</b>													
11 plants.....	1910	34	73.4	.344	24.62		9		12	35	26	18	
	1911	34	73.5	.363	26.71		9		12	35	18	26	
	1912	50	67.9	.352	23.63		30		8	32	12	13	
10 plants.....	1913	52	64.6	.359	22.76		40		8	19	31	2	
	1914	43	64.0	.337	20.95		7	35	9	14	33	2	
	1915	39	62.1	.369	22.48		46	10		26	15	3	
3 plants.....	1917	15	59.2	.611	37.66		60			13	27		
13 plants.....	1919	62	64.1	.818	52.43		5	37		5	40	6	6
14 plants.....	1920	77	60.3	.828	49.37		5	51		8	10	26	
<b>Bottom makers:</b>													
16 plants.....	1910	60	70.5	.335	23.26		10		3	80		7	
	1911	55	70.8	.331	23.24		11		5	67	9	7	
	1912	58	70.9	.347	24.44		10		5	69	9	7	
15 plants.....	1913	62	71.9	.367	26.32		10		6	48	26	10	
20 plants.....	1914	79	68.6	.370	24.68		4	19		5	39	28	5
	1915	76	68.5	.389	25.77		4	20		3	38	33	3
11 plants.....	1917	38	70.8	.497	34.59		16			53	26	5	
16 plants.....	1919	104	69.4	.833	57.81		8	10		2	63	14	4
17 plants.....	1920	122	63.2	.890	56.50		16	25		16	25	20	
<b>Bottom makers' helpers:</b>													
12 plants.....	1910	47	70.3	.251	17.23		13			79		9	
	1911	46	70.3	.243	16.83		13		7	65	11	4	
13 plants.....	1912	50	70.6	.257	17.95		12			60	24	4	
	1913	65	72.0	.263	18.72		9			51	31	9	
17 plants.....	1914	70	69.8	.273	18.45		9	9		44	34	4	
	1915	76	70.5	.269	18.46		8	8		1	38	39	5
9 plants.....	1917	44	71.3	.384	26.74		14			59	18	9	
13 plants.....	1919	112	68.8	.659	45.34		9	18		43	17	13	
14 plants.....	1920	135	64.6	.654	43.05		13	21		9	28	29	

92 WAGES AND HOURS OF LABOR—IRON AND STEEL INDUSTRY.

TABLE A (5).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—BLOOMING MILLS—Concluded.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	
<b>Roll engineers:</b>													
18 plants.....	1910	42	70.9	\$0.392	\$27.12	7	7	.....	10	45	17	14	
	1911	40	70.9	.385	26.66	8	8	.....	13	38	20	15	
19 plants.....	1912	46	68.4	.437	28.79	13	13	.....	9	24	33	9	
	1913	52	68.5	.471	30.96	12	12	.....	8	37	29	4	
23 plants.....	1914	60	65.6	.447	28.30	20	10	3	3	43	17	3	
	1915	59	65.4	.471	29.81	20	10	3	2	46	15	3	
12 plants.....	1917	37	63.8	.678	41.20	32	8	.....	.....	38	22	.....	
19 plants.....	1919	60	64.1	.971	62.24	18	23	.....	3	37	12	7	
20 plants.....	1920	63	60.9	1.017	61.68	5	49	3	3	22	17	.....	
<b>Rollers:</b>													
18 plants.....	1910	46	67.6	.605	40.00	13	7	.....	11	63	.....	7	
	1911	41	66.6	.585	38.49	7	15	.....	15	59	5	.....	
19 plants.....	1912	46	65.9	.632	40.53	13	13	.....	13	52	9	.....	
	1913	46	66.2	.701	44.98	13	13	.....	13	48	13	.....	
23 plants.....	1914	54	63.6	.684	42.44	17	17	4	6	57	.....	.....	
	1915	53	63.5	.697	43.26	17	17	4	4	58	.....	.....	
12 plants.....	1917	34	62.4	.912	55.94	35	9	.....	4	45	12	.....	
18 plants.....	1919	51	62.6	1.389	86.95	29	14	.....	4	45	4	4	
20 plants.....	1920	65	57.9	1.473	84.73	38	17	5	3	28	9	.....	
<b>Manipulators:</b>													
19 plants.....	1910	52	68.4	.365	24.21	12	6	.....	13	56	6	8	
	1911	48	67.9	.350	23.26	6	13	.....	17	50	10	.....	
	1912	49	66.8	.388	24.92	12	12	.....	12	49	10	.....	
	1913	60	65.3	.431	26.86	10	20	.....	13	42	15	.....	
23 plants.....	1914	62	62.4	.394	23.95	19	19	3	5	53	.....	.....	
	1915	60	63.4	.420	25.81	15	20	3	3	58	.....	.....	
12 plants.....	1917	34	62.4	.639	37.75	35	9	.....	.....	44	12	.....	
19 plants.....	1919	65	62.4	.935	58.34	26	18	.....	3	43	6	3	
20 plants.....	1920	82	58.7	.926	53.80	32	16	6	2	39	5	.....	
<b>Table men:</b>													
13 plants.....	1910	36	69.3	.271	18.03	8	8	.....	11	56	6	11	
	1911	35	68.7	.254	17.05	.....	17	.....	17	49	11	6	
	1912	35	68.7	.285	19.00	.....	17	.....	17	49	11	6	
12 plants.....	1913	31	68.0	.316	20.95	.....	19	.....	13	55	13	.....	
14 plants.....	1914	36	63.6	.314	19.36	17	17	6	3	58	.....	.....	
	1915	34	63.1	.327	19.94	18	18	6	3	56	.....	.....	
4 plants.....	1917	13	63.1	.414	25.51	.....	46	.....	.....	38	15	.....	
9 plants.....	1919	33	62.3	.663	41.30	24	21	.....	6	42	.....	6	
14 plants.....	1920	53	59.1	.687	40.31	34	13	6	4	36	8	.....	
<b>Shearmen:</b>													
19 plants.....	1910	48	70.0	.303	20.85	6	6	.....	8	58	13	8	
	1911	46	69.4	.306	20.96	7	7	.....	13	61	9	4	
	1912	52	69.8	.319	21.93	6	6	.....	12	65	8	4	
	1913	56	67.2	.370	24.23	16	5	.....	11	50	18	.....	
23 plants.....	1914	65	65.0	.345	21.84	14	14	3	8	62	.....	.....	
	1915	62	65.9	.362	23.09	10	15	3	6	66	.....	.....	
12 plants.....	1917	30	65.9	.523	33.41	20	10	.....	.....	57	13	.....	
19 plants.....	1919	59	64.9	.816	52.96	24	10	.....	3	53	7	3	
20 plants.....	1920	78	59.4	.813	48.27	31	21	3	5	38	3	.....	
<b>Shearmen's helpers:</b>													
18 plants.....	1910	100	70.9	.218	15.15	3	9	.....	8	56	10	14	
	1911	96	69.5	.217	14.90	3	9	.....	15	58	13	2	
	1912	99	70.2	.230	15.93	.....	9	.....	14	65	10	2	
	1913	111	69.5	.267	18.17	5	8	.....	9	56	22	.....	
20 plants.....	1914	113	68.4	.256	17.23	3	11	5	2	80	.....	.....	
	1915	114	68.5	.258	17.35	3	11	5	2	78	2	.....	
10 plants.....	1917	29	68.1	.412	27.60	10	10	.....	.....	66	14	.....	
19 plants.....	1919	159	68.8	.610	41.97	8	10	.....	7	65	6	5	
	1920	168	62.7	.619	38.95	16	18	2	7	48	8	.....	
<b>Laborers:</b>													
19 plants.....	1910	449	74.1	.162	11.97	.....	1	2	13	54	6	24	
	1911	363	73.7	.163	12.02	.....	1	4	9	59	9	18	
	1912	396	73.8	.164	12.13	.....	1	3	10	57	11	18	
	1913	352	73.4	.184	13.53	.....	1	3	16	54	12	14	
22 plants.....	1914	267	71.7	.187	13.39	(1)	.....	4	17	69	5	.....	
	1915	290	72.3	.187	13.49	(1)	.....	2	16	66	13	3	
11 plants.....	1917	388	74.3	.287	21.28	.....	5	.....	.....	66	28	1	
19 plants.....	1919	440	70.0	.469	32.53	13	3	1	14	43	16	11	
18 plants.....	1920	439	71.1	.511	36.43	12	(1)	3	10	38	22	15	

(1) Less than one-half of 1 per cent.

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings are presented in Table B (5), for each of the principal productive occupations in blooming mills for the years 1910 to 1920. These are simply percentages computed from the averages of Table A (5), with the average for 1913 as the base, or 100 per cent, as an aid in making comparisons of the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A (5).

For index numbers for this department as a whole (all selected occupations combined), see page 3.

TABLE B (5).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—*BLOOMING MILLS*.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Pit cranimen:</b>				<b>Roll engineers:</b>			
1910.....	100	85	84	1910.....	104	83	88
1911.....	99	84	83	1911.....	104	82	86
1912.....	99	89	88	1912.....	100	83	93
1913.....	100	100	100	1913.....	100	100	100
1914.....	96	97	92	1914.....	96	95	91
1915.....	96	102	96	1915.....	95	100	96
1917.....	95	148	138	1917.....	93	144	133
1919.....	97	221	216	1919.....	94	206	201
1920.....	90	236	213	1920.....	89	216	199
<b>Heaters:</b>				<b>Rollers:</b>			
1910.....	103	88	90	1910.....	102	86	89
1911.....	103	86	90	1911.....	101	83	86
1912.....	102	93	96	1912.....	100	90	90
1913.....	100	100	100	1913.....	100	100	100
1914.....	97	91	88	1914.....	96	98	94
1915.....	98	98	96	1915.....	96	99	96
1917.....	92	127	119	1917.....	94	130	124
1919.....	96	201	195	1919.....	95	198	193
1920.....	91	214	196	1920.....	87	210	188
<b>Heaters' helpers:</b>				<b>Manipulators:</b>			
1910.....	114	96	108	1910.....	105	85	90
1911.....	114	101	117	1911.....	104	81	87
1912.....	105	98	104	1912.....	102	90	93
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	94	92	1914.....	96	91	89
1915.....	96	103	99	1915.....	97	97	96
1917.....	92	170	165	1917.....	96	148	141
1919.....	99	228	230	1919.....	96	217	217
1920.....	93	231	217	1920.....	90	215	200
<b>Bottom makers:</b>				<b>Table men:</b>			
1910.....	98	91	88	1910.....	102	86	86
1911.....	98	90	88	1911.....	101	80	81
1912.....	99	95	93	1912.....	101	90	91
1913.....	100	100	100	1913.....	100	100	100
1914.....	95	101	94	1914.....	94	99	92
1915.....	95	106	98	1915.....	93	103	95
1917.....	98	135	131	1917.....	93	131	122
1919.....	97	227	220	1919.....	92	210	197
1920.....	88	248	215	1920.....	87	217	192
<b>Bottom makers' helpers:</b>				<b>Shearmen:</b>			
1910.....	98	95	92	1910.....	104	82	86
1911.....	98	92	90	1911.....	103	83	87
1912.....	98	98	96	1912.....	104	86	91
1913.....	100	100	100	1913.....	100	100	100
1914.....	97	104	99	1914.....	97	93	90
1915.....	98	102	99	1915.....	98	98	95
1917.....	99	146	143	1917.....	98	141	138
1919.....	96	251	242	1919.....	97	221	219
1920.....	90	249	230	1920.....	88	220	199

TABLE B (5).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—*BLOOMING MILLS*—Concl'd.

Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.
Shearmen's helpers:				Laborers:			
1910.....	102	82	83	1910.....	101	88	88
1911.....	100	81	82	1911.....	100	89	89
1912.....	101	86	88	1912.....	101	89	90
1913.....	100	100	100	1913.....	100	100	100
1914.....	98	96	95	1914.....	98	102	99
1915.....	99	97	95	1915.....	99	102	100
1917.....	98	154	152	1917.....	101	156	157
1919.....	99	228	231	1919.....	95	255	243
1920.....	90	232	214	1920.....	97	278	269

The customary working time per week of employees in the blooming-mill department has been classified and the number and percentages of employees under each classification are shown in Table C (5) for the years 1910 to 1920.

The number of employees reported in 1920 is not always the actual number of employees as the totals in most cases contain some duplications, or repeated employees, as has been explained in the general explanation of Table C (p. 14): Of the 1,385 employees reported in the selected occupations for all districts combined 1,357 are actually engaged and the 3,652 employees shown in all occupations represent 3,571 actual employees.

The number of employees reported, together with the number of actual employees for selected occupations and for all occupations in each district and for all districts combined are shown in Table 12.

TABLE 12.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS, 1920—*BLOOMING MILLS*.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Eastern.....	107	None.	107	248	None.	248
Pittsburgh.....	636	18	618	1,750	44	1,706
Great Lakes and Middle West.....	447	10	437	1,266	33	1,233
Southern.....	195	None.	195	388	4	384
Total.....	1,385	28	1,357	3,652	81	3,571

Practically all of the employees were found working 6 days, 7 days, or 6 days and 7 days alternately, the largest percentage working 6 days. The heading "6 days and 7 days alternately" indicates that the plants were running 7 days and 6 nights or 6 days and 7 nights each week, being shut down for one day or one night each week, and that the employees reported under this heading work 7 turns one week and 6 turns the next.

A study of the table will show that the working time of employees in selected occupations in this department has not materially changed since 1919. The most noticeable change is seen in the reduction from 12 to 4 per cent of the number working 6 days, 6 days, and 7 days in rotation, and the increase from 11 to 19 per cent of those working 6 days and 7 days alternately. When compared with other years considerable change in the working time of these employees is noted, especially when the years 1914 and 1915 are compared with 1920. The greatest fluctuation occurred in 6-day workers, as the percentage for such workers was 66 in 1910, became 63 in 1913, was increased to 76 in 1914, fell off again to 73 in 1915, and was further reduced to 64 in 1919 and to 63 in 1920. Seven-day workers in 1920 showed an increase over 1914 and 1915, but a decrease is recorded when 1920 is compared with any other year except 1913, where there is no change. In 1920 the percentage of 7-day workers was 11 as compared with 18 in 1910, 11 in 1913, and 12 in 1919, but in 1914 and 1915 this percentage had dropped to 5 in each year. The percentage of employees working 6 days and 7 days alternately was larger in 1920 than in any other year, the smallest being in 1914, when only 8 per cent of the employees worked those turns.

When all occupations in this department are considered, the number working 6 days decreased from 73 per cent in 1915 to 67 per cent in 1920, and those working 6 days and 7 days alternately increased from 9 per cent in 1915 to 14 per cent in 1920. The percentage of 7-day work also increased—from 11 per cent in 1915 to 15 per cent in 1920.

TABLE C (5).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—*BLOOMING MILLS.*

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—						Per cent of employees whose customary working time per week was—						
				5 days.	5 days and 6 days alternately.	6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days.	5 days.	5 days and 6 days alternately.	6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.
<b>EASTERN.</b>																
Selected occupations.....	1910	3	110	.....	70	6	25	.....	9	.....	64	6	23	.....	.....	8
	1911	3	97	.....	52	10	22	.....	13	.....	54	10	23	.....	.....	13
	1912	3	95	.....	46	14	22	.....	13	.....	48	15	23	.....	.....	14
	1913	3	95	.....	46	12	24	.....	13	.....	48	13	25	.....	.....	14
	1914	3	94	27	18	45	.....	.....	4	29	19	48	.....	.....	.....	4
	1915	3	86	27	10	45	.....	.....	4	31	12	52	.....	.....	.....	5
	1917	1	24	.....	.....	.....	24	.....	.....	.....	.....	.....	100	.....	.....	.....
	1919	3	98	.....	.....	88	.....	.....	10	.....	.....	90	.....	.....	.....	10
	1920	3	107	23	4	59	18	.....	3	21	4	55	17	.....	.....	3
All occupations.....	1914	3	248	42	50	128	10	.....	18	17	20	52	4	.....	.....	7
	1915	3	239	52	38	118	11	.....	20	22	16	49	5	.....	.....	8
	1920	3	248	40	8	155	29	.....	16	16	3	63	12	.....	.....	6
<b>PITTSBURGH.</b>																
Selected occupations.....	1910	8	522	.....	.....	426	83	.....	13	.....	.....	82	16	.....	.....	3
	1911	8	480	.....	.....	355	86	.....	39	.....	.....	74	18	.....	.....	8
	1912	8	493	.....	.....	354	92	.....	47	.....	.....	72	19	.....	.....	10
	1913	8	490	.....	.....	303	64	69	6	48	.....	62	13	14	1	10
	1914	10	524	.....	.....	<sup>1</sup> 371	61	60	3	29	.....	71	12	11	1	6
	1915	10	546	.....	.....	<sup>1</sup> 365	89	60	3	29	.....	67	16	11	1	5
	1917	5	438	.....	.....	281	103	<sup>2</sup> 54	.....	.....	.....	64	24	12	.....	.....
	1919	7	580	.....	.....	391	28	114	.....	47	.....	67	5	20	.....	8
	1920	8	636	.....	4	<sup>3</sup> 370	225	20	.....	17	.....	58	35	3	.....	3
All occupations.....	1914	10	1,216	.....	.....	<sup>1</sup> 879	129	69	3	136	.....	72	11	6	(*)	11
	1915	10	1,364	.....	.....	<sup>1</sup> 966	193	69	3	133	.....	71	14	5	(*)	10
	1920	8	1,750	1	9	<sup>5</sup> 1,154	397	21	.....	168	(*)	1	66	23	1	10
<b>GREAT LAKES AND MIDDLE WEST.</b>																
Selected occupations.....	1910	6	346	.....	.....	205	2	.....	139	.....	.....	59	1	.....	.....	40
	1911	6	296	.....	.....	188	24	.....	84	.....	.....	64	8	.....	.....	28
	1912	6	328	.....	.....	209	22	.....	97	.....	.....	64	7	.....	.....	30
	1913	6	360	.....	.....	259	56	.....	45	.....	.....	72	16	.....	.....	13

	1914	7	354			<sup>6</sup> 307	16	6	<sup>7</sup> 7	18			87	5	2	2	5	
	1915	7	355			<sup>6</sup> 293	20	12	<sup>8</sup> 18	12			83	6	3	5	3	
	1917	4	208			208							100					
	1919	7	569			356	122	48	19	<sup>9</sup> 24			63	21	8	3	4	
	1920	6	447			293	9	27	18	100			66	2	6	4	22	
All occupations.....	1914	7	744			<sup>6</sup> 652	28	6	<sup>7</sup> 7	51			88	4	1	1	7	
	1915	7	792			<sup>6</sup> 672	34	12	<sup>8</sup> 18	56			85	4	2	2	7	
	1920	6	1,266			811	81	27	19	328			64	6	2	2	26	
SOUTHERN.																		
Selected occupations.....	1910	2	86			61				25			71					29
	1911	2	75	1		49		12		13	1		65	16				17
	1912	2	72	1		55		12		4	1		76	17				6
	1913	-2	74			66		6		2			89	8				3
	1914	3	86			76		5		5			88	6				6
	1915	3	79			74		1		4			94	1				5
	1917	2	110			58		44		8			53	40				7
	1919	2	130			45				85			35					65
	1920	3	195			<sup>10</sup> 145		8	13	29			74	4	7			15
All occupations.....	1914	3	268			184		5		79			69	2				29
	1915	3	264			174		5		85			66	2				32
	1920	3	388			<sup>10</sup> 333		8	16	31			86	2	4			8
TOTAL.																		
Selected occupations.....	1910	19	1,064		70	698	110			186		7	66	10				18
	1911	19	948	1	52	602	144			149	( <sup>4</sup> )	6	64	15				16
	1912	19	988	1	46	632	148			161	( <sup>1</sup> )	5	64	15				16
	1913	19	1,019		46	640	150	69	6	108		5	63	15	7	1		11
	1914	23	1,058	27	18	<sup>11</sup> 799	82	66	<sup>12</sup> 10	56	3	2	76	8	6	1	5	5
	1915	23	1,066	27	10	<sup>11</sup> 777	110	72	<sup>12</sup> 21	40	3	1	73	10	7	2	5	1
	1917	12	780			556	171	<sup>2</sup> 45		8			71	22	6			5
	1919	19	1,377			880	150	162	19	<sup>9</sup> 166			64	11	12	1		12
	1920	20	1,385	23	8	<sup>14</sup> 867	260	60	18	149		2	63	19	4	1		11
All occupations.....	1914	23	2,476	42	50	<sup>11</sup> 1,843	172	75	<sup>12</sup> 10	284	2	2	74	7	3	( <sup>4</sup> )		11
	1915	23	2,659	52	38	<sup>11</sup> 1,930	243	81	<sup>13</sup> 21	294	2	1	73	9	3	1		11
	1920	20	3,652	41	17	<sup>14</sup> 2,453	515	64	19	543	1	( <sup>4</sup> )	67	14	2	1		15

<sup>1</sup> Including 9 employees who worked 7 days every ninth week and 6 employees who worked 7 days every sixth week.

<sup>2</sup> Worked 5 days, 7 days, and 7 days in rotation.

<sup>3</sup> Including 38 employees who worked 7 days every fourth week, and 16 employees who worked 7 days every sixth week.

<sup>4</sup> Less than 1 per cent.

<sup>5</sup> Including 38 employees who worked 7 days every fourth week, and 16 employees who worked 7 days every sixth week.

<sup>6</sup> Including 9 employees who worked 7 days every ninth week.

<sup>7</sup> Five employees worked 6 days every fourth week, and 2 employees worked 6 days for 3 weeks and 7 days for 5 weeks in each 8-week period.

<sup>8</sup> Fourteen employees worked 6 days every fourth week and 4 employees worked 6 days for three weeks and 7 days for 5 weeks in each 8-week period.

<sup>9</sup> Including 12 employees who worked 6 days every fourth week.

<sup>10</sup> Including 3 employees who worked 7 days every sixth week.

<sup>11</sup> Including 18 employees who worked 7 days every ninth week, and 6 employees who worked 7 days every sixth week.

<sup>12</sup> Including 5 employees who worked 6 days every fourth week, and 3 employees who worked 6 days for 3 weeks and 7 days for 5 weeks in each 8-week period.

<sup>13</sup> Including 14 employees who worked 6 days every fourth week and 4 employees who worked 6 days for 3 weeks and 7 days for 5 weeks in each 8-week period.

<sup>14</sup> Including 38 employees who worked 7 days every fourth week and 19 employees who worked 7 days every sixth week.

Table D (5) presents the most significant facts relative to customary and actual working time, total actual earnings, and earnings per hour of employees in the selected occupations in blooming mills in 1920, by occupations and districts.

Referring to the occupation of pit craneman by way of illustration, it is seen that there were 20 plants reported, in which under normal working conditions there were 114 positions, but during this pay-roll period 138 men worked in these 114 positions.

The average number of turns per week for all employees in the different occupations for all districts combined was either 6 or 6.3 turns per week, the heating crew and roll engineers having the slightly higher average, in the latter case due to their working on a repair turn when the mills are not producing. The average length of turn for the different occupations for all districts combined ranged from 9.7 hours for rollers to 11.3 for laborers.

The average hours per week for rollers were lower than those for any occupation, while the average hours per week for laborers were the highest, the former being 57.9 and the latter 71.1. The majority of the employees in every occupation worked 72 hours per week or less. In only 2 occupations, heaters and laborers, were any employees found working 84 hours per week. In the occupation of heaters out of 106 employees 2 worked such hours, while out of 439 laborers 68 worked such hours.

The highest average hourly earnings in this department were found in the Pittsburgh district in 9 of the 12 selected occupations, in the Great Lakes and Middle West district in 2, and in the Southern district in the remaining 1. The averages for the Southern district were higher than those for the Eastern district in all but two occupations, laborers and the little-skilled shearmen's helpers.<sup>12</sup>

The average earnings per hour of rollers (\$1.473) were the highest in any occupation and were followed by those of heaters (\$1.271) and of roll engineers (\$1.017). Those of laborers (51.1 cents) were the lowest. Average hours worked in the various occupations ranged from 109 by roll engineers to 81.5 by manipulators. Average earnings in the selected occupations in this department for the pay-roll period ranged from \$140.69 for rollers to \$49.38 for laborers.

Owing to the fact that many of the employees worked at more than one occupation during the period reported, separate figures which include the data for all occupations at which such employees worked are shown for each occupation. For example, the 106 heaters averaged 95.3 hours and earned \$120.24, but during the same period of time they averaged 32.8 hours at other occupations, giving them a total average of 128.1 hours and \$148.22 in earnings.

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<sup>12</sup> See "Introduction and summary," p. 12.







Heaters and roll engineers were the occupations selected in the blooming-mill department for which to show classified earnings per hour.

Table E (5) shows for these occupations, by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings per hour fell in each group of classified rates per hour.

The average earnings per hour of heaters in the Eastern district ranged from 70 cents to \$1.50 per hour. In the four districts the range of classified earnings was from 40 cents to \$2 per hour. Out of the 106 heaters 67, or 63 per cent, earned between \$1 and \$1.50 per hour. The largest number in any one group was found in that at \$1 to \$1.25 per hour; for all, however, the average was \$1.271. The range of classified earnings per hour for roll engineers extended from 30 cents to \$1.75 per hour, although 46 per cent of the 63 employees earned between 80 cents and \$1.25 per hour, the average for all being \$1.017.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (5).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS 1920—BLOOMING MILLS.

[For explanation of this table, see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Employees whose earnings per hour were—									
			30 and under 40 cents.	40 and under 50 cents.	60 and under 70 cents.	70 and under 80 cents.	80 and under 90 cents.	90 cents and under \$1.	\$1 and under \$1.25.	\$1.25 and under \$1.50.	\$1.50 and under \$1.75.	\$1.75 and under \$2.
			<b>HEATERS.</b>									
Eastern.....	10	\$1.083				3		1	3	3		
Pittsburgh.....	42	1.304					2	5	13	11	11	
G. L. and M. W.....	35	1.366		3	1				11	13	4	3
Southern.....	19	1.121		1		1	1	3	8	5		
Total.....	106	1.271		4	1	4	3	9	35	32	15	3
<b>ROLL ENGINEERS.</b>												
Eastern.....	6	.837				4			2			
Pittsburgh.....	27	1.055					6	8	6	6	1	
G. L. and M. W.....	22	1.031		1			7	3	8	3		
Southern.....	8	.987		1	1			3	3			
Total.....	63	1.017	1	1	1	4	13	14	19	9	1	

The customary turns per week, hours per turn, and full-time hours per week in the blooming-mill department are shown in detail, by districts and for all districts combined, for the year 1920, in Table F (5).

The table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the blooming-mill department was obtained from 20 plants and covers 3,571 actual employees—3,363 in part 1 of the table and 208 in part 2. However, the sum of the figures in this table would show 3,800 persons, due to 229 duplications, or repeated employees, appearing in part 2.

Blooming-mill plants, as is generally the case with all rolling mills, are seldom operated more than 6 days per week, and 67 per cent of all employees reported in Table F (5) customarily worked that number of turns, although some of the occupations were of necessity filled continuously. Sunday work, which is not to be confused with 7-day work, was quite common, however, and practically all of the mills closed down on the completion of the day turn on Saturday and started up again at the beginning of the night turn on Sunday. Of the 3,800 employees (including duplications) reported in Table F (5), a total of 2,979—2,660 of the employees included in part 1 and 319 of those in part 2—were Sunday workers. Of this number 1,513, or 51 per cent, worked every other Sunday, 771, or 26 per cent, worked every Sunday, and the remaining 23 per cent were relieved one Sunday out of every three or some such period. A total of 415 employees worked fewer hours on Saturday than on the regular Monday to Friday shifts, and 154 worked a smaller number of hours on Sunday. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turns, the night turns usually being of equal length.

Of the 3,363 employees reported working at one combination of hours and turns, 87 per cent alternated weekly from day to night work, 12 per cent worked days only, and the remaining 1 per cent worked nights only. Of the 2,950 employees alternating from day to night, 64 per cent worked 6 turns either day or night, 16 per cent worked 7 days and 6 nights, 15 per cent worked 7 turns each week, and the remainder worked 6 days, 7 days, and 7 days in rotation, 6 days, 6 days, and 7 days in rotation, or some such number of turns.

The 12-hour turn was most common among these employees, 1,532, or 52 per cent, working on 12-hour shifts. The 8-hour turn was also well represented, 788, or 27 per cent, being on the three-shift basis. The length of the day turn is not always the same as that of the night turn, as shown by the fact that 604, or 20 per cent, of the total number of alternating employees worked turns of different lengths, 316 working 11 hours when on day turn and 13 hours when on night turn, while 103 worked 10 hours on day turn and 14 hours on night turn.

Of the 390 men who worked days only, 84 per cent worked 6 days per week, 13 per cent worked 7 days, 2 per cent worked 6 days and 7 days alternately, and 1 per cent worked 5 days each week. The length of turn among the day workers covered a wide range of hours, 208 working 12 hours per day, 82 working 10 hours, and the remainder working hours varying from 8 to 11½.

A total of 18, or 78 per cent of the 23 employees reported as working night turns only, worked 6 nights per week and of that number 14 worked 12 hours per night. Those whose working time per week was 7 nights numbered 3, of which 2 worked 12 hours per turn. One employee alternated weekly from 6 to 7 nights and was on duty 13 hours each night, while 1 employee worked 5 nights of 12½ hours each week.

The 437 employees (including duplications) presented in Part 2 of the table are divided into the following classes: Those alternating from day to night, numbering 386, or 88 per cent; those working days only, numbering 46, or 11 per cent; and those working nights only, numbering 5, or 1 per cent. Of the 386 employees who work days one week and nights the next, 266, or 69 per cent, worked 6 turns each week, 64, or 17 per cent, alternated weekly from 6 to 7 turns, 46, or 12 per cent, worked 7 turns either day or night, and the remainder (8 employees) worked 6 days, 6 days, and 7 days in rotation, or some such number of turns. The customary length of turn for 292, or 76 per cent of the alternating employees, was 12 hours either day or night, and 46, or 12 per cent, were on an 8-hour basis. A total of 41, or 89 per cent of those working days only, worked 6 turns per week and the remaining 5, or 11 per cent, worked 7 turns. The length of turn varied from 8 to 12 hours per day, the largest number in any one group (or 43 per cent) being found on a 12-hour shift. All of the 5 employees who worked nights only worked 6 turns of 12 to 13 hours each week.

TABLE F (5).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BLOOMING MILLS.

[For explanation of this table see p. 15.]

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

Customary turns and hours worked.									Number of employees who worked each specified combination of customary turns and hours by districts.				
Day turns.					Night turns.				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.					
<b>Employees who worked day turns.</b>													
7	12	12	12	84					9	10	5	1	25
6	12	12		72						1			1
7	12	12	12	84									
7	11	11	13	79						2			2
6	11	11		66						3			3
7	11	11	11	77									
7	10	10	10	70						7			7
6	10	10		60						2			2
6	10	10	10	70									
7	8	8	8	56							18		18
6	12	12	12	72								20	20
6	12	12		72					3	57	46	49	155
6	12	11	11	71						1			1
6	12	11		71						3			3
6	12	6		66						3			3
6	11½	11½		69							12		12
6	11	11	10	65							1		1
6	11	11		66						11	4		15
6	11	10		65						14	7		21
6	10	10		60					10	17	4	2	33
6	10	9		59						2	14		16
6	10	5½		55½					24				24
6	9½	9½		57								1	1
6	9	8		53						1			1
6	8	8		48					1	6	14		21
5	10			50					5				5



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TABLE F (5).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BLOOMING MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.				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.					

Employees who alternated weekly from day to night turns—Continued.

7	8	8	8	56	6	8	8	48			12		12
7	8	8	8	56	6	8	8	48			2		2
7	8	8	8	56	6	8	8	48			4		4
6	8	8	8	48	6	8	8	48			16		16
6	8	8	8	48	6	8	8	48			5		5
6	8	8	8	48	6	8	8	48					6
6	8	8	8	48	6	8	8	48		6			6
6	8	8	8	48	6	8	8	48			8		8
6	12	13	7	73	6	12	12	72		2			2
6	12	12	7	72	7	12	12	84	12	20			32
6	12	12	7	72	6	13	13	78		4			4
6	12	12	7	72	6	12	13	73		70			70
6	12	12	12	72	6	12	12	72			71	143	214
6	12	12	12	72	6	12	12	72		4			4
6	12	12	12	72	6	12	12	72			27	12	39
6	12	12	12	72	6	12	12	72			100	67	167
6	12	12	12	72	6	12	12	72	45	208	70	1	324
6	12	12	12	72	6	12	6	66					
6	12	12	12	72	6	12	12	72		2			2
6	12	12	12	72	6	12	6	66					
6	12	12	12	72	6	12	6	66		1			1
6	12	12	12	72	6	12	12	72		2			2
6	12	12	12	72	6	12	12	72		6			6
6	12	11½	11	71½	6	12	12	72		72			72
6	12	11	11	71	7	12	12	84		3			3
6	12	11	11	71	6	13	13	78		58			58
6	12	11	11	71	6	12	13	73		4			4
6	12	11	11	71	6	12	12	72		163			163
6	12	10	10	70	6	12	12	72		2			2
6	12	6	6	66	6	12	12	72		2			2
6	11½	11	11	69½	6	11½	11½	69		3			3
6	11	11	11	66	7	13	14	93		1			1
6	11	11	11	66	7	13	13	93		3			3
6	11	11	11	66	7	13	13	93		8			8
6	11	11	11	66	7	13	13	93		8			8
6	11	11	11	66	7	13	12	92		1			1
6	11	11	11	66	7	13	12	92		1			1
6	11	11	11	66	7	13	12	91		10			10
6	11	11	11	66	7	13	12	90		2			2
6	11	11	11	66	6	13	14	82		2			2
6	11	11	11	66	6	13	14	79		5			5
6	11	11	11	66	6	13	13	81		17			17
6	11	11	11	66	6	13	13	80		2			2
6	11	11	11	66	6	13	13	80		7			7
6	11	11	11	66	6	13	15	80		6			6
6	11	11	11	66	6	13	14	79		48			48
6	11	11	11	66	6	13	13	78		2			2
6	11	11	11	66	6	13	13	78		5			5
6	11	11	11	66	6	13	13	78		125			125

TABLE F (5).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—*BLOOMING MILLS*—Continued.

PART I.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

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

Employees who alternated weekly from day to night turns—Concluded.

6	11	11	6	61	6	13	.....	13	78	.....	13	.....	.....	13
6	11	11	.....	66	6	12	.....	12	72	.....	2	.....	.....	2
6	11	11	.....	66	6	11	.....	11	66	.....	2	.....	.....	2
6	11	10	.....	65	6	13	.....	15	80	.....	1	.....	.....	1
6	11	10	.....	65	6	13	.....	14	79	.....	15	.....	.....	15
6	11	10	.....	65	6	13	.....	13	78	.....	18	.....	.....	18
6	11	10	.....	65	6	12	.....	12	72	.....	1	.....	.....	1
6	11	9	.....	64	7	13	14	15	94	.....	1	.....	.....	1
6	10½	5½	.....	57½	5	13½	.....	.....	67½	.....	4	.....	.....	4
6	10	11	.....	61	5	14	.....	.....	70	.....	4	.....	.....	4
6	10	10	.....	60	7	14	14	14	98	.....	11	.....	.....	11
6	10	10	.....	60	7	10	14	10	74	.....	1	.....	.....	1
6	10	10	.....	60	6	14	.....	14	84	.....	65	.....	.....	65
6	10	10	.....	60	6	13	.....	14	79	.....	1	.....	.....	1
6	10	10	.....	60	6	11	.....	11	66	.....	67	.....	.....	67
6	10	10	.....	60	6	10	.....	10	60	.....	6	.....	.....	6
6	10	9½	.....	59½	6	14	.....	14	84	.....	4	.....	.....	4
6	8	8	.....	8	48	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	8	10	.....	50	6	8	.....	8	48	.....	3	.....	.....	3
6	8	8	.....	8	48	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	8	9	.....	49	6	8	.....	5	45	.....	20	.....	.....	20
6	8	8	.....	8	48	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	8	9	.....	49	6	8	.....	5	45	.....	6	.....	.....	6
6	8	8	.....	48	7	8	8	7	55	.....	93	.....	.....	93
6	8	8	.....	48	6	8	8	8	48	.....	.....	5	.....	5
6	8	8	.....	48	6	8	.....	8	48	.....	.....	16	.....	16
6	8	8	.....	48	6	8	8	8	48	.....	.....	145	27	172
6	8	8	.....	48	.....	.....	.....	.....	.....	.....	.....	186	.....	186
6	8	8	.....	48	6	8	.....	8	48	.....	.....	.....	.....	.....
6	8	8	.....	48	6	8	.....	8	48	.....	10	.....	.....	10
5	10½	.....	.....	52½	5	13½	.....	.....	67½	.....	35	.....	.....	35
5	10	.....	.....	50	6	12	.....	12	72	.....	9	.....	.....	9

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TABLE F (5).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BLOOMING MILLS—Continued.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

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

Employees who worked day turns.

7	12	12	12	54						2	2		4
7	8	8	8	56							1		1
6	12	12	12	72								2	2
6	12	12		72						1	8	4	13
6	12	11		71						1			1
6	11½	11½		69						2	3		4
6	11	11		66						1			2
6	11	10		35						12	2		14
6	10	10		30						3			3
6	8	8		48							2		2

Employees who worked night turns.

				6	13		13	78		2			2
				6	12	12	12	72				2	2
				6	12	12		72				1	1

Employees who alternated weekly from day to night turns.<sup>2</sup>

7	12	12	12	84	7	12	12	12	84	12	23		35
7	12	12	12	84	6	12	12		72		9		9
7	12	12	12	84	6	12		12	72	40			40
7	12	12	3	75	7	12	15	12	87	4			4
7	12	12	3	75	7	12	3	12	75				
7	11	11	11	77	6	11		11	66	1			1
7	11	11	10	76	6	13		14	79	4			4
6	10	10		60	6	14		14	84				
7	10	10	10	70	6	14		14	84	3			3
7	8	8	8	56	7	8	8	8	56		5	2	7
7	8	8	8	56									
7	8	8	8	56	6	8		8	48		2		2
7	8	8	8	56									
6	8	8	8	48	6	8		8	48			1	1
7	8	8	4	52									
6	8	8	8	48	6	8		8	48			3	3
7	8	8	2	50									
6	12	12		72	7	12	12	12	84	5			5
6	12	12	12	72	6	12	12	12	72		25		25
6	12	12	12	72	6	12		12	72	10			10
6	12	12		72	6	12	12	12	72		16		16
6	12	12		72	6	12	12		72		54	3	57
6	12	12		72	6	12		12	72	52			52
6	12	12	4	64	6	12		12	72	5			5
6	12	11½		71½	6	12		12	72	2			2
6	12	11		71	6	12		12	72	13			13
6	12	12		72	6	12	6	12	66				
6	12	12		72	6	12	12	12	72	8			8
6	12	12		72	6	12		12	72				

<sup>2</sup> In the Pittsburgh district out of 142 employees who worked 6 days and 6 nights per week alternately 3 per cent worked 1 day extra every fourth week and 6 per cent worked 1 day extra every sixth week.

TABLE F (5).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—*BLOOMING MILLS*—Concluded.

**PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.**

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

**Employees who alternated weekly from day to night turns—Concluded.**

6	12	12	.....	72	6	12	6	12	66	}	10	.....	.....	.....	10
6	12	12	.....	72	6	12	6	12	66						
6	12	12	.....	72	6	12	.....	12	72						
6	12	6	.....	66	6	12	.....	12	72	1	.....	.....	.....	.....	1
6	11	11	.....	66	7	13	13	16	94	1	.....	.....	.....	.....	1
6	11	11	.....	66	7	13	13	13	91	1	.....	.....	.....	.....	1
6	11	11	.....	66	6	13	.....	14	79	18	.....	.....	.....	.....	18
6	11	11	11	66	6	13	.....	13	78	3	.....	.....	.....	.....	3
6	11	11	10	65	6	13	.....	14	79	4	.....	.....	.....	.....	4
6	11	11	.....	66	6	13	.....	13	78	7	.....	.....	.....	.....	7
6	11	10	.....	65	6	13	.....	15	80	1	.....	.....	.....	.....	1
6	10	10	.....	60	7	14	14	14	98	3	.....	.....	.....	.....	3
6	10	10	.....	60	6	14	.....	14	84	2	.....	.....	.....	.....	2
6	8	8	.....	48	}	7	8	14	8	62	1	.....	.....	.....	1
6	8	8	.....	48											
6	8	9	.....	49	6	8	.....	5	45	2	.....	.....	.....	.....	2
6	8	8	8	48	}	6	8	8	.....	48	4	11	4	.....	19
6	8	8	.....	48											
6	8	8	.....	48	}	6	8	.....	8	48	.....	7	.....	.....	7
6	8	8	.....	48											
6	8	8	.....	48	}	6	8	8	8	48	.....	2	.....	.....	2
6	8	8	.....	48											
6	8	8	.....	48	6	8	8	.....	48	.....	2	.....	.....	.....	2
6	8	8	.....	48	6	8	8	.....	48	.....	2	.....	.....	.....	2

## PLATE MILLS.<sup>13</sup>

The average earnings per hour for the principal productive occupations combined in the plate-mill department in 1920 were 15 per cent higher than in 1919, 167 per cent higher than in 1913, and 200 per cent higher than in 1910. Average full-time hours per week were at the same level in 1920 as in 1910, although once in the period they were slightly lower and four times they were from 1 to 3 per cent higher. Since full-time hours per week varied so little from year to year, full-time weekly earnings very closely followed the course of hourly earnings and showed an increase in 1920 of 11 per cent over 1919, of 165 per cent over 1913, and of 201 per cent over 1910 (see p. 3).

The most significant facts concerning average earnings and average hours in each of the principal productive occupations in this department for the years 1910 to 1920 are shown in Table A (6). The data for 1920 cover 11 plants, representing 1,500 employees in 16 selected occupations and 3,227 employees in all occupations. Of the 11 plants reported, 10 operated sheared-plate mills, in which the edges are not rolled and must be sheared off, and 4 operated universal mills, in which the edges are rolled and therefore only the ends need be cut. The average earnings per hour in 1920 for the department as a whole, including all occupations, selected and others, were 67.1 cents.

The changes which have taken place in average full-time hours per week from year to year in the several selected occupations have been so slight that when 1920 is compared with any other year little variation in the working time of employees in any occupation can be seen.

Average hourly earnings showed large increases in each occupation in 1920 over all other years for which data are presented except 1919. When 1920 is compared with 1919, 12 occupations show slight increases and 4 show very slight decreases. Although the average hourly earnings of heaters, for example, show a reduction in 1920 from 1919 of 1.3 cents, the 1920 average is over twice as great as that for any other year except 1917, the increase over that year being 54 per cent.

There having been such slight variations in full-time hours per week, average full-time weekly earnings followed the trend of hourly earnings in practically all occupations. When 1920 is compared with 1919, increases are seen in 10 occupations and decreases in 6 occupations, as compared with 12 increases and 4 decreases in average hourly earnings. The 1920 averages show large increases over those of all years other than 1919.

In the distribution of employees according to their full-time hours per week practically all are found under the classifications beginning with 60 and ending with "under 84." The only notable exception occurs in the occupation of laborers, where 8 per cent of the employees had full-time of "Over 48 and under 60" and 12

<sup>13</sup> Summary figures relating to the plate-mill department are given, with figures for other departments of the iron and steel industry, on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

per cent 60 hours. Roll engineers were the only employees whose occupation had an 84-hour week in 1920, 13 per cent of the employees having had full time of that length.

TABLE A (6).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—PLATE MILLS.

[For explanation of this table see p. 13.]

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Charging-crane and charging-machine operators:</b>												
9 plants	1910	41	71.6	\$0.303	\$21.85				34	56		10
	1911	39	69.4	.283	19.70		3	5	33	56		3
10 plants	1912	42	69.6	.315	21.98			5	33	33	29	
	1913	46	70.7	.339	24.07				35	39	26	
12 plants	1914	52	70.2	.306	21.69				42	31	27	
	1915	54	70.3	.329	23.39				41	30	30	
7 plants	1917	30	70.4	.480	33.85				20	80		
11 plants	1919	71	71.5	.799	57.13				18	76	6	
10 plants	1920	63	70.0	.798	56.18			6	38	19	37	
<b>Heaters:</b>												
11 plants	1910	56	71.0	.508	36.35				39	54		7
	1911	55	69.1	.468	32.46		2	4	38	55		2
	1912	55	69.9	.513	36.02			4	36	33	27	
	1913	54	71.7	.562	40.59				39	26	35	
13 plants	1914	64	70.5	.529	37.63				48	23	22	6
	1915	61	70.6	.557	39.73				49	21	23	7
7 plants	1917	30	70.4	.771	54.35				20	80		
11 plants	1919	66	70.7	1.202	84.98				27	70	3	
	1920	84	68.5	1.189	81.55		4		60	26	11	
<b>Heaters' helpers:</b>												
10 plants	1910	111	69.5	.243	16.98				67	28		5
	1911	108	67.3	.227	15.31			4	66	30		1
	1912	113	68.7	.243	16.74			3	61	25	8	4
	1913	107	68.7	.252	17.50				64	23	12	
12 plants	1914	112	67.7	.247	16.68				76	9	15	
	1915	109	67.6	.264	18.04				76	8	16	
6 plants	1917	36	67.4	.469	31.67				56	44		
10 plants	1919	129	71.1	.601	42.73				23	74	3	
	1920	140	68.9	.620	42.74			1	73	17	9	
<b>Roll engineers:</b>												
11 plants	1910	36	71.5	.300	21.45				28	61	11	
	1911	35	70.8	.290	20.55			6	34	37	17	6
	1912	37	72.5	.287	20.93			5	32	27	22	14
	1913	36	72.8	.309	22.63				33	31	22	14
13 plants	1914	38	70.2	.307	21.55				45	34	16	5
	1915	39	69.7	.309	21.58				51	28	15	5
7 plants	1917	20	70.9	.444	31.63				30	60		10
11 plants	1919	43	72.7	.744	54.00				19	67		14
	1920	39	71.6	.774	55.98				31	33	23	13
<b>Rollers, sheared-plate mills:</b>												
9 plants	1910	28	68.4	.712	48.18				71	29		
	1911	28	68.1	.607	41.46		4		54	43		
	1912	27	68.7	.711	48.93				48	52		
	1913	26	68.5	.718	49.21				50	50		
11 plants	1914	28	68.0	.703	47.94				57	43		
	1915	28	67.9	.734	49.89				57	43		
7 plants	1917	18	69.4	1.011	70.32				33	67		
9 plants	1919	30	70.8	1.530	108.32				23	77		
10 plants	1920	35	68.1	1.558	106.60			6	51	34	9	
<b>Screw men, sheared-plate mills:</b>												
9 plants	1910	28	68.6	.421	28.75				64	36		
	1911	28	68.6	.393	26.95		4		46	50		
	1912	29	69.0	.435	30.00		3		41	55		
	1913	29	69.0	.452	33.36				45	55		
10 plants	1914	28	68.7	.434	30.08				50	50		
	1915	26	68.3	.474	32.61				54	46		
7 plants	1917	22	69.9	.702	49.15				27	72		
9 plants	1919	32	71.3	1.117	79.64				16	84		
	1920	39	68.4	1.115	76.23			5	51	44		

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TABLE A (6).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—PLATE MILLS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Table operators, sheared-plate mills:</b>												
9 plants.....	1910	26	68.4	\$0.318	\$21.64				69	31		
	1911	28	68.1	.300	20.44				57	43		
	1912	30	68.3	.334	22.85				53	47		
	1913	31	68.2	.363	24.87				55	45		
11 plants.....	1914	31	67.6	.317	21.73				61	39		
	1915	32	67.5	.332	22.63				63	38		
6 plants.....	1917	20	68.5	.510	35.02				40	60		
9 plants.....	1919	45	70.6	.825	58.25				29	71		
10 plants.....	1920	42	67.6	.870	58.80			5	55	40		
<b>Hookmen, sheared-plate mills:</b>												
9 plants.....	1910	73	68.3	.262	17.88				68	32		
	1911	72	68.1	.246	16.81				58	42		
	1912	72	68.5	.276	18.90				53	47		
	1913	76	68.4	.313	21.55				57	43		
11 plants.....	1914	74	68.2	.294	20.27				57	43		
	1915	76	68.0	.314	21.57				58	42		
6 plants.....	1917	49	69.6	.476	33.25				29	71		
9 plants.....	1919	89	71.0	.780	55.38				22	78		
10 plants.....	1920	100	67.6	.813	55.02			8	55	37		
<b>Roll hands, other, sheared-plate mills:</b>												
6 plants.....	1910	14	68.0	.263	17.71				71	29		
	1911	14	68.9	.242	16.64				43	57		
	1912	16	69.3	.269	18.54				38	63		
7 plants.....	1913	20	69.1	.265	18.28				50	50		
9 plants.....	1914	24	67.4	.257	17.42				67	33		
	1915	24	67.4	.268	18.12				58	42		
5 plants.....	1917	16	69.1	.401	27.74				37	63		
8 plants.....	1919	28	71.0	.676	48.00				21	79		
	1920	33	68.3	.668	45.76			6	64	30		
<b>Rollers, universal mills:</b>												
4 plants.....	1910	8	69.5	.636	44.22				50	50		
	1911	7	68.4	.584	40.31			14	29	57		
	1912	6	67.8	.581	39.78			17	33	50		
5 plants.....	1913	6	69.8	.672	47.81				33	67		
	1914	8	68.8	.590	41.08				50	50		
	1915	8	68.8	.676	47.10				50	50		
	1919	9	70.7	1.371	96.93				22	78		
	1920	9	70.0	1.372	98.32				56	22		
<b>Screwmen, main rolls, universal mills:</b>												
4 plants.....	1910	8	69.5	.470	32.75				50	50		
	1911	7	66.6	.421	28.23			29	29	43		
	1912	7	66.6	.407	27.38			29	29	43		
	1913	7	70.1	.460	32.66				29	71		
5 plants.....	1914	9	69.2	.386	26.96				44	56		
	1915	9	69.2	.451	31.51				44	56		
	1919	11	70.9	1.015	71.96				18	82		
	1920	10	69.4	1.028	72.88				20	80		
<b>Screwmen, side rolls, universal mills:</b>												
4 plants.....	1910	10	69.2	.314	21.77				60	40		
	1911	9	66.3	.296	19.80				22	44	33	
	1912	9	66.3	.271	18.12				22	44	33	
	1913	8	68.6	.294	20.56				22	50	50	
5 plants.....	1914	10	68.1	.271	18.69					60	40	
	1915	10	68.1	.332	22.83					60	40	
	1919	10	70.8	.713	50.48					20	80	
	1920	12	69.6	.902	63.94					50	50	
<b>Roll hands, other, universal mills:</b>												
2 plants.....	1910	6	70.0	.299	20.93				33	67		
	1911	4	72.0	.299	21.55					100		
	1912	5	69.6	.277	19.41			20		80		
	1913	8	70.3	.261	18.50				25	75		
5 plants.....	1914	10	69.5	.266	18.48					40	60	
	1915	9	69.2	.310	21.46					44	56	
	1919	19	71.4	.605	43.20					11	89	
	1920	10	69.5	.687	48.41					40	60	

TABLE A (6).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—PLATE MILLS—Concluded.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Shearmen:</b>												
11 plants.....	1910	70	67.5	\$0.378	\$25.69	.....	.....	3	64	33	.....	.....
	1911	66	68.0	.356	24.45	.....	.....	6	42	52	.....	.....
	1912	69	68.3	.384	26.48	.....	.....	7	38	55	.....	.....
	1913	69	68.8	.415	28.81	.....	1	.....	39	59	.....	.....
13 plants.....	1914	73	68.4	.406	27.97	.....	1	.....	45	53	.....	.....
	1915	73	68.2	.436	29.68	.....	1	3	44	52	.....	.....
7 plants.....	1917	42	69.7	.638	44.74	.....	.....	24	10	67	.....	.....
11 plants.....	1919	97	70.8	.977	69.17	.....	1	.....	21	78	.....	.....
	1920	92	68.0	1.016	69.44	.....	1	8	45	47	.....	.....
<b>Shearmen's helpers:</b>												
11 plants.....	1910	460	68.4	.215	14.71	.....	.....	2	57	42	.....	.....
	1911	429	68.4	.206	14.20	.....	.....	4	41	56	.....	.....
	1912	432	68.6	.223	15.42	.....	.....	3	39	58	.....	.....
	1913	425	68.7	.250	17.25	.....	(1)	.....	42	57	.....	.....
13 plants.....	1914	408	68.2	.243	16.71	.....	(1)	.....	48	52	.....	.....
	1915	406	68.4	.260	17.89	.....	(1)	1	46	50	2	.....
7 plants.....	1917	248	69.0	.400	27.60	.....	.....	20	10	70	.....	.....
11 plants.....	1919	630	71.1	.630	44.79	.....	.....	.....	20	80	(1)	.....
	1920	623	68.2	.665	45.56	.....	(1)	3	44	52	.....	.....
<b>Laborers:</b>												
11 plants.....	1910	355	66.8	.159	10.68	.....	.....	25	58	10	1	6
	1911	274	66.2	.158	10.51	.....	.....	26	52	18	3	1
	1912	339	68.9	.161	11.17	.....	.....	22	36	31	6	2 5
	1913	349	69.3	.181	12.62	.....	.....	22	36	32	3	2 7
12 plants.....	1914	216	67.6	.174	11.85	.....	6	21	30	27	13	3
	1915	208	66.7	.174	11.66	.....	17	19	29	19	13	3
5 plants.....	1917	197	70.3	.294	20.67	.....	3	10	.....	87	.....	.....
10 plants.....	1919	587	69.5	.450	31.28	.....	12	2	21	62	1	3
8 plants.....	1920	348	67.9	.498	34.66	.....	8	12	4	66	10	.....

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

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

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings for the principal productive occupations in plate mills, for the years 1910 to 1920, are presented in Table B (6). These are simply percentages computed from the averages of Table A (6), with the average for 1913 as the base, or 100 per cent, as an aid in making comparisons of the exact differences appearing from year to year in the actual averages, some of which differences are noted in the text preceding Table A (6).

For index numbers for this department as a whole (all selected occupations combined), see p. 3.

TABLE B (6).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—PLATE MILLS.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Charging-crane and charging-machine operators:</b>				<b>Hookmen, sheared-plate mills:</b>			
1910.....	101	89	91	1910.....	100	84	83
1911.....	98	83	82	1911.....	100	79	78
1912.....	98	93	91	1912.....	100	88	88
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	90	90	1914.....	100	94	94
1915.....	99	97	97	1915.....	99	100	100
1917.....	100	142	141	1917.....	102	152	154
1919.....	101	236	237	1919.....	104	249	257
1920.....	99	235	233	1920.....	99	260	255
<b>Heaters:</b>				<b>Roll-hands, other sheared plate mills:</b>			
1910.....	99	96	90	1910.....	98	99	97
1911.....	96	83	80	1911.....	100	91	91
1912.....	97	91	89	1912.....	100	102	101
1913.....	100	100	100	1913.....	100	100	100
1914.....	98	94	93	1914.....	98	97	95
1915.....	98	99	98	1915.....	98	101	99
1917.....	98	137	134	1917.....	100	151	152
1919.....	99	214	209	1919.....	103	255	263
1920.....	96	212	201	1920.....	99	252	250
<b>Heaters' helpers:</b>				<b>Rollers, universal mills:</b>			
1910.....	101	96	97	1910.....	100	95	92
1911.....	98	90	87	1911.....	98	87	84
1912.....	100	96	95	1912.....	97	86	83
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	98	95	1914.....	99	88	86
1915.....	98	105	103	1915.....	99	101	99
1917.....	98	186	181	1919.....	101	204	203
1919.....	103	238	244	1920.....	100	204	206
1920.....	100	246	244	<b>Screwmen, main rolls, universal mills:</b>			
<b>Roll engineers:</b>				1910.....	99	102	100
1910.....	98	97	95	1911.....	95	92	86
1911.....	97	94	91	1912.....	95	88	84
1912.....	100	93	92	1913.....	100	100	100
1913.....	100	100	100	1914.....	99	84	83
1914.....	96	99	95	1915.....	99	98	96
1915.....	96	100	95	1919.....	101	221	220
1917.....	97	144	140	1920.....	99	223	223
1919.....	100	241	239	<b>Screwmen, side rolls, universal mills:</b>			
1920.....	98	250	247	1910.....	101	107	106
<b>Rollers, sheared-plate mills:</b>				1911.....	97	101	96
1910.....	100	99	98	1912.....	97	92	88
1911.....	99	85	84	1913.....	100	100	100
1912.....	100	99	99	1914.....	99	92	91
1913.....	100	100	100	1915.....	99	113	111
1914.....	99	98	97	1919.....	103	243	246
1915.....	99	102	101	1920.....	101	207	311
1917.....	101	141	143	<b>Roll-hands, other, universal mills:</b>			
1919.....	103	213	220	1910.....	100	115	113
1920.....	99	217	217	1911.....	102	115	116
<b>Screwmen, sheared plate mills:</b>				1912.....	99	106	105
1910.....	99	87	86	1913.....	100	100	100
1911.....	99	82	81	1914.....	99	102	100
1912.....	100	90	90	1915.....	98	119	116
1913.....	100	100	100	1919.....	102	232	234
1914.....	100	90	90	1920.....	99	263	262
1915.....	99	98	98	<b>Shearmen:</b>			
1917.....	101	146	147	1910.....	98	91	89
1919.....	103	232	239	1911.....	99	86	85
1920.....	99	231	229	1912.....	99	93	92
<b>Table-operators, sheared-plate mills:</b>				1913.....	100	100	100
1910.....	100	88	87	1914.....	99	98	97
1911.....	100	83	82	1915.....	99	105	103
1912.....	100	92	92	1917.....	101	154	155
1913.....	100	100	100	1919.....	103	235	240
1914.....	99	87	87	1920.....	99	245	241
1915.....	99	91	91				
1917.....	100	140	141				
1919.....	104	227	234				
1920.....	99	240	236				

TABLE B (6).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—PLATE MILLS—Concluded.

Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per week.	Full-time weekly earnings.
Shearmen's helpers:				Laborers:			
1910.....	100	86	85	1910.....	96	88	85
1911.....	100	82	82	1911.....	96	87	83
1912.....	100	89	89	1912.....	99	89	89
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	97	97	1914.....	98	96	94
1915.....	100	104	104	1915.....	96	96	92
1917.....	100	160	160	1917.....	101	162	164
1919.....	103	252	260	1919.....	100	249	248
1920.....	99	266	264	1920.....	98	275	275

The customary working time per week of employees in the plate-mills department has been classified and the number and per cent of employees under each classification are shown in Table C (6) for the years 1910 to 1920.

The number of employees reported in 1920 includes some duplications, or repeated employees, as stated in the general explanation of Table C (p. 14). In the 1,501 employees reported in selected occupations for all districts combined there was 1 duplication, leaving 1,500 actually engaged, and the total of 3,230 employees shown for all occupations represents 3,227 individuals.

The gross number of employees, together with the net number of actual employees for selected occupations and for all occupations in each district and all districts combined, are shown in Table 13.

TABLE 13.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS—PLATE MILLS.

Districts.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Eastern.....	455	None.	455	937	None.	937
Pittsburgh.....	637	1	636	1,572	3	1,569
Great Lakes and Middle West....	389	None.	389	721	None.	721
Total.....	1,501	1	1,500	3,230	3	3,227

Practically all of the employees worked 6 days, or 5 days and 6 days alternately, with the largest number (or 78 per cent), appearing under 6 days. The heading "5 days and 6 days alternately" indicates that the plants were running 6 days and 5 nights each week, being shut down approximately 36 hours each week, and that the employees reported under this heading worked six turns one week and five turns the next.

In selected occupations in all districts in 1910, 82 per cent of the employees customarily worked six days each week and 13 per cent alternated weekly from five to six days. During the period 1911 to 1915 the percentage of employees working five days and six days alternately gradually increased, accompanied by a corresponding reduction in 6-day work. In 1915 each number of turns per week is represented by the same percentage of employees (46). A great change in working time of employees took place between the years 1915 and 1919, however, a large majority of the mills returning to a 6-day per week basis. The full time for 85 per cent of the employees reported in 1919 was 6 days per week and for 11 per cent 5 days and 6 days alternately. These are almost identical with the percentages for 1910. Six-day workers decreased in 1920 to 79 per cent and those working 5 days and 6 days alternately, increased to 20 per cent of the total.

The fluctuation in full time of employees in selected occupations was about equally apparent in the full time of those in all occupations. In 1914, the first year in which data for all occupations were collected, the percentage of employees under the heading "5 days and 6 days alternately" was 34, in 1915 it was 35, and in 1920 it dropped to 18. The percentage of employees having full time of 6 days was 57 in 1914, 55 in 1915, and 78 in 1920.

TABLE C (6).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—PLATE MILLS.

[For explanation of this table see p. 15.]

District.	Year.	Number of plants.	Number of employ-ees.	Number of employees whose cus- tomary working time per week was—					Per cent of employees whose cus- tomary working time per week was—					
				5 days and 6 days alter- nate- ly.	6 days and 7 days alter- nate- ly.	6 days, 7 days, and 7 days in rota- tion.	7 days	5 days and 6 days alter- nate- ly.	6 days and 7 days alter- nate- ly.	6 days, 7 days, and 7 days in rota- tion.	7 days			
<b>EASTERN.</b>														
Selected oc- cupations.	19.0	2	343	84	253			6	25	74			2	
	1911	2	343	268	75				78	22				
	1912	2	333	242	86			5	73	26			2	
	1913	2	339	287	45			7	85	13			2	
	1914	3	378	295	80			3	78	21			1	
	1915	3	390	337	49			3	(1) 86	13			1	
	1917	1	87	82	5				94	6				
	1919	2	498	217	279			2	44	56			(1)	
	1920	3	455	109	346				24	76				
All occupa- tions.	1914	3	707	475	2 184		3 2	46	67	26		(1)	7	
	1915	3	699	3 516	2 131		3 2	47	(1) 74	19		(1)	7	
	1920	3	937	278	591			68	30	63			7	
<b>PITTSBURGH.</b>														
Selected oc- cupations.	1910	5	709		665	6		38		94	1		5	
	1911	5	621	8	62	492	2	57	1	10	(1)		9	
	1912	5	696		78	526	6	86		11	76	1	12	
	1913	5	668		78	490	22	78		12	73	3	12	
	1914	6	585		124	4 379	56	26		21	65	10	4	
	1915	6	576		124	4 371	49	32		22	64	9	6	
	1917	3	367		365			2		99			1	
	1919	5	953		919			34		96			4	
	1920	5	657		61	586	7	3		89	1		(1)	
All occupa- tions.	1914	6	1,139		172	2 817	4 71	79		15	72	7	7	
	1915	6	1,131		174	2 807	4 59	81		16	72	5	7	
	1920	5	1,572		128	61,397	18	29		8	89	1	2	
<b>GREAT LAKES AND MIDDLE WEST.</b>														
Selected oc- cupations.	1910	4	278		90	172		16		62			6	
	1911	4	239	22	91	121		5	9	38	51		2	
	1912	4	219	19	91	97	8	4	9	42	44	4	2	
	1913	4	249		95	142	2	6	4	38	57	1	2	
	1914	4	222		93	125		3	1	42	56		1	
	1915	4	206		81	121		3	1	39	59		1	
	1917	3	273		86	187				32	68		1	
	1919	4	445			419	20	6		94	4		1	
	1920	3	389		134	253		2		34	65		1	
	All occupa- tions.	1914	4	455		130	306	10	3	6	29	67	2	1
1915		4	425		106	294	18	3	4	25	69	4	1	
1920		3	721		180	537		4		25	74		1	
<b>TOTAL.</b>														
Selected oc- cupations.	1916	11	1,330		174	1,096	6	60		13	82	1	5	
	1911	11	1,203	30	421	688	2	62	3	35	57	(1)	5	
	1912	11	1,248	19	411	709	14	95	2	33	57	1	8	
	1913	11	1,256		460	677	24	6	89	37	54	2	1	
	1914	13	1,185		512	4 584	56	3	30	43	49	5	(1) 3	
	1915	13	1,172	1	542	4 541	49	3	36	(1) 46	46	4	(1) 3	
	1917	7	727		168	557		2		23	77		(1) 1	
	1919	11	1,896		217	1,617	20	42		11	85	1	2	
	1920	11	1,501		304	1,185	7	5		20	79	(1)	(1) 1	
	All occupa- tions.	1914	13	2,301		777	71,307	4 81	8 5	131	34	57	3	(1) 3
		1915	13	2,245	3	796	71,232	4 77	8 5	132	(1) 35	55	3	(1) 3
1920		11	3,230		586	62,525	18	101		18	78	1	6	

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

<sup>2</sup> Including 6 employees who worked 7 days every sixth week.

<sup>3</sup> Worked 6 days every fourth week.

<sup>4</sup> Including 4 employees who worked 7 days every fourth week.

<sup>5</sup> Including 30 men who worked 7 turns every fourth week, 9 men who worked 7 turns every sixth week, and 3 men who worked 7 turns every third week.

<sup>6</sup> Including 30 men who worked 7 turns every fourth week, 9 men who worked 7 turns every sixth week, and 6 men who worked 7 turns every third week.

<sup>7</sup> Including 12 employees who worked 7 days every sixth week.

<sup>8</sup> Including 2 employees who worked 6 days every fourth week.

Table D (6) presents the most significant facts relative to customary and actual working time, actual earnings, and earnings per hour of employees in the plate-mill department, by occupations and districts, for the year 1920.

It will be noted that rollers in sheared-plate mills are reported from 10 plants and rollers in universal mills from 4 plants. It would seem from these figures that data had been obtained from 14 plants instead of 11 as shown in Table 6. This seeming inconsistency is due to the fact that 3 of the plants reported have both sheared plate and universal plate mills.

Referring to the occupation of heaters by way of illustration: The 11 plants reported had 72 positions to be filled under normal working conditions, 84 men, however, occupied these positions during the pay-roll period of one-half month. The average customary full time of these men was 5.9 turns per week, 11.5 hours per turn, and 68.5 hours per week. In the distribution of the customary working time of the 84 actual employees, 50, or 60 per cent, worked "over 60 and under 72" hours per week, while 22, or 26 per cent, worked 72 hours. Of the remaining 12 employees 9 worked "over 72 and under 84" hours, and 3 worked from 48 to 60 hours per week. The average hourly earnings for heaters, in all districts combined, were \$1.189, while the full-time weekly earnings ranged from \$64.93 in the Eastern district to \$95.42 in the Pittsburgh district.

Owing to the fact that a large number of the employees worked in more than one occupation during the pay-roll period, and in order to give the complete hours and earnings for them, separate figures including all occupations at which such employees worked are given for each occupation. While 84 men working as heaters averaged 111.4 hours per pay-roll period, they also averaged 14.8 hours at other work, making a total average of 126.2 hours per pay-roll period in "specified [heaters] and other occupations." During the 111.4 hours they worked as heaters they earned an average of \$132.90, or \$1.189 per hour. When the work of these men in all occupations is considered they earned \$145.04, that is, \$12.14 was earned in some occupation other than that of heaters. By including all occupations, however the hourly rate dropped from \$1.189 to \$1.137.

The average earnings per hour in this department range from 49.8 cents for laborers to \$1.558 for rollers, sheared-plate mills, and the average actual hours worked per pay-roll period range from 59.7 for laborers to 128 for roll engineers.

TABLE D (6).—AVERAGE CUSTOMARY FULL-TIME HOURS WORKED AND AVERAGE ACTUAL EARNINGS PER PAY-ROLL PERIOD AND PER HOUR, BY OCCUPATIONS AND DISTRICTS, 1920—PLATE MILLS.

[For explanation of this table see p. 14.]

Occupation and district.	Number of plants.	Positions.			Employees working in scheduled pay-roll period.								Scheduled pay-roll period (16 days).						
		Number.	Average customary full time of employees in the positions.			Number.	Number whose customary full-time hours per week were—					Average full-time earnings per week.	Specified occupation.			Specified and other occupations.			
			Turns per week.	Hours per turn.	Hours per week.		48 and under.	Over 48 and under 60.	60 and under 72.	72	Over 72 and under 84.		84	Average hours worked.	Average earnings.	Average earnings per hour.	Average hours worked.	Average earnings.	Average earnings per hour.
<b>Charging-crane and charging-machine operators:</b>																			
Eastern.....	3	22	5.9	11.6	68.3	22			22				\$39.00	127.5	\$72.80	\$0.571	128.1	\$73.15	\$0.571
Pittsburgh.....	4	24	6.2	11.5	71.6	27		4		23			67.81	121.4	114.92	.947	131.0	122.54	.935
G. L. and M. W.....	3	11	5.9	11.8	69.9	14			2	12			60.74	95.7	83.20	.869	116.7	97.07	.832
Total.....	10	57	6.0	11.6	70.0	63		4	24	12	23		56.18	117.8	93.16	.798	126.8	99.63	.785
<b>Heaters:</b>																			
Eastern.....	3	33	5.9	11.5	68.2	37			37				64.93	109.0	103.73	.952	116.9	108.02	.924
Pittsburgh.....	5	29	6.0	11.5	68.5	35	3		11	12	9		95.42	112.6	156.84	1.393	131.9	173.66	1.316
G. L. and M. W.....	3	3	5.9	11.8	69.7	12			2	10			92.35	115.5	153.02	1.325	137.9	175.74	1.274
Total.....	11	72	5.9	11.5	68.5	84	3		50	22	9		81.55	111.4	132.90	1.189	126.2	145.04	1.137
<b>Heaters' helpers:</b>																			
Eastern.....	3	64	6.0	11.6	69.3	84			84				35.20	92.4	46.91	.508	102.2	51.20	.501
Pittsburgh.....	5	26	6.0	11.8	70.4	40		2	8	18	12		53.79	89.3	63.23	.764	116.3	88.02	.757
G. L. and M. W.....	2	16	5.7	11.4	64.8	16			10	6			54.69	119.7	101.05	.844	121.2	101.85	.840
Total.....	10	106	5.9	11.6	68.9	140		2	102	24	12		42.74	94.6	59.19	.620	108.4	67.51	.613
<b>Roll engineers:</b>																			
Eastern.....	3	12	5.8	11.5	66.2	12			12				43.29	135.5	88.63	.654	135.5	88.62	.654
Pittsburgh.....	5	14	6.1	12.1	74.3	18				6	9	3	60.55	113.6	92.52	.815	137.0	106.63	.774
G. L. and M. W.....	3	8	6.3	12.0	75.0	9				7		2	63.75	146.7	124.74	.850	146.7	124.74	.850
Total.....	11	34	6.0	11.9	71.6	39			12	13	9	5	55.98	128.0	98.76	.774	138.8	105.27	.755
<b>Rollers, sheared-plate mills:</b>																			
Eastern.....	3	11	5.8	11.5	67.1	12			12				76.63	135.3	154.56	1.142	144.4	160.57	1.112
Pittsburgh.....	5	12	5.9	11.6	69.1	16		2	4	7	3		125.07	97.9	177.10	1.810	128.7	221.23	1.719
G. L. and M. W.....	2	6	5.8	11.7	68.2	7			2	5			115.74	117.6	199.49	1.697	130.9	219.27	1.676
Total.....	10	29	5.9	11.6	68.1	35		2	18	12	3		106.60	114.7	173.85	1.558	134.5	200.04	1.502



Rollers, universal mills:																				
Eastern.....	2	5	5.8	11.6	67.6	5				5				54.01	131.6	105.15	.799	131.6	105.15	.799
Pittsburgh.....	1	2	6.5	11.5	75.0	2					2			175.35	162.0	378.75	2.338	162.0	378.75	2.338
G. L. and M. W.....	1	1	6.0	12.0	72.0	2					2			132.05	72.0	132.06	1.834	96.0	167.79	1.748
Total.....	4	8	6.0	11.6	70.0	9					5	2	2	98.32	125.1	171.93	1.372	130.4	179.87	1.353
Screwmen, main rolls, universal mills:																				
Eastern.....	2	3	5.7	11.6	66.0	3				2	1			41.38	101.5	63.64	.627	101.5	63.64	.627
Pittsburgh.....	1	2	6.0	12.0	72.0	4					4			79.34	79.5	87.59	1.102	135.0	140.55	1.040
G. L. and M. W.....	1	2	6.0	12.0	72.0	3					3			95.76	88.0	117.01	1.330	132.0	186.64	1.414
Total.....	4	7	5.9	11.8	69.4	10					2	8		72.88	88.7	89.23	1.028	124.1	131.22	1.028
Screwmen, side rolls, universal mills:																				
Eastern.....	2	6	5.8	11.7	68.3	6				6				36.75	121.9	65.59	.538	121.9	65.59	.538
Pittsburgh.....	1	2	6.0	12.0	72.0	3					3			112.90	106.0	166.25	1.568	150.3	215.40	1.433
G. L. and M. W.....	1	1	6.0	12.0	72.0	3					3			69.34	48.0	46.22	.963	136.0	129.78	.954
Total.....	4	9	5.9	11.8	69.6	12					6	6		63.94	99.5	85.91	.902	132.5	119.09	.866
Roll hands, other, universal mills:																				
Eastern.....	2	4	5.8	11.7	67.0	4				4				36.18	112.0	60.48	.540	112.0	60.48	.540
Pittsburgh.....	1	2	6.0	12.0	72.0	3					3			58.82	106.0	86.62	.817	158.7	133.47	.841
G. L. and M. W.....	1	2	6.0	12.0	72.0	3					3			54.29	88.0	66.35	.754	142.7	103.30	.724
Total.....	4	8	5.9	11.8	69.5	10					4	6		48.41	103.0	70.08	.687	135.2	95.22	.685
Shearmen:																				
Eastern.....	3	21	5.8	11.4	66.3	26				26				51.18	97.4	75.18	.772	111.7	81.54	.730
Pittsburgh.....	5	33	6.0	11.7	69.7	45		1	7	7	30			83.01	99.8	118.86	1.191	120.1	136.43	1.136
G. L. and M. W.....	3	18	5.8	11.6	66.9	21				8	13			62.95	98.8	92.98	.941	115.0	105.60	.918
Total.....	11	72	5.9	11.6	68.0	92		1	7	41	43			69.44	98.9	100.61	1.016	116.6	113.88	.972
Shearmen's helpers:																				
Eastern.....	3	98	5.8	11.5	67.0	121			1	120				35.38	106.4	64.71	.528	113.2	58.95	.521
Pittsburgh.....	5	180	6.0	11.8	70.3	282		3	18	61	200			51.39	95.4	69.78	.731	118.9	83.95	.706
G. L. and M. W.....	3	174	5.8	11.5	66.6	220				95	125			43.69	89.9	58.96	.656	100.3	65.19	.650
Total.....	11	452	5.9	11.6	68.2	623		3	19	276	325			45.56	95.6	63.31	.665	111.2	72.47	.650
Laborers:																				
Eastern.....	3	47	6.0	9.8	59.1	73		27	40	5	1			23.52	64.3	25.57	.398	76.9	30.61	.398
Pittsburgh.....	3	75	6.0	12.0	71.8	160			1	9	114	36		38.20	72.3	38.43	.532	98.6	55.54	.563
G. L. and M. W.....	2	33	6.0	11.9	71.6	115			1		114			36.80	39.1	20.07	.514	115.0	68.08	.592
Total.....	8	155	6.0	11.3	67.9	348		27	42	14	229	36		34.66	59.7	29.71	.498	99.5	54.45	.538

Screwmen, sheared-plate mills, and shear-men were the occupations in the plate-mill department selected for which to show classified earnings per hour.

Table E (6) shows for each occupation, by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings fell in each group of classified rates per hour.

There was a wide range in the earnings of shear-men in the Eastern district and of both occupations in the Pittsburgh district. The classified earnings per hour of shear-men in the Eastern district ranged from 45 cents to \$1.50 per hour and in the Pittsburgh district from 60 cents to \$1.75. The largest number in any one group (27) was found at "\$1 and under \$1.25," and the average for all was \$1.016 per hour.

The classified earnings for screwmen, sheared-plate mills, ranged from 60 cents to \$2 per hour, and the average earnings per hour in all districts were \$1.115.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (6).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—PLATE MILLS.

[For explanation of this table see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Employees whose earnings per hour were—									
			45 and under 50 cents.	50 and under 60 cents.	60 and under 70 cents.	70 and under 80 cents.	80 and under 90 cents.	90 cents and under \$1.	\$1 and under \$1.25.	\$1.25 and under \$1.50.	\$1.50 and under \$1.75.	\$1.75 and under \$2.
<b>SCREW MEN, SHEARED-PLATE MILLS.</b>												
Eastern.....	11	\$0.784			4	3	2	2				
Pittsburgh.....	19	1.170			1	2	3	1	3	3	4	2
Great Lakes and Middle West.....	9	1.404							1	5	3	
Total.....	39	1.115			5	5	5	3	4	8	7	2
<b>SHEARMEN.</b>												
Eastern.....	26	.772	8	4	9	2		1	5	2		
Pittsburgh.....	45	1.191			1	6	5	1	13	16	3	
Great Lakes and Middle West.....	21	.941			4	1	4	3	9			
Total.....	92	1.016	3	4	14	9	9	5	27	18	3	

The customary turns per week, hours per turn, and full-time hours per week, in the plate-mill department are shown in detail for each of the three districts in which data were secured, and for all districts combined, for the year 1920, in Table F (6).

The table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in more than one occupation, and part 2 relating to those who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the plate-mill department was obtained from 11 plants and covers 3,227 actual employees—3,082 in part 1 and 145 in part 2. However, the sum of the figures in this table would show 3,380 persons, due to the 153 duplications, or repeated employees, appearing in part 2.

Plate mills, as is generally the case with all rolling mills, are seldom operated more than 6 days per week, and 78 per cent of all employees reported in Table F (6) customarily worked that number of turns, although some of the occupations were of necessity filled continuously. Sunday work, which is not to be confused with 7-day work, was quite common, however, as practically all of the mills closed down on the completion of the day turn on Saturday and started up again at the beginning of the night turn on Sunday. Of the 3,380 employees (including duplications) reported in Table F (6) a total of 2,368, or 2,149 of the employees included in part 1 of the table and 219 of those in part 2 were Sunday workers. Of this number 2,040, or 86 per cent, worked every other Sunday, 117, or 5 per cent, worked every Sunday, and the remaining 9 per cent were relieved one Sunday out of every three or some such period. A total of 1,294 worked fewer hours on Saturday than on the regular Monday to Friday turns and 220 worked a smaller number of hours on Sunday. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turn, the night turns usually being of equal length.

Of the 3,082 employees reported as working one combination of hours and turns, 2,780, or 90 per cent, alternated weekly from day to night work, 287, or 9 per cent, worked days only, and the remaining 15 employees, or less than one-half of 1 per cent, worked nights only. Of the 2,780 employees alternating from day to night work, 75 per cent worked 6 turns either day or night, 21 per cent worked 6 days and 5 nights alternately, 3 per cent worked 7 turns each week, and 2 per cent varied from 7 days and 6 nights alternately to 7 days, 6 days, and 6 days in rotation.

The 12-hour turn was most common among these employees, 1,398, or 50 per cent, working on 12-hour shifts. The length of the day turn is not always the same as that of the night turn, as shown by the fact that 1,124, or 40 per cent of the total number of alternating employees, worked turns of different lengths, 760 working 11 hours when on day turn and 13 hours when on night turn, while 252 worked 10 hours on day turn and 14 hours on night turn.

Of the 287 men who worked days only, 92 per cent worked 6 days each week, while the remaining 8 per cent worked 7 turns. The length of turn among the day workers covered a wide range of hours, 180 working 10 hours per day, 62 working 12 hours, 40 working 11 hours, and the remaining 5 employees working hours varying from 8 to 11½.

A total of 12, or 80 per cent of the 15 employees reported as working night turns only, worked 6 nights per week, and of that number 11 worked 12 hours per night. The remaining 3 employees worked 7 nights of 12 hours each week.

The 298 employees (including duplications) presented in part 2 of the table are divided into the following classes: Those alternating from day to night, numbering 220, or 74 per cent; those working days only, numbering 70, or 23 per cent; and those working nights

only, numbering 8, or 3 per cent. Out of the 220 employees who worked days one week and nights the next, 205, or 93 per cent, worked 6 turns each week, 12, or 5 per cent, worked 6 days and 5 nights alternately, 2 employees, or 1 per cent, worked 7 days and 6 nights alternately, while 1 employee worked 6 days, 6 days, 6 days, and 7 days in rotation. The customary length of turn for 100, or 45 per cent of the alternating employees, was 11 hours when on day turn and 13 hours on night turn, and 99, or 45 per cent, worked 12 hours either day or night. All of the 70 employees working days only worked 6 turns per week and of that number 50, or 71 per cent, worked 10 hours per turn. The working time of those employed nights only was found to be 6 turns each week, with 4 employees working 12 hours each night and the remaining 4 working on 11-hour shifts.

TABLE F (6).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—PLATE MILLS.

[For explanation of this table see p. 15.]

**PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.**

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

**Employees who worked day turns.**

7	12	12	12	84					9		2	11
7	11	11	11	77					3			3
7	10	10	10	70					9			9
6	12	12	12	72							1	1
6	12	12	11	71							1	1
6	12	12		72					8	9	10	27
6	12	11		71						1		1
6	12	10		70					4			4
6	12	6		66					17			17
6	11½	11½		69							1	1
6	11	11	10	65							6	6
6	11	11		66					11	9	2	22
6	11	10		65						4		4
6	11	6		61					5			5
6	10½	10½	9	61½							1	1
6	10½	10½		63						1		1
6	10	10		60					33	17	15	65
6	10	10	9	59							1	1
6	10	9	9	58							24	24
6	10	9		59						13	33	46
6	10	5		55					35			35
6	8	8		48							2	2

**Employees who worked night turns.**

				7	12	12	12	84	1		2	3
				6	13½	13½		81		1		1
				6	12	12	12	72			3	3
				6	12	12		72			3	3
				6	12		12	72	1	3		5

TABLE F (6).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—PLATE MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.									Number of employees who worked each specified combination of customary turns and hours, by districts.				
Day turns.					Night turns.				East-ern.	Pitts-burgh.	Great Lakes and Middle West.	Total.	
Turns per week.	Hours.				Turns per week.	Hours.							
	Mon-day to Fri-day.	Satur-day.	Sun-day.	Per week.		Mon-day to Fri-day.	Satur-day.	Sun-day.					Per week.
7	12	12	12	84	7	12	12	12	84	46	25	71	
7	12	12	12	84	6	12	12	12	72	3	3	3	
7	12	10	12	82	6	12	12	12	72	2	2	2	
6	11	11	11	66	6	13	13	13	78	3	3	3	
6	11	11	11	66	6	13	13	13	78	6	6	6	
7	11	11	11	77	6	13	13	13	78	2	2	2	
7	11	11	6	72	6	13	13	13	78	12	12	12	
6	11	11	2	66	6	13	13	13	78	4	4	4	
7	11	11	2	68	6	13	13	13	78	11	11	11	
7	10	10	10	70	7	14	14	14	98	324	324	324	
6	12	12	12	72	6	12	12	12	72	17	17	21	
6	12	12	12	72	6	12	12	12	72	16	16	24	
6	12	12	12	72	6	12	12	12	72	27	27	57	
6	12	12	12	72	6	12	12	12	72	12	12	12	
6	12	10 3/4	70 3/4	70 3/4	6	12	12	12	72	291	50	341	
6	12	10	70	70	5	12	12	12	60	109	109	109	
6	12	7	67	67	5	12	12	12	60	4	4	4	
6	12	6	66	66	6	12	12	12	72	28	28	28	
6	12	6	66	66	6	12	12	6	66	134	134	134	
6	12	6	66	66	5	12	12	13	60	257	257	257	
6	11	12	67	67	6	13	13	13	78	1	1	1	
6	11	11	11	66	6	13	13	13	78	8	8	8	
6	11	11	11	66	6	13	13	13	78	4	4	34	
6	11	11	6	61	6	13	13	13	78	15	15	15	
7	11	11	2	68	6	13	13	13	78	27	27	27	
6	11	11	6	68	6	13	13	13	78	2	2	2	
6	11	11	6	66	6	13	13	14	79	4	4	4	
6	11	11	6	66	6	13	13	14	79	10	10	10	
6	11	11	6	66	6	13	13	15	80	4	4	4	
6	11	11	6	66	6	13	13	16	81	8	8	8	
6	11	11	6	66	6	13	13	17	82	2	2	2	
6	11	11	6	66	6	13	13	16	81	5	5	5	
6	11	11	6	66	6	13	13	15	80	2	2	2	
6	11	11	6	66	6	13	13	14	79	9	9	9	
6	11	11	6	66	6	13	13	14	79	5	5	5	
6	11	11	6	66	6	13	13	13	78	10	10	10	
6	11	11	6	66	6	13	13	13	78	596	596	596	
6	11	11	6	66	5	11	11	13	55	180	180	180	
6	11	10	11	65	6	13	14	13	79	1	1	1	
6	11	10	65	65	6	13	14	16	82	2	2	2	
6	11	10	65	65	6	13	14	13	78	5	5	5	
6	11	9	64	64	5	11	11	11	55	9	9	9	
6	11	8	63	63	5	13	13	13	65	1	1	1	
6	11	6	61	61	5	13	13	14	65	16	16	16	
6	10	10	60	60	7	14	14	14	98	9	9	9	
6	10	10	60	60	7	14	14	14	98	3	3	3	
6	10	10	60	60	6	14	14	14	84	36	36	36	
6	10	10	60	60	6	14	14	14	84	200	200	200	
6	10	10	60	60	6	13	13	13	78	4	4	4	
6	10	10	60	60	6	12	12	12	72	8	8	8	
6	10	10	60	60	6	10	10	10	60	62	62	62	
6	10	9	59	59	6	13	13	13	78	2	2	2	
6	10	9	59	59	6	12	12	12	72	98	98	98	
6	10	8	58	58	5	10	10	10	50	4	4	4	
7	8	8	8	56	6	8	8	8	48	3	3	3	
6	8	8	8	48	6	8	8	8	48	3	3	3	

<sup>1</sup> In the Pittsburgh district of the 1,240 employees who worked 6-day turns and 6-night turns per week, alternately, 1 per cent worked one extra turn every fourth week, and 1 per cent worked one extra turn every sixth week.

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TABLE F (6).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—PLATE MILLS—Concluded.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY TURNS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

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

Employees who worked day turns.

6	12	12	12	72								1	1
6	12	12		72						1	1	3	5
6	12	12	11	71								1	1
6	12	12	9	69								1	1
6	12	6		66						2			2
6	11½	11½	11½	69								1	1
6	11½	11½		69								4	4
6	11	11		66							1	2	3
6	11	11	10	65							1	2	2
6	10	10		60						13	5	1	19
6	10	9		59							1	23	24
6	10	9	9	58								5	5
6	10	5		55						2			2

Employees who worked night turns.

					6	12	12			72			4	4
					6	11			11	66	4			4

Employees who alternated weekly from day to night turns.

7	12	12	12	84	6	12			12	72		1		1
7	12	10	12	82	6	12			12	72		1		1
6	11	11		66	6	13			13	78		3		1
7	11	11	2	68	6	13			13	78		1		1
6	12	12	12	72	6	12	12		12	72			8	8
6	12	12		72	6	12	12		12	72			33	33
6	12	12		72	6	12			12	72		5	2	7
6	12	11		71	6	12			12	72		11		11
6	12	10½		70½	6	12			12	72		3		3
6	12	10		70	6	12			12	72	20	11		31
6	12	10		70	5	12				60		4		4
6	11	15		70	6	13			13	78		1		1
6	11	12		67	6	13			13	78		25		25
6	11	11	11	66	6	13	13		13	78		1		1
6	11	11	11	66	6	13			13	78		1		1
6	11	11		66	6	13	14		16	82		6		6
6	11	11		66	6	13	13		15	80		1		1
6	11	11		66	6	13	13		14	79		1		1
6	11	11		66	6	13			17	82		5		5
6	11	11		66	6	13			16	81		1		1
6	11	11		66	6	13			15	80		1		1
6	11	11		66	6	13			14	79		2		2
6	11	11		66	6	13			13	78		47		47
6	11	10	11	65	6	13	14		13	79		4		4
6	11	10		65	6	13	14		16	82		3		3
6	11	9		64	5	11				55		4		4
6	10	10		60	6	14	14			84		2		2
6	10	10		60	6	14			14	84		1		1
6	10	10		60	6	10	10			60		2		2
6	10	9		59	6	12	12			72			1	1
6	10	9		59	6	12			12	72				5
6	10	8		58	5	10				50		5		4
6	10	5½		55½	6	10			10	60	2	4		2

## STANDARD RAIL MILLS.<sup>14</sup>

The year 1920 marked the period of the lowest average full-time hours per week and the highest average hourly earnings, as well as the highest average full-time weekly earnings, in standard rail mills in any year for which data are available. In 1920 the average full-time hours per week for the selected occupations combined were 7, 11, and 14 per cent less than in 1919, 1913, and 1910, respectively. Average hourly earnings were 16 per cent higher in 1920 than in 1919, 156 per cent higher than in 1913, and 184 per cent higher than in 1910. Average full-time weekly earnings were 9 per cent higher in 1920 than in 1919, 135 per cent higher than in 1913, and 155 per cent higher than in 1910 (see p. 3).

The most significant facts concerning average earnings and average hours in each of the principal productive occupations in this department for the years 1910 to 1920 are shown in Table A (7). The data for 1920 cover 4 plants representing 698 employees in selected occupations and 1,344 in all occupations. The average earnings per hour in 1920 for all occupations, both the principal productive and all others combined, were 63.2 cents.

In only two occupations, roll engineers and laborers, were the average full-time hours per week higher in 1920 than in 1919. In 1910 the average full-time hours of roll engineers were 77.4; in 1913 they decreased to 74.9, and in 1919 to 69.7. In 1920 they were 74.7, which is an increase of 5 hours over 1919, but a decrease of 0.2 of an hour as compared with 1913 and of 2.7 hours as compared with 1910. Laborers worked an average full-time week of 76 hours in 1910 which in 1913 had decreased to 70.5 hours and in 1919 to 65.6 hours. The average increased 4.2 hours, to 69.8, in 1920. The greatest decreases in average full-time weekly hours are shown in those for reheaters, reheaters' helpers, and rollers' helpers, owing to a change from 2 to 3 shifts per day by the employees reported in 1920.

Average hourly earnings in 1920 for all occupations but roll engineers and drillers and punchers show a substantial increase over 1919, as well as over former years. In 1910 the average hourly earnings of roll engineers were 31 cents. In 1913 they had increased to 32.3 cents, and in 1919 to 82.1 cents. The average for 1920 is 75.3 cents only, a drop of nearly 7 cents as compared with 1919, but an increase of 133 per cent as compared with 1913. In 1910 the average hourly earnings for drillers and punchers were 22 cents and in 1913 24.9 cents. The greatest increase, 38.8 cents in all, was made between the years 1915 and 1919. In 1920 the average hourly earnings were 66.1 cents, about one-half cent less than in 1919, but three times as great as in 1910.

Average full-time weekly earnings in 1920 showed an increase in 14 occupations and a decrease in 7 occupations as compared with 1919, but comparing 1920 with any year other than 1919 it is seen that an

<sup>14</sup> Summary figures for the standard rail mill department are given with figures for other departments of the iron and steel industry on pp. 1 to 12, and an explanation of the scope of the investigation is given on p. 13.

increase occurred in every occupation. In the occupation of charging-machine operators the average full-time weekly earnings in 1910 were \$16.87 as compared with \$18.39 in 1913. In 1915 they had decreased to \$16.27 and in 1919 had increased to \$36.86. In 1920 they had increased to \$51.65, or \$14.79 more than they were in 1919, and \$33.26 more than in 1913.

In the distribution of average full-time hours per week reheaters, reheaters' helpers, and rollers' helpers changed from 72 hours per week in 1919 to "48 and under" per week in 1920. Great increases in the percentage of employees working "48 and under" hours per week took place in the occupations of charging-machine operators, table lever men, guide setters, hotbed men, straighteners, gag press, and straighteners' helpers.

In the occupation of laborers there was a decrease in the percentage of employees working "48 and under" hours per week and a corresponding increase in the percentage working 72 hours per week. In 1920 the occupation of roll engineers was the only one in which employees worked 84 hours per week.

TABLE A (7).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—STANDARD RAIL MILLS.

[For explanation of this table see p. 13.]

Occupation, and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—								
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	72	Over 72 and under 84.	84			
Charging-machine operators:														
3 plants.....	1910	22	72.0	\$0.234	\$16.87	.....	.....	.....	100	.....	.....	.....	.....	.....
	1911	22	72.0	.232	16.72	.....	.....	.....	100	.....	.....	.....	.....	.....
	1912	22	72.0	.244	17.58	.....	.....	.....	100	.....	.....	.....	.....	.....
	1913	22	72.0	.255	18.39	.....	.....	.....	100	.....	.....	.....	.....	.....
	1914	22	72.0	.280	20.17	.....	.....	.....	100	.....	.....	.....	.....	.....
	1915	22	72.0	.226	16.27	.....	.....	.....	100	.....	.....	.....	.....	.....
2 plants.....	1919	19	72.0	.512	36.86	.....	.....	.....	100	.....	.....	.....	.....	.....
	1920	13	64.4	.802	51.65	31	.....	69	.....	.....	.....	.....	.....	.....
Reheaters:														
4 plants.....	1910	23	72.0	.429	31.00	.....	.....	.....	.....	91	.....	9	.....	.....
	1911	23	72.0	.421	30.28	.....	.....	.....	.....	100	.....	.....	.....	.....
	1912	23	72.0	.410	29.50	.....	.....	.....	.....	100	.....	.....	.....	.....
3 plants.....	1913	14	72.0	.382	27.53	.....	.....	.....	.....	100	.....	.....	.....	.....
	1914	14	72.0	.336	24.18	.....	.....	.....	.....	100	.....	.....	.....	.....
	1915	12	72.0	.355	27.70	.....	.....	.....	.....	100	.....	.....	.....	.....
2 plants.....	1919	17	72.0	.843	60.70	.....	.....	.....	.....	100	.....	.....	.....	.....
	1920	17	47.7	1.101	52.52	100	.....	.....	.....	.....	.....	.....	.....	.....
Reheaters' helpers:														
3 plants.....	1910	24	71.3	.280	19.95	.....	.....	50	.....	50	.....	.....	.....	.....
	1911	24	72.0	.264	18.98	.....	.....	.....	.....	100	.....	.....	.....	.....
	1912	24	72.0	.304	21.87	.....	.....	.....	.....	100	.....	.....	.....	.....
	1913	23	72.0	.345	24.87	.....	.....	.....	.....	100	.....	.....	.....	.....
2 plants.....	1914	20	72.0	.354	25.49	.....	.....	.....	.....	100	.....	.....	.....	.....
	1915	20	72.0	.254	18.27	.....	.....	.....	.....	100	.....	.....	.....	.....
	1919	14	72.0	.517	37.22	.....	.....	.....	.....	100	.....	.....	.....	.....
1 plant.....	1920	18	48.0	.788	37.82	100	.....	.....	.....	.....	.....	.....	.....	.....
Roll engineers:														
6 plants.....	1910	42	77.4	.310	24.30	.....	.....	.....	.....	48	.....	14	.....	38
	1911	43	75.8	.277	21.14	.....	.....	.....	.....	42	.....	42	.....	16
7 plants.....	1912	48	74.1	.304	22.44	.....	.....	.....	.....	58	.....	38	.....	4
	1913	32	74.9	.323	24.16	.....	.....	.....	.....	63	.....	25	.....	13
	1914	32	73.5	.317	23.33	.....	.....	.....	.....	88	.....	.....	.....	13
	1915	30	72.5	.322	23.30	.....	.....	.....	.....	80	.....	20	.....	.....
5 plants.....	1919	26	69.7	.821	57.22	.....	12	.....	.....	88	.....	.....	.....	.....
4 plants.....	1920	22	74.7	.753	55.82	.....	23	.....	.....	32	.....	.....	.....	45

TABLE A (7).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—STANDARD RAIL MILLS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Rollers:</b>												
5 plants.....	1910	12	72.3	\$0.624	\$45.09					83	17	
6 plants.....	1911	14	72.2	.591	42.67					86	14	
	1912	14	72.2	.646	46.65					86	14	
	1913	14	72.6	.690	50.18					79	21	
	1914	14	71.1	.649	46.16				14	86		
	1915	13	71.5	.603	43.09				8	92		
5 plants.....	1919	12	68.0	1.222	83.10	17				83		
4 plants.....	1920	11	61.8	1.414	87.58	45			36	18		
<b>Rollers' helpers:</b>												
1 plant.....	1910	3	72.0	.561	40.39					100		
2 plants.....	1911	3	72.7	.284	20.56					33	67	
	1912	6	72.6	.304	21.98					33	67	
	1913	6	73.3	.323	23.61					50	50	
	1914	4	72.0	.468	33.66					100		
	1915	4	72.0	.407	29.30					100		
1 plant.....	1919	2	72.0	.531	38.23					100		
	1920	2	48.0	.977	46.90	100						
<b>Table lever men:</b>												
6 plants.....	1910	74	65.5	.454	28.25		32			59		8
	1911	69	64.0	.422	26.08		35			65		
	1912	80	67.1	.392	26.52		23			75		3
	1913	80	67.1	.416	27.51		23			75		3
7 plants.....	1914	62	64.0	.324	20.49	29			16	55		
	1915	53	65.0	.366	22.92	26			9	64		
5 plants.....	1919	44	60.5	.825	49.91	48				52		
4 plants.....	1920	43	51.5	1.052	54.77	81			19			
<b>Table men:</b>												
4 plants.....	1910	26	72.0	.279	20.06					100		
5 plants.....	1911	27	72.4	.262	18.97					96	4	
	1912	30	72.0	.324	23.32					100		
	1913	30	72.0	.354	25.47					100		
4 plants.....	1914	32	70.4	.356	24.92				25	75		
	1915	28	71.1	.336	23.68				14	86		
1 plant.....	1919	4	48.0	.482	23.14	100						
	1920	5	48.0	.526	25.25	100						
<b>Guide setters:</b>												
5 plants.....	1910	20	66.8	.440	29.26		15	15		70		
7 plants.....	1911	27	66.8	.336	22.20		11	22	4	41	22	
	1912	30	67.3	.346	23.14		10	20	3	47	20	
4 plants.....	1913	17	67.9	.394	26.49		18			82		
5 plants.....	1914	21	68.6	.394	27.11	14				86		
	1915	21	68.6	.417	28.45	14				86		
	1919	29	67.9	.835	56.70	17				83		
4 plants.....	1920	21	55.9	1.110	63.23	52			48			
<b>Hot-saw men:</b>												
6 plants.....	1910	19	72.0	.289	20.79					100		
7 plants.....	1911	16	72.0	.251	18.10					100		
	1912	20	72.0	.260	18.69					100		
	1913	20	72.0	.283	20.36					100		
	1914	17	71.6	.263	18.86				6	94		
	1915	17	71.6	.272	19.52				6	94		
4 plants.....	1919	11	67.6	.580	39.21	18				82		
	1920	13	59.8	.721	43.00	46			23	31		
<b>Hot-saw men's helpers:</b>												
6 plants.....	1910	64	72.4	.165	11.92					97		3
7 plants.....	1911	66	72.1	.168	12.10					88	12	
	1912	73	72.1	.169	12.20					89	11	
6 plants.....	1913	60	72.1	.187	14.16					87	13	
7 plants.....	1914	56	71.3	.197	14.08				11	89		
	1915	61	71.8	.189	13.56				5	82	13	
5 plants.....	1919	47	68.9	.485	33.42	13				87		
4 plants.....	1920	27	57.9	.551	31.50	59			11	30		
<b>Hotbed lever men:</b>												
6 plants.....	1910	34	74.1	.209	15.64					82		18
7 plants.....	1911	31	72.1	.195	14.06					74	26	
	1912	35	72.1	.195	14.07					77	23	
	1913	36	72.1	.213	15.36					78	22	
	1914	32	71.6	.213	15.21				6	94		
	1915	29	71.8	.209	14.94				3	97		
5 plants.....	1919	31	67.4	.548	36.94	19				81		
4 plants.....	1920	28	62.7	.577	36.48	39			39	21		

TABLE A (7).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—STANDARD RAIL MILLS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—					
						48 and under.	Over 48 and under 60.	60 and under 72.	72 and under 84.	84	
<b>Hotbed men:</b>											
6 plants	1910	44	73.6	\$0.176	\$12.95					86	
7 plants	1911	47	72.0	.176	12.65					100	14
	1912	48	72.2	.180	12.98					96	4
6 plants	1913	56	72.0	.188	13.54					100	
7 plants	1914	43	71.7	.185	13.30				5	95	
	1915	49	71.9	.174	12.54				2	98	
4 plants	1919	22	67.6	.502	33.94	18				82	
3 plants	1920	20	55.5	.636	36.45	90		20			
<b>Straighteners, gag press:</b>											
5 plants	1910	106	59.0	.564	32.41	62		6	11		21
6 plants	1911	94	56.9	.526	29.91	60		6		34	
7 plants	1912	110	59.1	.514	30.45	51		5		44	
	1913	101	59.2	.576	34.06	60		6		44	
6 plants	1914	84	53.7	.571	20.59	75				25	
	1915	85	56.2	.612	34.22	64				36	
4 plants	1919	57	67.8	1.112	75.39	18				82	
	1920	45	51.5	1.357	69.88	62				18	
<b>Straighteners' helpers:</b>											
5 plants	1910	139	72.1	.205	14.55			17		66	17
6 plants	1911	120	69.9	.205	14.05			18		83	
7 plants	1912	146	70.2	.211	14.54			15		85	
	1913	131	70.0	.253	17.28			17		83	
6 plants	1914	102	71.7	.226	16.12				5	95	
	1915	118	71.4	.219	15.47				8	92	
5 plants	1919	60	67.8	.527	35.73	17				83	
3 plants	1920	38	56.4	.627	36.19	53		47			
<b>Chippers:</b>											
5 plants	1910	114	72.1	.231	16.78			11	14	54	22
6 plants	1911	91	70.2	.233	16.44			2	18	80	
7 plants	1912	113	70.2	.224	15.79			2	18	81	
	1913	103	70.0	.267	18.76			14	4	83	
6 plants	1914	54	70.8	.270	19.07				19	81	
	1915	58	70.9	.301	21.31				17	83	
5 plants	1919	78	69.2	.747	51.69	12				88	
4 plants	1920	48	62.4	.810	60.36	46			38	17	
<b>Drillers and punchers:</b>											
5 plants	1910	152	76.7	.220	16.78			13		34	53
6 plants	1911	133	70.6	.218	15.35				16	84	
7 plants	1912	203	70.5	.214	15.05				17	83	
	1913	179	70.5	.249	17.45			11	2	87	
6 plants	1914	100	71.2	.251	17.80				12	88	
	1915	90	71.0	.280	19.67				16	84	
5 plants	1919	143	67.8	.668	45.29	17				83	
3 plants	1920	77	62.4	.661	42.21	39			35	26	
<b>Cold-saw men:</b>											
5 plants	1910	18	74.7	.191	14.21			33		11	56
6 plants	1911	19	69.3	.194	13.43				42	37	21
	1912	22	71.8	.213	15.50				36	27	18
	1913	23	72.3	.233	17.04				35	26	17
7 plants	1914	16	71.3	.217	15.46			6	13	75	6
	1915	13	73.4	.218	15.99			8	8	62	23
4 plants	1919	13	62.8	.499	31.34	38				62	
	1920	16	62.7	.578	38.00	25			50	25	
<b>Cold-saw men's helpers:</b>											
3 plants	1910	30	76.0	.171	12.98					67	33
4 plants	1911	36	72.0	.172	12.38					100	
7 plants	1912	54	73.3	.183	13.56			4		81	15
6 plants	1913	52	73.8	.197	14.70					85	15
	1914	48	70.5	.186	13.09			8	8	83	
	1915	52	74.3	.185	13.82			8	8	84	31
5 plants	1919	52	69.2	.479	33.15	12				88	
3 plants	1920	37	68.1	.525	36.08	11			46	43	
<b>Inspectors:</b>											
5 plants	1910	68	75.5	.225	16.77			13		44	43
7 plants	1911	68	70.9	.230	16.25			4	9	87	
	1912	76	71.0	.228	16.12			4	8	88	
	1913	73	70.5	.258	18.11			7	10	84	
	1914	62	70.5	.236	16.65			5	24	71	
	1915	80	71.5	.239	17.11			4	8	81	8
5 plants	1919	59	67.5	.561	39.22	17			3	80	
4 plants	1920	53	63.1	.649	40.91	26		13	38	23	

**TABLE A (7).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—STANDARD RAIL MILLS—Concluded.**

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Laborers:</b>												
6 plants.....	1910	501	76.0	\$0.163	\$12.31	.....	.....	9	4	42	.....	45
7 plants.....	1911	382	71.9	.169	12.12	.....	.....	5	15	60	12	7
	1912	417	71.9	.168	12.07	.....	.....	7	13	57	16	6
	1913	377	70.5	.193	13.61	.....	.....	7	10	82	.....	1
	1914	222	69.9	.185	12.99	.....	.....	11	16	73	.....	.....
	1915	339	71.0	.182	12.95	.....	.....	5	6	89	.....	.....
5 plants.....	1919	425	65.6	.478	31.36	26	.....	4	.....	67	.....	3
4 plants.....	1920	319	69.8	.531	37.02	3	1	6	2	89	.....	.....

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings are presented in Table B (7) for the principal productive occupations in standard rail mills, for 1920 and previous years. These are simply percentages computed from the averages presented in Table A (7), with the average for 1913 as the base, or 100 per cent. These index numbers make clearer and more definite the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A (7).

For index numbers for this department as a whole (all selected occupations combined), see page 3.

**TABLE B (7).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—STANDARD RAIL MILLS.**

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Charging-machine operators:</b>				<b>Reheaters' helpers—Con.</b>			
1910.....	100	92	92	1914.....	100	103	102
1911.....	100	91	90	1915.....	100	74	73
1912.....	100	96	95	1919.....	100	150	150
1913.....	100	100	100	1920.....	67	228	152
1914.....	100	110	119	<b>Roll engineers:</b>			
1915.....	100	89	88	1910.....	103	96	101
1919.....	100	201	200	1911.....	101	86	88
1920.....	89	315	281	1912.....	99	94	93
<b>Reheaters:</b>				1913.....	100	100	100
1910.....	100	112	113	1914.....	98	98	97
1911.....	100	110	110	1915.....	97	100	97
1912.....	100	107	107	1919.....	93	254	237
1913.....	100	100	100	1920.....	100	233	231
1914.....	100	88	88	<b>Rollers:</b>			
1915.....	100	101	101	1910.....	100	90	90
1919.....	100	221	220	1911.....	99	86	85
1920.....	66	288	191	1912.....	99	94	93
<b>Reheaters' helpers:</b>				1913.....	100	100	100
1910.....	99	81	80	1914.....	98	94	92
1911.....	100	77	76	1915.....	98	87	86
1912.....	100	88	88	1919.....	94	177	166
1913.....	100	100	100	1920.....	85	205	175

TABLE B (7).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—STANDARD RAIL MILLS—Concluded.

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Rollers' helpers:</b>				<b>Straighteners, gag press:</b>			
1910.....	98	174	171	1910.....	100	98	95
1911.....	99	88	87	1911.....	96	91	88
1912.....	99	94	93	1912.....	100	89	89
1913.....	100	100	100	1913.....	100	100	100
1914.....	98	145	143	1914.....	91	99	90
1915.....	98	126	123	1915.....	95	106	100
1919.....	98	164	162	1919.....	115	193	221
1920.....	65	302	199	1920.....	87	236	205
<b>Table lever men:</b>				<b>Straighteners' helpers:</b>			
1910.....	98	109	103	1910.....	103	81	84
1911.....	95	101	94	1911.....	100	81	81
1912.....	100	94	96	1912.....	100	83	84
1913.....	100	100	100	1913.....	100	100	100
1914.....	95	78	75	1914.....	102	89	93
1915.....	97	88	83	1915.....	102	87	89
1919.....	90	198	181	1919.....	97	208	207
1920.....	77	253	199	1920.....	81	248	209
<b>Table men:</b>				<b>Chippers:</b>			
1910.....	100	79	79	1910.....	103	87	89
1911.....	101	74	74	1911.....	100	87	88
1912.....	100	92	91	1912.....	100	84	84
1913.....	100	109	100	1913.....	100	100	100
1914.....	98	101	98	1914.....	101	101	102
1915.....	99	95	93	1915.....	101	113	114
1919.....	67	136	91	1919.....	99	280	276
1920.....	67	149	99	1920.....	89	303	268
<b>Guide setters:</b>				<b>Drillers and punchers:</b>			
1910.....	98	112	110	1910.....	109	88	96
1911.....	98	85	84	1911.....	100	88	88
1912.....	99	88	87	1912.....	100	86	86
1913.....	100	100	100	1913.....	100	100	100
1914.....	101	100	104	1914.....	101	101	102
1915.....	101	106	107	1915.....	101	112	114
1919.....	100	212	214	1919.....	96	268	260
1920.....	82	282	239	1920.....	89	265	242
<b>Hot-saw men:</b>				<b>Cold-saw men:</b>			
1910.....	100	102	102	1910.....	103	82	83
1911.....	100	89	89	1911.....	96	83	79
1912.....	100	92	91	1912.....	99	91	91
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	93	92	1914.....	99	93	91
1915.....	99	96	96	1915.....	102	94	94
1919.....	94	205	193	1919.....	87	214	184
1920.....	83	255	211	1920.....	87	248	223
<b>Hot-saw men's helpers:</b>				<b>Cold-saw men's helpers:</b>			
1910.....	100	84	84	1910.....	103	87	88
1911.....	100	85	85	1911.....	98	87	84
1912.....	100	86	86	1912.....	99	93	92
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	100	99	1914.....	96	94	89
1915.....	100	96	96	1915.....	101	94	94
1919.....	96	246	236	1919.....	94	243	226
1920.....	80	280	222	1920.....	92	266	245
<b>Hotbed lever men:</b>				<b>Inspectors:</b>			
1910.....	103	98	102	1910.....	107	87	93
1911.....	100	92	92	1911.....	101	89	90
1912.....	100	92	92	1912.....	101	88	89
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	100	99	1914.....	100	91	92
1915.....	100	98	97	1915.....	101	93	94
1919.....	93	257	240	1919.....	96	225	217
1920.....	87	271	238	1920.....	90	252	226
<b>Hotbed men:</b>				<b>Laborers:</b>			
1910.....	102	94	96	1910.....	108	84	90
1911.....	100	94	93	1911.....	102	88	89
1912.....	100	96	95	1912.....	102	87	89
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	98	98	1914.....	99	96	95
1915.....	100	93	93	1915.....	101	94	95
1919.....	94	267	251	1919.....	93	248	230
1920.....	77	338	269	1920.....	99	275	272

The customary working time per week of employees in the standard rail mill department has been classified and the number and per cent of employees under each classification are shown in Table C (7) for the years 1910 to 1920.

The number of employees reported in 1920 is not always the actual number of employees, as the totals in most cases contain some duplications, or repeated employees, as stated in the general explanation of Table C (p. 14). Of the 700 employees reported in selected occupations for all districts combined 698 are actually engaged and the 1,349 shown in all occupations represent 1,344 actual employees.

The number of employees reported, together with the number of actual employees for selected occupations and for all occupations in each district and all districts combined, are shown in Table 14.

TABLE 14.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS, 1920—STANDARD RAIL MILLS.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Pittsburgh.....	454	None.	454	654	2	652
Great Lakes and Middle West.....	246	2	244	695	3	692
Total.....	700	2	698	1,349	5	1,344

In 1920, 98 per cent of the employees in selected occupations worked 6 days per week, the remainder working 7 days all or part of the time. In 1919, 100 per cent of the employees worked 6 days. In 1910 only 68 per cent worked 6 days while 30 per cent regularly worked 7 days per week. However, in 1911 the 7-day workers had decreased to 3 per cent, and they have stood at 1 or 2 per cent each year since, except in 1919, when only 3 out of 1,174 employees were reported as working 7 days.

When all occupations for 1920, selected and others, are combined and compared with 1915, it is found that 88 per cent worked 6 days in 1915 and 92 per cent in 1920. This increase was accompanied by a reduction in those working "5 days and 6 days alternately," and "5 days, 6 days, and 6 days in rotation," 6 per cent having worked these turns in 1915 while none were reported in 1920 at less than 6 turns per week. The 1914 percentages are practically the same as those of 1915.

TABLE C (7).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—STANDARD RAIL MILLS.

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—					Per cent of employees whose customary working time per week was—					
				5 days and 6 days alternately.	5 days, 6 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	7 days.	5 days and 6 days alternately.	5 days, 6 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.
EASTERN.														
Selected occupations.	1913	1	199			199					100			
	1914	2	303	88	9	206			29	3	68			
	1915	2	322	69	18	235			21	6	73			
All occupations.	1914	2	430	117	9	298		6	27	2	69			1
	1915	2	481	89	18	368		6	19	4	77			1
PITTSBURGH.														
Selected occupations.	1910	2	374			312		62			83			17
	1911	3	447			430	10	7			96	2		2
	1912	3	431			412	12	7			96	3		2
	1913	3	507			473	13	21			93	3		4
	1914	2	356			351		5			99			1
	1915	2	452			427	6	19			94	1		4
	1919	2	618			618					100			
	1920	2	454			444	6	4			98	1		1
All occupations.	1914	2	548			503	14	31			92	3		6
	1915	2	656			567	14	75			86	2		11
	1920	2	654			585	31	35	3		89	5	(1)	5
G. L. & M. W.														
Selected occupations.	1910	4	1,161			727	8	27	399		68	1	2	34
	1911	4	908			796	52	27	33		88	6	3	4
	1912	4	1,026			900	76	27	23		88	7	3	2
	1913	4	920			904	6	3	7		98	1	(1)	1
	1914	3	398			398					100			
	1915	3	420			420					100			
	1919	3	556			553	3				99	1		
	1920	2	246			241	5				98	2		
All occupations.	1914	3	747			718			29		96			4
	1915	3	808			779	8		21		96	1		3
	1920	2	695			662	4	4	25		95	1	1	4
TOTAL.														
Selected occupations.	1910	6	1,585			1,039	8	27	461		68	1	2	30
	1911	7	1,355			1,226	62	27	49		91	5	2	3
	1912	7	1,457			1,312	98	27	39		90	6	2	2
	1913	7	1,427			1,377	19	3	28		97	1	(1)	2
	1914	7	1,057	88	9	955		5	8	1	90			1
	1915	7	1,194	69	18	1,082	6	19	6	2	91	1		2
	1919	5	1,174			1,171	3				100	(1)		
	1920	4	700			685	11		4		98	2		1
	All occupations.	1914	7	1,725	117	9	1,519	14		66	7	1	88	1
1915		7	1,945	89	18	1,714	22		102	5	1	88	1	5
1920		4	1,349			1,247	35	7	60		92	3	1	4

<sup>1</sup> Less than 1 per cent.<sup>2</sup> Worked 6 days, 7 days, and 7 days in rotation.

The most significant facts concerning customary full-time hours and actual working time and earnings in the selected occupations of standard rail mills in 1920 are shown in Table D (7).

Referring to the occupation of rollers, for example, it is seen that there were 10 positions in the 4 plants reported and that 11 men worked in these positions during the pay-roll period studied. These men averaged 6 turns per week of 10.3 hours each, making an average week of 61.8 hours. The 11 rollers averaged 120.1 hours of work during the pay-roll period and earned \$169.79, with average hourly earnings of \$1.414. This is the highest average per hour for any occupation in this department, and the average for cold-saw men's helpers, 52.5 cents, is the lowest.

All the occupations presented worked 6 turns per week except roll engineers, who averaged 6.6 turns of 11.3 hours each. These employees quite regularly do repair work when the mill is not producing. Only two other occupations averaged equally long hours per turn, and none averaged equally long hours per week.

Employees in most occupations frequently work also at other occupations. Separate figures therefore are given showing the total average hours and earnings for such employees at all occupations in which they were engaged. Usually the secondary occupations are those paying lower rates than the chief occupation of the employees—frequently skilled employees filling out short days as laborers. For example, straighteners (gag press) averaged \$1.357 per hour, but these employees averaged only 99.3 cents per hour when all their time and earnings are considered.

Laborers and those in other unskilled occupations, on the other hand, are frequently given tryouts in higher-paid occupations when a regular skilled employee is not available. Thus while laborers averaged 53.1 cents per hour, the same employees averaged 60.6 cents when their total time and earnings are considered.

TABLE D (7).—AVERAGE CUSTOMARY FULL-TIME HOURS WORKED AND AVERAGE ACTUAL EARNINGS PER PAY-ROLL PERIOD AND PER HOUR, BY OCCUPATIONS AND DISTRICTS, 1920—STANDARD RAIL MILLS.

[For explanation of this table see page 14.]

Occupation and district.	Number of plants.	Positions.			Employees working in scheduled pay-roll period.								Scheduled pay-roll period (16 days).													
		Number.	Average customary full time of employees in the positions.			Number.	Number whose customary full-time hours per week were—						Average full-time earnings per week.	Specified occupation.			Specified and other occupations.									
			Turns per week.	Hours per turn.	Hours per week.		48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.		84	Average hours worked.	Average earnings.	Average earnings per hour.	Average hours worked.	Average earnings.	Average earnings per hour.						
<b>Charging-machine operators:</b>																										
Pittsburgh.....	2	11	6.0	10.7	64.4	13	4																			
<b>Reheaters:</b>																										
Pittsburgh.....	2	15	6.0	8.0	47.7	17	17																			
<b>Reheaters' helpers:</b>																										
Pittsburgh.....	1	14	6.0	8.0	48.0	18	18																			
<b>Roll engineers:</b>																										
Pittsburgh.....	2	10	7.0	12.0	84.0	10																				
G. L. and M. W.....	2	10	6.2	10.6	65.4	12		5																		
<b>Total.....</b>	<b>4</b>	<b>20</b>	<b>6.6</b>	<b>11.3</b>	<b>74.7</b>	<b>22</b>		<b>5</b>																		
<b>Rollers:</b>																										
Pittsburgh.....	2	6	6.0	10.5	63.0	7	3				4															
G. L. and M. W.....	2	4	6.0	10.0	60.0	4	2																			
<b>Total.....</b>	<b>4</b>	<b>10</b>	<b>6.0</b>	<b>10.3</b>	<b>61.8</b>	<b>11</b>	<b>5</b>				<b>4</b>	<b>2</b>														
<b>Rollers' helpers:</b>																										
Pittsburgh.....	1	2	6.0	8.0	48.0	2	2																			
<b>Table lever men:</b>																										
Pittsburgh.....	2	14	6.0	9.6	57.6	18	10				8															
G. L. and M. W.....	2	25	6.0	8.0	48.0	25	25																			
<b>Total.....</b>	<b>4</b>	<b>39</b>	<b>6.0</b>	<b>8.6</b>	<b>51.5</b>	<b>43</b>	<b>35</b>				<b>8</b>															
<b>Table men:</b>																										
G. L. and M. W.....	1	4	6.0	8.0	48.0	5	5																			





Guide setters and straighteners (gag press) were the occupations in the standard rail mills department selected for which to show classified earnings per hour.

Table E (7) shows for each of these occupations, by districts, the total number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings fell in each group of classified earnings per hour.

The range of the classified earnings for guide setters extended from 60 cents to \$1.50 per hour, with an average of \$1.11. The classified earnings for straighteners (gag press) ranged from 50 cents to \$1.875 per hour, although 44 per cent of the employees reported earned from \$1.25 to \$1.50, and the average for all was \$1.357.

The significance of the extreme groups is explained on page 15.

In the first of these occupations the average for the Pittsburgh district was 20 per cent higher than that for the Great Lakes and Middle West district, but in the second occupation the reverse was the case, the percentage in this instance being over 26 per cent.

TABLE E (7).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—STANDARD RAIL MILLS.

[For explanation of this table see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Employees whose earnings per hour were—									
			50 and under 60 cts.	60 and under 70 cts.	80 and under 90 cts.	90 cts. and under \$1.	\$1 and under \$1.125	\$1.125 and under \$1.25	\$1.25 and under \$1.375	\$1.375 and under \$1.50	\$1.50 and under \$1.625	\$1.625 and under \$1.75
<b>GUIDE SETTERS.</b>												
Pittsburgh.....	16	\$1.156	.....	1	3	4	2	.....	.....	6	.....	.....
Great Lakes and Middle West.....	5	.963	.....	.....	2	.....	3	.....	.....	.....	.....	.....
Total.....	21	1.110	.....	1	5	4	5	.....	.....	6	.....	.....
<b>STRAIGHTENERS, GAG PRESS.</b>												
Pittsburgh.....	31	1.253	.2	.....	1	1	2	5	10	10	.....	.....
Great Lakes and Middle West.....	14	1.588	.....	.....	.....	.....	.....	2	.....	.....	3	8
Total.....	45	1.357	2	.....	1	1	2	7	10	10	3	8

The customary turns per week, hours per turn, and full-time hours per week in the standard rail mill department are shown in detail for each of the two districts in which data were secured and for both districts combined, for the year 1920, in Table F (7.)

The table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the standard rail mill department was obtained from 4 plants and covers 1,344 actual employees—1,080 in part 1 of the table and 264 in part 2. However, the figures in this table would show a total of 1,619 persons, due to 275 duplications, or repeated employees, appearing in part 2 of the table.

Rail mills, as is generally the case with all rolling mills, are seldom operated more than 6 days per week, and 94 per cent of all employees

reported in Table F (7) customarily worked that number of turns, although some of the occupations were of necessity filled continuously. Sunday work, which is not to be confused with 7-day work, was quite common, however, as practically all of the mills closed down on the completion of the day turn on Saturday and started up again at the beginning of the night turn on Sunday. Of the 1,619 employees (including duplications) reported in Table F (7), a total of 1,175 (734 of the employees included in part 1 and 441 of those in part 2) were Sunday workers. Of this number, 1,006, or 86 per cent, worked every other Sunday, 108, or 9 per cent, worked every Sunday, and the remaining 5 per cent were relieved one Sunday out of every three or some such period. A total of 304 worked fewer hours on Saturday than on the regular Monday to Friday turns and 55 worked a smaller number of hours on Sunday. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turn, the night turns usually being of equal length.

Of the 1,080 employees reported as working at one combination of hours and turns, 84 per cent alternated weekly from day to night work, 15 per cent worked days only, and the remainder (4 employees) worked nights only. Of the 910 employees alternating from day to night work 90 per cent worked 6 turns either day or night, 6 per cent worked 7 turns each week, 4 per cent worked 7 days and 6 nights or 6 days and 7 nights, alternately, and the remainder (6 employees) worked 7 days, 7 days, and 6 days in rotation.

The 8-hour turn was most common among these employees, 413, or 45 per cent, working on a 3-shift basis. The 12-hour turn was also well represented, 327, or 36 per cent, working on turns of that length. The length of the day turn is not always the same as that of the night turn, as shown by the fact that 164, or 18 per cent of the total number of alternating employees, worked turns of different lengths, 126 working 10 hours when on day turn and 14 hours when on night turn.

Of the 166 men who worked days only, 159, or 96 per cent, worked 6 days per week and the remaining 7 employees, or 4 per cent, worked 7 days. The length of turn among the day workers covered a wide range of hours, 63 working 8 hours per day, 52 working 10 hours, and 41 working 12-hour shifts. The 4 employees reported as working night turns only all worked 6 turns each week and 12 hours per night.

The 539 employees presented in part 2 of the table were divided into the following classes: Those alternating from day to night, numbering 470, or 87 per cent; those working days only, numbering 65, or 12 per cent; and those working nights only, numbering 4, or 1 per cent. Of the 470 employees who worked days one week and nights the next, 467, or 98 per cent, worked 6 turns each week, 1 per cent worked 7 turns, 1 per cent worked 6 turns and 7 turns alternately, and the remaining 1 employee worked 7 days, 7 days, and 6 days in rotation. The customary length of turn for 300, or 64 per cent, of the alternating employees was 12 hours either day or night; 90, or 19 per cent, were on an 8-hour basis, and 76, or 16 per cent, worked 10 hours on day turn and 14 hours on night turn. The 65 employees who worked days only, worked 6 days each week, and 32, or 49 per cent, of that number worked 11½ hours per turn. The working time of the 4 employees who worked nights only was 6 turns each week, and all of that number worked 12 hours per night.

TABLE F (7).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—STANDARD RAIL MILLS.

[For explanation of this table see p. 15.]

## PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

Customary turns and hours worked.										Number of employees who worked each specified combination of customary turns and hours, by districts.		
Day turns.					Night turns.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.			
<b>Employees who worked day turns.</b>												
7	12	12	12	84	.....	.....	.....	.....	.....	1	.....	1
7	12	12	10	82	.....	.....	.....	.....	.....	1	.....	1
7	10	10	10	70	.....	.....	.....	.....	.....	1	.....	1
7	10	10	6	66	.....	.....	.....	.....	.....	2	.....	2
7	8	8	8	56	.....	.....	.....	.....	.....	2	2	2
6	12	12	.....	70	.....	.....	.....	.....	.....	2	15	17
6	12	10	.....	69	.....	.....	.....	.....	.....	2	.....	2
6	12	9	.....	69	.....	.....	.....	.....	.....	20	.....	20
6	11	11	.....	66	.....	.....	.....	.....	.....	3	6	9
6	10	10	.....	60	.....	.....	.....	.....	.....	27	4	31
6	10	9	.....	59	.....	.....	.....	.....	.....	3	15	18
6	8½	8½	.....	51	.....	.....	.....	.....	.....	1	1	1
6	8	8	.....	48	.....	.....	.....	.....	.....	1	60	61
<b>Employees who worked night turns.</b>												
.....	.....	.....	.....	.....	6	12	12	12	72	.....	2	2
.....	.....	.....	.....	.....	6	12	12	12	72	.....	2	2
<b>Employees who alternated weekly from day to night turns.</b>												
7	12	12	6	78	7	12	12	14	86	2	.....	2
7	11	11	12	78	7	13	13	12	90	2	.....	2
7	10	10	10	70	7	14	14	14	98	25	.....	25
7	8½	8½	8	59½	6	8½	.....	8½	51½	.....	4	4
7	8	8	8	56	7	8	8	8	56	.....	22	22
7	8	8	8	56	7	8	8	8	56	.....	22	22
7	8	8	8	56	6	8	.....	8	48	.....	3	3
7	8	8	16	64	7	8	8	8	56	3	.....	3
6	8	8	.....	48	7	8	8	8	56	3	.....	3
6	12	11	.....	83	6	12	.....	12	72	2	.....	2
6	11	11	12	78	6	13	.....	12	77	10	.....	10
6	11	11	11	77	6	13	.....	13	78	2	.....	2
6	10	10	10	70	6	14	.....	14	84	15	.....	15
6	12	12	.....	72	6	12	.....	12	72	44	.....	44
6	12	12	.....	72	6	12	.....	12	72	.....	19	19
6	12	12	.....	72	6	12	.....	12	72	.....	155	155
6	12	10	.....	70	6	12	.....	12	72	7	.....	7
6	12	9	.....	69	6	12	.....	12	72	98	.....	98
6	11	11	11	66	6	13	13	13	78	1	.....	1
6	11	11	.....	66	6	13	.....	13	78	2	.....	2
6	11	11	.....	66	6	13	13	.....	78	.....	6	6
6	11	9	.....	64	6	13	.....	14	79	6	.....	6
6	11	9	.....	64	6	13	.....	12	77	9	.....	9
6	10	10	.....	60	6	14	.....	14	84	86	.....	86
6	10	8	.....	58	6	10	.....	8	58	2	.....	2
6	8	8	.....	48	6	8	.....	8	48	40	261	301
6	8	8	.....	48	6	8	8	.....	48	.....	26	26
6	8	8	.....	48	6	8	.....	8	48	.....	46	46
6	8	8	.....	48	6	8	.....	8	48	.....	46	46
6	8	.....	8	48	6	8	.....	8	48	12	.....	12
6	8	7	.....	47	6	8	.....	8	48	.....	.....	.....

TABLE F (7).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—STANDARD RAIL MILLS—Concl'd.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

Customary turns and hours worked.										Number of employees who worked each specified combination of customary turns and hours, by districts.		
Day turns.					Night turns.							
Turns per week.	Hours.				Turns per week.	Hours.				Pitts-burgh.	Great Lakes and Middle West.	Total.
	Mon-day to Fri-day.	Satur-day.	Sun-day.	Per week.		Mon-day to Fri-day.	Satur-day.	Sun-day.	Per week.			
<b>Employees who worked day turns.</b>												
6	12	12	.....	72	.....	.....	.....	.....	.....	.....	9	9
6	11½	11½	.....	69	.....	.....	.....	.....	.....	.....	32	32
6	11	11	.....	66	.....	.....	.....	.....	.....	10	2	12
6	10	10	.....	60	.....	.....	.....	.....	.....	9	.....	9
6	10	9	.....	59	.....	.....	.....	.....	.....	.....	2	2
6	8	8	.....	48	.....	.....	.....	.....	.....	.....	1	1
<b>Employees who worked night turns.</b>												
.....	.....	.....	.....	.....	6	12	12	.....	72	.....	2	2
.....	.....	.....	.....	.....	6	12	12	.....	72	.....	2	2
<b>Employees who alternated weekly from day to night turns.</b>												
7	11	11	12	78	7	13	13	12	90	1	.....	1
7	10	10	10	70	6	14	.....	14	84	2	.....	2
7	8½	8½	8	59½	6	8½	8½	.....	51½	.....	1	1
7	8	8	8	56	7	8	8	.....	56	.....	3	3
7	8	8	8	56	.....	.....	.....	.....	.....	.....	.....	.....
7	8	8	8	56	6	8	.....	8	48	.....	1	1
7	8	8	8	56	.....	.....	.....	.....	.....	.....	.....	.....
6	12	12	.....	72	6	12	12	.....	72	.....	24	24
6	12	12	.....	72	6	12	.....	12	72	145	.....	145
6	12	12	.....	72	6	12	12	12	72	.....	6	6
6	12	9	.....	69	6	12	.....	12	72	125	.....	125
6	11	9	.....	64	6	13	.....	14	79	1	.....	1
6	11	9	.....	64	6	13	.....	12	77	1	.....	1
6	10	10	.....	60	6	14	.....	14	84	74	.....	74
6	8	8	.....	48	6	8	.....	8	48	56	.....	58
6	8	8	.....	48	6	8	8	.....	48	.....	7	7
6	8	8	.....	48	6	8	.....	6	46	20	.....	20
6	8	7	.....	47	6	8	.....	8	48	1	.....	1

## BAR MILLS.<sup>15</sup>

Considering the bar-mill department as a whole, the year 1920 marked the highest point of average earnings per hour and per week in the department during the period 1907 to 1920. Covering the same period, average full-time hours per week were slightly less in 1920 than in any other year for which data are presented.

Average earnings per hour in 1920 for the principal productive occupations combined showed an increase of 152 per cent over the average for 1913 and 168 per cent over that for 1907. As average full-time hours per week had decreased 1 per cent only since 1913 and 7 per cent since 1907, average full-time weekly earnings followed closely the course of average earnings per hour and increased 153 per cent over 1913 and 156 per cent over 1907 (see p. 3).

The most significant facts concerning average earnings and average hours in each of the principal productive occupations in this department for the years 1907 to 1920 are shown in Table A (8).

The data for 1920 cover 25 plants, representing 5,130 employees in 18 selected occupations and 1,555 in all other occupations, making a total of 6,685 employees in all occupations. The average earnings per hour in 1920 for the department as a whole, including all occupations, selected and others, were 71.3 cents.

The year 1920 shows the lowest average full-time hours per week for selected occupations as a whole of any year of the period 1907 to 1920, but when each occupation in Table A (8) is considered separately, it will be noted that all of the 18 occupations show decreases in 1920 only when compared with the years 1907, 1909, and 1919. Compared with 1908 all of the occupations in 1920 show decreases in working time except that of laborers which increased from 64.8 hours per week in 1908 to 65.1 hours in 1920. Compared with 1913, 5 of the occupations increased in 1920, although the increase was comparatively small in each case. Decreases in average full-time hours per week are most noticeable when the year 1920 is compared with 1907, ranging from 1.9 hours for stranders to 6.6 hours for shearmen. Hours per week in 1920 varied from 57.6 for stranders to 69.7 for roll engineers.

Average earnings per hour for all of the principal productive occupations were much higher in 1920 than in any year for which data are available. During the period 1907 to 1920 increases ranging from 92 per cent for rollers to 268 per cent for chargers and helpers took place. In 1907 chargers received 17.3 cents per hour but in 1908 and 1909 this figure was reduced to 16.1 cents for each year. Earnings increased in 1910 to 19.2 cents per hour and the same rate was paid in 1912, but during the intervening year, 1911, the average was only 18.4 cents. A further increase to 22.6 cents per hour was recorded in 1913, followed by a slight decrease to 21.9 cents in 1914. In 1915 the average paid was 22.2 cents per hour, which increased enormously in 1919, to 56.1 cents. The increase was continued in a lesser degree in 1920, the average for that year being 63.6 cents.

<sup>15</sup> Summary figures relating to the bar-mill department are given with figures for other departments of the iron and steel industry on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

Full-time weekly earnings increased in practically the same proportion as hourly earnings, owing to the fact that full-time hours per week remained much more steady than hourly rates.

In the percentage distribution of employees according to their full-time hours per week, the majority of employees in all but one of the occupations in 1920 appeared in the two groups "Over 48 and under 60" and "Over 60 and under 72" hours.

In the occupation of roll engineers 54 per cent of the employees worked from 72 to 84 hours full time. This was the only occupation in 1920 in which any workmen were employed 84 hours per week and only 3 per cent worked those hours.

TABLE A (8).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BAR MILLS.

[For explanation of this table see p. 13.]

Occupation, and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	72	Over 72 and under 84.	84		
<b>Stockers:</b>													
8 plants.....	1907	93	64.4	\$0.178	\$11.43	.....	9	9	70	9	4	.....	
	1908	90	64.1	.167	10.72	.....	11	9	66	14	.....	.....	
	1909	88	64.2	.168	10.79	.....	9	9	78	3	.....	.....	
13 plants.....	1910	170	59.0	.250	14.24	16	25	4	51	5	.....	.....	
	1911	211	60.9	.217	12.94	13	19	21	34	13	.....	.....	
	1912	217	60.9	.231	13.79	12	17	27	31	13	.....	.....	
31 plants.....	1913	374	60.2	.216	12.89	4	25	34	36	1	.....	.....	
	1914	603	60.4	.199	12.00	2	33	18	43	4	.....	.....	
41 plants.....	1915	582	60.2	.198	11.91	1	46	9	39	4	.....	.....	
	1919	298	63.7	.524	33.38	1	9	31	51	9	.....	.....	
15 plants.....	1920	458	61.5	.612	37.69	7	26	7	51	8	.....	.....	
<b>Heaters:</b>													
15 plants.....	1907	121	63.9	.508	32.35	2	13	2	70	10	.....	2	
	1908	112	63.9	.467	29.66	3	18	2	61	15	.....	2	
	1909	112	64.0	.488	31.06	3	18	2	70	4	.....	2	
25 plants.....	1910	217	62.9	.507	31.73	8	13	7	58	10	.....	1	
	1911	184	62.7	.510	31.87	10	17	1	60	9	.....	1	
	1912	199	62.4	.482	29.84	9	22	1	57	9	.....	1	
44 plants.....	1913	285	59.7	.590	34.74	10	37	1	46	3	.....	2	
	1914	409	59.9	.548	32.49	9	34	1	52	2	.....	(1)	
57 plants.....	1915	392	60.1	.562	33.50	9	35	(1)	52	3	.....	1	
	1919	209	61.7	1.147	70.77	13	1	17	60	8	.....	.....	
23 plants.....	1920	213	60.1	1.176	70.73	13	27	2	52	2	.....	5	
<b>Heaters' helpers:</b>													
14 plants.....	1907	167	65.3	.246	15.77	2	12	2	65	16	.....	4	
	1908	153	65.1	.227	14.50	2	16	3	56	21	.....	3	
	1909	151	65.0	.234	14.87	2	16	3	74	1	.....	4	
24 plants.....	1910	295	62.6	.273	16.77	16	11	8	52	11	.....	1	
	1911	283	62.7	.259	15.94	16	13	2	55	10	.....	3	
25 plants.....	1912	319	62.2	.260	16.01	14	23	2	50	9	.....	1	
	1913	467	60.5	.269	16.21	8	42	2	44	4	.....	(1)	
42 plants.....	1914	582	60.9	.265	16.09	6	36	1	52	5	.....	(1)	
	1915	570	60.3	.272	16.37	11	32	(1)	50	5	.....	(1)	
54 plants.....	1919	323	60.7	.655	39.76	24	1	17	46	10	.....	1	
	1920	435	59.5	.744	44.16	14	30	5	46	2	.....	3	
<b>Chargers and helpers:</b>													
12 plants.....	1907	104	65.5	.173	11.34	.....	10	5	68	15	.....	2	
	1908	102	65.6	.161	10.56	.....	10	5	66	20	.....	.....	
	1909	107	65.9	.161	10.60	.....	9	4	75	7	.....	5	
18 plants.....	1910	179	65.3	.192	12.40	.....	7	8	7	59	20	.....	.....
	1911	185	64.8	.184	11.90	6	14	3	59	18	.....	.....	
19 plants.....	1912	182	65.0	.192	12.45	5	13	3	61	18	.....	.....	
	1913	262	62.5	.226	14.00	4	27	2	63	3	.....	1	
31 plants.....	1914	346	61.9	.219	13.47	4	32	1	62	1	.....	1	
	1915	333	61.7	.222	13.56	9	27	(1)	62	2	.....	1	
41 plants.....	1919	189	62.4	.561	35.01	17	10	5	55	10	.....	3	
	1920	328	61.9	.636	39.45	5	28	2	60	5	.....	.....	

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

TABLE A (8).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—BAR MILLS—Continued.

Occupation, and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—					
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Drag-downs:</b>											
11 plants	1907	86	64.4	\$0.271	\$17.31	.....	19	60	19	2	.....
	1908	82	63.9	.246	15.58	.....	24	52	23	.....	
	1909	83	64.0	.250	15.93	.....	24	70	4	2	.....
19 plants	1910	132	65.1	.269	17.44	.....	18	3	57	19	3
20 plants	1911	127	64.7	.262	16.78	.....	24	.....	55	20	2
	1912	130	64.3	.253	16.12	.....	25	.....	54	19	2
33 plants	1913	186	60.8	.282	16.98	9	38	1	44	7	2
45 plants	1914	265	60.7	.277	16.58	6	38	.....	49	6	1
	1915	256	61.1	.280	16.96	5	36	.....	51	7	1
18 plants	1919	131	64.9	.696	45.17	3	3	11	62	21	.....
20 plants	1920	205	60.6	.725	43.33	17	16	2	59	6	.....
<b>Roll engineers:</b>											
13 plants	1907	58	72.3	.226	16.29	.....	.....	53	9	31	7
	1908	56	71.4	.221	15.76	.....	.....	50	18	29	4
	1909	56	71.5	.217	15.52	.....	.....	54	11	32	4
22 plants	1910	99	72.0	.229	16.46	.....	3	40	26	23	7
	1911	95	70.4	.228	16.07	.....	.....	57	14	24	2
	1912	97	70.0	.229	16.05	4	1	53	12	28	2
41 plants	1913	153	69.2	.247	17.06	.....	7	6	45	16	4
52 plants	1914	183	68.8	.247	16.97	.....	6	5	47	26	11
	1915	178	68.9	.246	16.77	.....	6	4	49	27	12
21 plants	1919	94	70.2	.558	39.17	2	.....	15	31	35	2
22 plants	1920	109	69.7	.657	45.65	3	2	3	39	12	15
<b>Rollers:</b>											
13 plants	1907	65	65.5	1.013	66.88	.....	17	17	43	18	5
	1908	63	65.7	.878	57.88	.....	19	13	44	19	5
	1909	63	65.5	.917	60.40	.....	19	13	52	16	.....
22 plants	1910	124	62.4	.928	58.21	12	16	13	47	12	.....
23 plants	1911	120	62.0	.873	54.65	13	22	8	43	15	.....
24 plants	1912	128	61.6	.863	53.60	12	26	9	38	16	.....
42 plants	1913	173	59.3	.985	58.85	.....	56	.....	43	1	.....
56 plants	1914	216	59.6	.936	56.13	.....	49	.....	51	.....	
	1915	215	59.4	.944	56.75	.....	51	.....	49	.....	
23 plants	1919	108	61.3	1.821	111.62	22	4	21	42	8	2
25 plants	1920	141	59.5	1.949	116.13	11	26	16	37	11	.....
<b>Roughers:</b>											
15 plants	1907	252	61.5	.434	26.28	13	20	5	44	17	.....
	1908	242	62.5	.343	21.35	10	23	5	40	22	.....
	1909	243	62.4	.368	22.72	10	23	5	57	6	.....
25 plants	1910	425	61.0	.402	24.51	17	20	8	46	9	.....
26 plants	1911	403	60.5	.377	22.68	18	24	3	46	9	.....
	1912	408	60.2	.389	23.36	18	25	3	45	9	.....
	1913	407	59.8	.436	26.00	6	46	1	43	4	.....
57 plants	1914	385	58.8	.436	25.41	2	65	.....	32	.....	
	1915	386	58.9	.438	25.76	2	62	.....	36	.....	
23 plants	1919	202	60.7	.933	56.63	21	10	10	46	13	.....
25 plants	1920	319	57.8	1.034	59.46	16	44	1	36	3	.....
<b>Catchers:</b>											
11 plants	1907	69	62.5	.442	27.68	.....	42	1	36	20	.....
	1908	70	62.0	.381	23.57	.....	46	.....	34	.....	
	1909	70	61.9	.400	24.93	.....	46	.....	54	.....	
20 plants	1910	115	60.2	.419	25.45	13	35	5	40	7	.....
	1911	111	59.9	.392	23.70	14	39	.....	41	7	.....
	1912	110	59.7	.399	23.92	14	39	.....	40	7	.....
44 plants	1913	222	58.1	.445	25.73	3	63	.....	33	1	.....
57 plants	1914	293	58.6	.430	25.03	2	60	.....	38	.....	
	1915	296	58.8	.432	25.35	2	60	.....	38	.....	
23 plants	1919	187	60.6	.936	56.72	23	11	7	46	13	.....
25 plants	1920	217	57.9	1.022	58.68	19	38	1	38	4	.....
<b>Stranders:</b>											
13 plants	1907	175	59.5	.354	19.45	22	17	11	34	15	.....
	1908	174	59.7	.277	16.25	22	17	11	32	17	.....
	1909	174	59.7	.297	17.34	22	17	11	42	7	.....
21 plants	1910	272	60.6	.301	17.85	18	16	14	40	13	.....
22 plants	1911	262	59.8	.272	16.03	18	27	8	34	13	.....
	1912	266	59.6	.283	16.62	18	28	8	33	13	.....
42 plants	1913	491	58.3	.345	20.15	.....	64	.....	35	1	.....
56 plants	1914	635	58.4	.318	18.57	.....	57	11	31	(1)	.....
	1915	615	58.1	.326	18.99	.....	77	.....	23	(1)	.....
23 plants	1919	381	59.5	.762	45.34	26	13	8	44	9	.....
25 plants	1920	525	57.6	.849	48.79	14	46	1	36	3	.....

TABLE A (8).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BAR MILLS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—					
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	Over 72 and under 84.	84	
<b>Finishers:</b>											
10 plants.....	1907	65	65.9	\$0.369	\$20.45	.....	12	14	48	26	.....
	1908	63	66.4	.279	18.53	.....	13	11	49	27	.....
	1909	63	66.2	.300	19.85	.....	13	10	68	10	.....
17 plants.....	1910	111	64.0	.323	20.48	14	7	9	55	15	.....
19 plants.....	1911	121	62.8	.313	19.60	12	20	7	45	17	.....
21 plants.....	1912	137	62.0	.328	20.29	11	31	7	38	13	.....
40 plants.....	1913	182	59.6	.350	20.77	.....	63	.....	35	2	.....
54 plants.....	1914	223	60.0	.341	20.42	.....	48	1	55	.....	.....
	1915	222	59.8	.352	20.95	.....	43	1	51	.....	.....
22 plants.....	1919	123	61.6	.796	47.19	16	13	13	46	11	.....
24 plants.....	1920	177	60.0	.886	52.05	9	34	5	44	7	.....
<b>Hookups:</b>											
12 plants.....	1907	92	63.9	.268	17.30	10	3	9	52	26	.....
	1908	84	65.3	.225	14.70	4	5	17	42	33	.....
	1909	82	65.7	.241	15.82	4	5	10	57	24	.....
20 plants.....	1910	174	63.2	.272	17.13	16	6	11	43	25	.....
21 plants.....	1911	154	63.0	.250	15.66	14	14	6	44	23	.....
22 plants.....	1912	177	61.9	.254	15.74	12	24	8	36	20	.....
36 plants.....	1913	227	59.6	.291	17.32	.....	46	.....	48	5	.....
47 plants.....	1914	262	59.8	.268	16.03	.....	48	.....	52	.....	.....
	1915	245	60.3	.270	16.25	.....	41	.....	59	.....	.....
21 plants.....	1919	156	59.6	.641	38.20	22	20	13	32	13	.....
24 plants.....	1920	277	57.7	.771	43.83	18	35	1	37	9	.....
<b>Roll hands, other:</b>											
9 plants.....	1907	97	66.8	.278	18.53	6	4	4	40	45	.....
	1908	94	67.0	.255	16.97	6	4	4	40	45	.....
	1909	94	66.8	.266	17.65	6	4	4	70	15	.....
18 plants.....	1910	180	62.8	.295	18.35	22	10	4	44	20	.....
	1911	177	62.5	.273	16.97	22	13	2	42	20	.....
	1912	176	62.7	.267	17.97	20	13	2	44	20	.....
24 plants.....	1913	199	62.2	.316	20.02	.....	24	.....	76	.....	.....
37 plants.....	1914	240	62.2	.285	17.92	.....	21	.....	79	.....	.....
	1915	235	62.6	.291	18.23	.....	26	.....	74	.....	.....
18 plants.....	1919	174	62.1	.684	42.48	17	10	2	60	11	.....
20 plants.....	1920	352	60.7	.758	45.99	5	41	(1)	45	9	.....
<b>Hotbed men:</b>											
15 plants.....	1907	362	68.3	.189	11.98	4	21	14	43	19	.....
	1908	399	63.2	.174	10.93	4	21	19	35	21	.....
	1909	286	63.3	.180	11.00	4	22	15	54	5	.....
25 plants.....	1910	500	62.9	.300	12.46	11	16	14	43	12	3
26 plants.....	1911	450	61.9	.188	11.61	12	24	6	48	9	.....
	1912	461	61.7	.192	11.80	12	26	5	45	11	.....
43 plants.....	1913	690	60.3	.217	13.06	7	43	2	45	4	.....
56 plants.....	1914	714	60.3	.213	12.77	5	42	2	47	4	.....
	1915	721	60.0	.216	12.83	14	34	.....	43	8	.....
23 plants.....	1919	497	59.4	.545	32.37	27	15	8	41	9	.....
24 plants.....	1920	727	58.8	.618	36.46	9	45	(1)	41	4	.....
<b>Shearmen:</b>											
15 plants.....	1907	94	64.8	.249	16.20	.....	15	16	51	18	.....
	1908	92	65.1	.216	14.10	.....	15	18	46	21	.....
	1909	93	65.3	.225	14.72	.....	15	18	59	3	4
25 plants.....	1910	156	63.3	.264	16.40	10	16	14	46	10	4
	1911	151	62.5	.254	15.55	10	23	12	45	11	.....
24 plants.....	1912	156	62.4	.251	15.40	10	24	10	43	12	1
41 plants.....	1913	218	60.2	.281	16.74	5	42	9	41	2	1
54 plants.....	1914	263	60.5	.280	16.78	4	38	9	46	3	.....
	1915	264	60.5	.293	17.56	11	31	6	47	5	.....
22 plants.....	1919	145	60.9	.634	38.61	15	23	8	46	8	.....
25 plants.....	1920	216	58.2	.752	43.99	14	42	4	37	3	.....

1 Less than 1 per cent.

TABLE A (8).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1907 TO 1920—BAR MILLS—Concluded.

Occupation and number of plants.	Year.	Num-ber of em-ployees.	Aver- age full-time hours per week.	Aver- age earnings per hour.	Aver- age full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60.	Over 60 and under 72.	72.	Over 72 and under 84.	84.
<b>Shearmen's helpers:</b>												
15 plants.....	1907	201	65.9	\$0.174	\$11.46	.....	6	10	62	20	1	.....
	1908	172	66.2	.168	11.07	.....	7	13	59	17	5	.....
	1909	185	67.3	.169	11.32	.....	6	14	59	4	16	.....
23 plants.....	1910	355	64.7	.187	12.02	13	3	12	45	22	6	.....
	1911	359	63.8	.178	11.28	13	8	10	50	18	.....	.....
	1912	358	63.9	.184	11.74	13	9	10	46	18	3	.....
35 plants.....	1913	418	62.7	.209	12.98	4	24	6	61	3	2	.....
48 plants.....	1914	487	62.7	.201	12.57	3	24	6	63	5	.....	.....
	1915	471	62.3	.203	12.66	10	20	4	60	7	.....	.....
19 plants.....	1919	399	62.3	.513	31.96	17	9	6	55	12	1	(1)
22 plants.....	1920	507	60.8	.615	37.39	7	40	3	48	1	.....	.....
<b>Bundlers:</b>												
5 plants.....	1907	41	66.9	.202	13.53	.....	.....	.....	76	24	.....	.....
	1908	41	66.9	.174	11.68	.....	.....	.....	76	24	.....	.....
	1909	41	66.8	.186	12.42	.....	.....	100	.....	.....	.....	.....
6 plants.....	1910	77	66.1	.207	13.69	.....	.....	100	.....	.....	.....	.....
7 plants.....	1911	131	62.0	.197	12.20	.....	66	.....	34	.....	.....	.....
	1912	132	62.0	.193	11.94	.....	65	.....	35	.....	.....	.....
12 plants.....	1913	178	61.4	.218	13.38	.....	71	2	27	.....	.....	.....
13 plants.....	1914	178	63.9	.203	12.97	.....	43	2	55	.....	.....	.....
	1915	210	64.4	.208	13.38	.....	37	1	58	4	.....	.....
6 plants.....	1919	115	68.8	.529	36.40	.....	2	4	37	57	.....	.....
10 plants.....	1920	151	60.9	.555	33.80	2	65	6	27	.....	.....	.....
<b>Laborers:</b>												
10 plants.....	1907	296	68.3	.153	10.44	.....	(1)	17	47	25	8	2
	1908	227	64.8	.153	9.93	.....	1	41	48	8	.....	2
	1909	324	67.8	.150	10.17	.....	1	23	42	27	4	2
15 plants.....	1910	511	67.8	.160	10.86	.....	2	29	25	36	5	2 4
17 plants.....	1911	390	65.5	.159	10.40	.....	9	27	45	18	1	1
21 plants.....	1912	536	65.0	.160	10.38	.....	23	15	43	18	1	1
42 plants.....	1913	891	62.5	.169	10.66	(1)	26	33	33	2	5	(1)
54 plants.....	1914	1,039	63.3	.173	11.00	1	18	31	42	7	1	1
	1915	1,029	62.9	.173	10.91	1	22	27	41	8	1	(1)
21 plants.....	1919	1,058	66.1	.443	29.28	2	9	18	45	18	5	2
20 plants.....	1920	816	65.1	.506	33.12	6	20	11	35	27	1	.....

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

<sup>2</sup> Including 1 per cent whose full-time hours per week were 84<sup>1</sup>, and less than 1 per cent whose full-time hours per week were 91.

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings are presented in Table B (8) for each of the principal productive occupations in bar mills for the years 1907 to 1920. These index numbers are simply percentages computed from the averages of Table A, with the average for 1913 taken as the base or 100 per cent, as an aid in making comparisons of the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A (8).

For index numbers for this department as a whole (all selected occupations combined), see page 3.

TABLE B (8).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1907 TO 1920—BAR MILLS.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Stockers:</b>				<b>Rollers:</b>			
1907.....	107	82	89	1907.....	110	103	114
1908.....	106	77	83.	1908.....	111	89	98
1909.....	107	78	84	1909.....	110	93	103
1910.....	98	116	110	1910.....	105	94	99
1911.....	101	100	100	1911.....	105	89	93
1912.....	101	107	107	1912.....	104	88	91
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	92	93	1914.....	101	95	95
1915.....	100	92	92	1915.....	100	96	96
1919.....	106	243	259	1919.....	103	185	190
1920.....	102	283	292	1920.....	100	198	197
<b>Heaters:</b>				<b>Roughers:</b>			
1907.....	107	86	93	1907.....	103	100	101
1908.....	107	79	85	1908.....	105	79	82
1909.....	107	83	89	1909.....	104	84	87
1910.....	105	86	91	1910.....	102	92	94
1911.....	105	86	92	1911.....	101	86	87
1912.....	105	82	86	1912.....	101	89	90
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	93	94	1914.....	98	100	98
1915.....	101	95	96	1915.....	98	100	99
1919.....	103	194	204	1919.....	102	214	218
1920.....	101	199	204	1920.....	97	237	229
<b>Heaters' helpers:</b>				<b>Catchers:</b>			
1907.....	108	91	97	1907.....	108	99	108
1908.....	108	84	89	1908.....	107	86	92
1909.....	107	87	92	1909.....	107	90	97
1910.....	103	101	103	1910.....	104	94	99
1911.....	104	96	98	1911.....	103	88	92
1912.....	103	97	99	1912.....	103	90	93
1913.....	100	100	100	1913.....	100	100	100
1914.....	101	99	99	1914.....	101	97	97
1915.....	100	101	101	1915.....	101	97	99
1919.....	100	243	245	1919.....	104	210	220
1920.....	98	277	272	1920.....	100	230	228
<b>Chargers and helpers:</b>				<b>Stranders:</b>			
1907.....	105	77	81	1907.....	102	97	97
1908.....	105	71	75	1908.....	102	80	81
1909.....	105	71	76	1909.....	102	86	86
1910.....	104	85	89	1910.....	104	87	89
1911.....	104	81	85	1911.....	103	79	80
1912.....	104	85	89	1912.....	102	82	82
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	97	96	1914.....	100	92	92
1915.....	99	98	97	1915.....	100	94	94
1919.....	100	248	250	1919.....	102	221	225
1920.....	99	281	282	1920.....	99	246	242
<b>Drag-downs:</b>				<b>Finishers:</b>			
1907.....	106	96	102	1907.....	111	88	98
1908.....	105	87	92	1908.....	111	80	89
1909.....	105	89	94	1909.....	111	86	96
1910.....	107	95	103	1910.....	107	92	99
1911.....	106	93	99	1911.....	106	89	94
1912.....	106	90	95	1912.....	104	94	98
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	98	98	1914.....	101	97	98
1915.....	100	99	100	1915.....	100	101	101
1919.....	107	247	266	1919.....	103	219	227
1920.....	107	257	255	1920.....	101	247	251
<b>Roll engineers:</b>				<b>Hook-ups:</b>			
1907.....	104	91	95	1907.....	107	92	100
1908.....	103	89	92	1908.....	110	77	85
1909.....	103	88	91	1909.....	110	83	91
1910.....	104	93	96	1910.....	106	93	99
1911.....	102	92	94	1911.....	106	86	90
1912.....	101	93	94	1912.....	104	87	91
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	100	99	1914.....	100	92	93
1915.....	99	100	98	1915.....	101	93	94
1919.....	101	226	230	1919.....	100	220	221
1920.....	101	266	268	1920.....	97	265	253

TABLE B (8).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1907 TO 1920—BAR MILLS—Concluded.

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Roll hands, other:</b>				<b>Shearmen's helpers:</b>			
1907.....	106	88	93	1907.....	105	83	88
1908.....	106	81	85	1908.....	106	80	85
1909.....	106	84	88	1909.....	107	81	87
1910.....	99	93	92	1910.....	103	89	93
1911.....	99	86	85	1911.....	102	85	87
1912.....	99	91	90	1912.....	102	88	90
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	90	90	1914.....	100	96	97
1915.....	99	92	91	1915.....	99	97	98
1919.....	98	216	212	1919.....	99	245	246
1920.....	96	240	230	1920.....	97	294	288
<b>Hotbed men:</b>				<b>Bundlers:</b>			
1907.....	105	87	92	1907.....	109	93	101
1908.....	105	80	84	1908.....	109	80	87
1909.....	105	83	84	1909.....	109	85	93
1910.....	104	92	95	1910.....	108	95	102
1911.....	103	87	89	1911.....	101	90	91
1912.....	102	88	90	1912.....	101	89	89
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	98	98	1914.....	104	93	97
1915.....	100	100	98	1915.....	105	95	100
1919.....	99	251	248	1919.....	112	243	272
1920.....	98	285	279	1920.....	99	255	253
<b>Shearmen:</b>				<b>Laborers:</b>			
1907.....	108	89	97	1907.....	109	91	98
1908.....	108	77	84	1908.....	104	91	93
1909.....	108	80	88	1909.....	108	89	96
1910.....	105	94	98	1910.....	108	95	102
1911.....	104	90	93	1911.....	105	94	98
1912.....	104	89	92	1912.....	104	95	97
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	100	100	1914.....	101	102	103
1915.....	100	104	105	1915.....	101	102	102
1919.....	101	226	231	1919.....	106	262	275
1920.....	97	268	263	1920.....	104	299	311

The customary working time per week of employees in the bar-mill department has been classified and the number and per cent of employees under each classification are shown in Table C (8), for the years 1907 to 1920.

The number of employees reported in 1920 includes some duplications, or repeated employees, as stated in the general explanation of Table C (p. 14). In the 5,330 employees reported in selected occupations for all districts combined there were 200 duplications, leaving 5,130 actually engaged, and the total of 6,983 employees shown for all occupations represents 6,685 individuals.

The gross number of employees reported, together with the net number of actual employees, for selected occupations and all occupations in each district and all districts combined, are shown in Table 15.

TABLE 15.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, 1920—BAR MILLS.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Eastern.....	867	1	866	950	1	949
Pittsburgh.....	2,372	154	2,218	3,167	239	2,928
Great Lakes and Middle West.....	1,509	24	1,485	2,079	30	2,049
Southern.....	582	21	561	787	28	759
Total.....	5,330	200	5,130	6,983	298	6,685

The working time of employees in the bar-mill department shows a wide variation of days or turns per week—5 days, 6 days, and 7 days, with the many combinations thereof. However, in 1920 46 per cent of all employees worked 6 days and 33 per cent worked "5 days and 6 days alternately," while the remaining 21 per cent were scattered among the other different classifications of turns per week, with only 1 per cent working 7 days each week and 3 per cent working 5 days only each week.

When 1920 is compared with 1919, only a few changes in the working time of employees in selected occupations in this department can be seen, but when 1920 is compared with other years considerable fluctuation in the number of turns worked per week is noted. Thirty-six per cent of the employees worked 5 days and 6 days alternately in 1920, as compared with 42 per cent in 1919, 52 per cent in 1910, 48 per cent in 1913, and 54 per cent in 1915. The year 1910 shows the largest proportion of 6-day workers (60 per cent), and 1914 the lowest (32 per cent), while there were 40 per cent in this group in 1920.

TABLE C (8).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS PER WEEK, BY DISTRICTS, 1907 TO 1920—BAR MILLS.

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—							Per cent of employees whose customary working time per week was—												
				5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days.	5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days.
EASTERN.																							
Selected occupations..	1907	3	313	1	242			70						(1)	77				22				
	1908	3	355	1	290			64						(1)	82				18				
	1909	3	357	1	290			66						(1)	81				19				
	1910	8	890	157	323			406				4	18	36	36				46			(1)	
	1911	8	831	1	455			375					(1)	55	45				45				
	1912	8	946	14	588			344					2	62	36				36				
	1913	12	1,387	57	912		3	410		2	3		4	66		(1)	30		30		(1)	(1)	
	1914	15	1,562	64	1,144		3	349				2	4	73		(1)	22		22			(1)	
	1915	15	1,543	63	1,130			348				2	4	73			23		23			(1)	
	1919	4	636	216	259			161					34	41			25		25				
	1920	6	867	110	404	100		248		5			13	47	12		29		29				
All occupations.....	1914	15	1,851	69	1,207		3	554		11			7	4	65		(1)	30		1			(1)
	1915	15	1,876	70	1,211			573		12			10	4	65			31		1			
	1920	6	950	133	425	100		287		5			14	45	11		30		31				

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

TABLE C (8).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS PER WEEK, BY DISTRICTS, 1907 TO 1920—BAR MILLS—Concluded.

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—								Per cent of employees whose customary working time per week was—													
				5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days.	5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	5 days and 7 days alternately.	6 days and 7 days alternately.	6 days, 6 days, and 7 days in rotation.	6 days, 7 days, and 7 days in rotation.	7 days.		
<b>PITTSBURGH.</b>																									
Selected occupations..	1907	6	1,215	32	561	42	.....	521	8	34	.....	.....	17	3	46	4	.....	43	1	3	.....	.....	1	1	
	1908	6	1,060	58	455	42	.....	479	4	16	.....	.....	6	6	43	4	.....	45	(1)	2	.....	.....	1	3	
	1909	6	1,163	26	465	42	.....	579	4	18	.....	.....	29	2	40	4	.....	50	(1)	2	.....	.....	1	3	
	1910	10	2,185	18	676	45	.....	1,403	4	14	.....	.....	25	1	31	2	.....	64	(1)	1	.....	.....	1	1	
	1911	10	2,096	33	806	42	.....	1,188	4	16	.....	.....	7	2	39	2	.....	57	(1)	1	.....	.....	1	1	
	1912	10	2,193	37	967	42	.....	1,120	4	14	.....	.....	9	2	44	2	.....	51	(1)	1	.....	.....	1	1	
	1913	11	2,380	<sup>2</sup> 115	<sup>3</sup> 1,154	42	.....	<sup>4</sup> 700	.....	<sup>5</sup> 54	<sup>297</sup> 9	.....	9	5	48	2	.....	29	.....	2	.....	.....	2	2	
	1914	14	2,833	100	1,388	42	.....	890	.....	38	349	12	14	4	49	1	.....	31	.....	1	.....	.....	1	1	
	1915	14	1,845	88	1,439	42	.....	1,242	.....	18	12	.....	4	3	51	1	.....	44	.....	1	.....	.....	1	1	
	1919	4	1,534	.....	417	.....	1,032	.....	57	.....	.....	.....	28	.....	27	.....	.....	67	.....	4	.....	.....	2	.....	
	1920	7	2,372	56	792	.....	<sup>6</sup> 957	.....	11	47	<sup>7</sup> 459	35	15	2	33	.....	.....	40	(1)	2	.....	.....	1	1	
	All occupations.....	1914	14	3,250	<sup>2</sup> 162	<sup>8</sup> 1,461	42	.....	<sup>9</sup> 1,128	4	<sup>10</sup> 64	349	12	28	5	45	1	.....	35	(1)	2	.....	.....	1	1
1915		14	3,366	<sup>2</sup> 122	<sup>8</sup> 1,549	42	4	<sup>11</sup> 1,562	4	56	12	15	4	46	1	(1)	.....	46	(1)	2	.....	.....	1	1	
1920		7	3,167	69	958	.....	<sup>6</sup> 1,458	11	153	<sup>7</sup> 460	38	20	2	30	.....	.....	46	(1)	5	.....	.....	1	1		
<b>GREAT LAKES AND MIDDLE WEST.</b>																									
Selected occupations..	1907	6	850	10	421	.....	64	336	6	4	.....	.....	9	1	50	.....	8	40	1	1	.....	.....	1	1	
	1908	6	801	12	335	.....	48	385	6	6	.....	.....	9	2	42	.....	6	48	1	1	.....	.....	1	1	
	1909	6	795	4	346	.....	48	356	6	24	.....	.....	11	1	44	.....	6	45	1	3	.....	.....	1	1	
	1910	7	1,017	.....	227	.....	49	651	6	8	.....	.....	76	.....	22	.....	5	64	1	1	.....	.....	1	8	
	1911	8	997	4	429	.....	45	<sup>12</sup> 497	6	10	.....	.....	6	1	43	.....	5	50	1	1	.....	.....	1	1	
	1912	8	975	4	420	.....	<sup>13</sup> 53	454	6	22	10	.....	6	(1)	36	.....	5	47	1	2	.....	.....	1	1	
	1913	12	1,279	11	457	90	49	621	6	14	<sup>14</sup> 10	1	21	1	43	7	4	49	(1)	1	1	.....	.....	1	2
	1914	19	2,207	63	1,189	111	49	755	6	7	<sup>14</sup> 10	.....	17	3	54	5	3	34	(1)	.....	.....	.....	.....	1	1
	1915	19	2,113	62	1,152	67	49	762	6	7	.....	.....	8	3	55	3	2	36	(1)	.....	.....	.....	.....	1	1
	1919	11	2,126	111	1,195	.....	49	756	.....	2	.....	.....	12	5	56	.....	2	36	.....	.....	.....	.....	.....	.....	1
	1920	7	1,509	13	619	172	226	478	.....	.....	.....	.....	1	1	41	11	15	32	.....	.....	.....	.....	.....	.....	(1)

All occupations.....	1914	19	2,694	77	1,284	120	49	1,085	6	15	14 10	.....	48	3	48	4	2	40	(1)	1	(1)	.....	2	
	1915	19	2,484	76	1,246	70	49	989	6	15	14 10	.....	23	3	50	3	2	40	(1)	1	(1)	.....	1	
	1920	7	2,079	13	759	200	233	846	.....	22	.....	.....	6	1	37	10	11	41	.....	1	.....	.....	(1)	
SOUTHERN.																								
Selected occupations..	1913	9	795	207	252	.....	.....	335	.....	.....	.....	.....	1	26	32	.....	.....	42	.....	.....	.....	.....	(1)	
	1914	9	721	156	195	.....	.....	369	.....	.....	.....	.....	1	22	27	.....	.....	51	.....	.....	.....	.....	(1)	
	1915	9	719	172	146	.....	.....	400	.....	.....	.....	.....	1	24	20	.....	.....	56	.....	.....	.....	.....	(1)	
	1919	4	494	31	128	.....	.....	335	.....	.....	.....	.....	.....	6	26	.....	.....	68	.....	.....	.....	.....	(1)	
	1920	5	582	21	120	.....	.....	435	.....	2	.....	.....	4	4	21	.....	.....	75	.....	(1)	.....	.....	1	
All occupations.....	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	.....	2	.....	.....	11	3	19	.....	.....	77	.....	(1)	.....	.....	1	
TOTAL.																								
Selected occupations..	1907	15	2,378	43	1,224	42	64	927	14	38	.....	.....	26	2	52	2	3	39	1	2	.....	.....	1	
	1908	15	2,216	71	1,080	42	48	928	10	22	.....	.....	15	3	49	2	2	42	1	1	.....	.....	1	
	1909	15	2,315	31	1,101	42	48	1,001	10	42	.....	.....	40	1	48	2	2	43	(1)	2	.....	.....	2	
	1910	25	4,092	175	1,226	45	49	2,460	10	22	.....	.....	105	4	30	1	1	60	(1)	1	.....	.....	3	
	1911	26	3,924	38	1,690	42	45	2,060	10	26	.....	.....	13	1	43	1	1	63	(1)	1	.....	.....	(1)	
	1912	26	4,114	55	1,975	42	53	1,918	10	36	.....	.....	15	1	48	1	1	47	(1)	1	.....	.....	(1)	
	1913	44	5,841	390	2,775	132	52	2,066	6	70	.....	.....	9	31	7	48	2	35	(1)	1	.....	.....	1	
	1914	57	7,323	383	3,916	153	52	2,363	6	45	.....	.....	12	34	5	53	2	32	(1)	1	.....	.....	(1)	
	1915	57	7,220	385	3,867	109	49	2,752	6	25	.....	.....	15	5	54	2	1	38	(1)	(1)	.....	.....	(1)	
	1919	23	4,789	358	1,999	.....	.....	2,284	.....	59	.....	.....	40	7	42	.....	.....	48	.....	1	.....	.....	1	
	1920	25	6,330	200	1,935	272	226	2,118	11	54	.....	.....	35	20	4	36	5	4	40	(1)	1	.....	.....	(1)
All occupations.....	1914	57	8,802	523	4,171	162	52	3,325	10	90	.....	.....	12	98	6	47	2	38	(1)	1	.....	.....	1	
	1915	57	8,732	497	4,178	112	53	3,715	10	83	.....	.....	12	62	6	48	1	43	(1)	1	.....	.....	1	
	1920	25	6,983	236	2,289	300	233	3,197	11	182	.....	.....	38	37	3	33	4	3	46	(1)	3	.....	.....	1

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

<sup>2</sup> Including 4 employees who worked 6 days during 5 months of the year.

<sup>3</sup> Including 62 employees who worked 6 days during 5 months of the year.

<sup>4</sup> Including 16 employees who worked 5 days during 4 months of the year; 112 employees who worked 5 and 6 days alternately during 4 months of the year; and 4 employees who worked 7 days every eighth week.

<sup>5</sup> Including 9 employees who worked 6 days for 5 weeks and 7 days for 4 weeks in each 9-week period.

<sup>6</sup> Including 10 employees who worked 7 days every eighth week, and 5 employees who are relieved 1 turn every fourth week.

<sup>7</sup> Including 27 employees who worked 6 days for 5 weeks and 7 days for 4 weeks in each 9-week period.

<sup>8</sup> Including 64 employees who worked 6 days during 5 months of the year.

<sup>9</sup> Including 15 employees who worked 5 days during 4 months of the year; 112 employees who worked 5 and 6 days alternately during 4 months of the year; and 6 employees who worked 7 days every eighth week.

<sup>10</sup> Including 18 employees who worked 6 days for 5 weeks and 7 days for 4 weeks in each 9-week period.

<sup>11</sup> Including 15 employees who worked 5 days during 4 months of the year; 114 employees who worked 5 and 6 days alternately during 4 months of the year; 18 employees who worked 7 days every ninth week; 6 employees who worked 7 days every sixth week; and 3 employees who worked 7 days every eighth week.

<sup>12</sup> Including 10 employees who worked 7 days every fifth week.

<sup>13</sup> Including 8 employees who worked 5 days every fourth week.

<sup>14</sup> Worked 7 days every fifth week.

Table D (8) presents the most significant facts relative to customary and actual working time, actual earnings, and earnings per hour of employees in bar mills, by occupations and districts, for the year 1920.

Referring to the occupation of heaters, by way of illustration: There were 174 positions to be filled in 24 plants during the pay-roll period scheduled, but these positions were occupied by 213 actual employees. The average customary turns per week, hours per turn, and hours per week of the employees working as heaters were 5.7 turns, 10.6 hours, and 60.1 hours, respectively. One hundred and ten, or over 50 per cent, of the 213 actual employees customarily worked "over 60 and under 72" hours per week, while 85 employees worked less than 60 hours.

The average hourly rate for heaters ranged from \$1.027 in the Eastern district to \$1.453 in the Southern district, with an average of \$1.176 for all districts combined. The range for average full-time weekly earnings was from \$60.28 in the Eastern district to \$90.09 in the Southern, and the average for all districts was \$70.73. While the earnings of employees have usually been highest in the Pittsburgh and Great Lakes and Middle West districts, one general exception should be noted for the Southern district. The earnings for some of the highly skilled occupations in that district are as high, and in some instances even higher, than in any of the other districts. The reason for this condition is said to be that employees in these occupations, for a large part, are brought from the northern districts and will not accept a lower rate than they formerly received, and in some cases they will not go to the warmer climate, to which they are not accustomed, unless they are given a higher rate than that paid in the Pittsburgh or Great Lakes and Middle West districts. On the other hand, occupations requiring little skill, including common laborers, are recruited to a great extent from among the Negroes, who are paid less than the whites in the same occupation.

Owing to the fact that a large number of the employees worked in more than one occupation during the pay-roll period, and in order to give the complete hours and earnings for them, separate figures are shown which include all occupations at which they worked. While 213 men working as heaters averaged 97.8 hours per pay-roll period, they also averaged 9.8 hours at other work, making a total of 107.6 average hours per pay-roll period in "specified [heaters] and other occupations." During the 97.8 hours they worked as heaters they earned an average of \$115.59, or \$1.176 per hour. When the work of these men in all occupations is considered, they earned \$122.40; that is, \$6.81 was earned in some other occupation than that of heaters.

The average earnings per hour in this department range from 50.6 cents for laborers to \$1.949 for rollers, and the average actual hours worked per pay-roll period range from 69.4 for laborers to 134.1 for roll engineers.







TABLE D (8).—AVERAGE CUSTOMARY FULL-TIME HOURS WORKED AND AVERAGE ACTUAL EARNINGS PER PAY-ROLL PERIOD AND PER HOUR, BY OCCUPATIONS AND DISTRICTS, 1920—BAR MILLS—Concluded.

Occupation and district.	Number of plants.	Positions.				Employees working in scheduled pay-roll period.								Scheduled pay-roll period (16 days)						
		Number.	Average customary full time of employees in the positions.			Number.	Number whose customary full-time hours per week were—						Average full-time earnings per week.	Specified occupation.			Specified and other occupations.			
			Turns per week.	Hours per turn.	Hours per week.		48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.		84	Average hours worked.	Average earnings.	Average earnings per hour.	Average hours worked.	Average earnings.	Average earnings per hour.
<b>Shearmen:</b>																				
Eastern.....	6	47	5.5	9.9	54.5	61	12	34	15			\$32.26	84.0	\$49.71	\$0.592	94.8	\$56.03	\$0.591		
Pittsburgh.....	7	58	5.9	10.4	61.1	77	37	37	40			48.94	92.5	74.07	.801	120.9	91.48	.756		
G. L. and M. W.....	7	46	5.7	10.0	57.3	54	19	9	1	25		55.24	101.2	97.53	.964	115.0	107.10	.931		
Southern.....	5	16	6.0	10.3	61.8	24		10	8			32.57	90.5	47.72	.527	131.0	68.76	.525		
<b>Total.....</b>	<b>25</b>	<b>167</b>	<b>5.7</b>	<b>10.2</b>	<b>58.2</b>	<b>216</b>	<b>31</b>	<b>90</b>	<b>9</b>	<b>80</b>	<b>6</b>	<b>43.99</b>	<b>92.0</b>	<b>70.13</b>	<b>.752</b>	<b>113.2</b>	<b>82.85</b>	<b>.727</b>		
<b>Shearmen's helpers:</b>																				
Eastern.....	3	28	5.6	10.4	58.0	55		40	15			30.91	58.8	31.36	.533	65.4	34.86	.533		
Pittsburgh.....	7	144	5.8	10.8	62.2	293		116	1	141	5	38.00	70.3	42.96	.611	108.2	65.92	.609		
G. L. and M. W.....	7	106	5.7	10.4	59.4	153	35	28	2	88		41.34	83.3	57.99	.696	102.6	70.28	.685		
Southern.....	5	29	6.0	10.2	61.3	36		18	12			26.05	106.5	45.28	.425	130.2	55.96	.430		
<b>Total.....</b>	<b>22</b>	<b>307</b>	<b>5.8</b>	<b>10.6</b>	<b>60.8</b>	<b>507</b>	<b>35</b>	<b>202</b>	<b>15</b>	<b>244</b>	<b>6</b>	<b>37.39</b>	<b>75.6</b>	<b>46.40</b>	<b>.615</b>	<b>108.4</b>	<b>63.16</b>	<b>.611</b>		
<b>Bundlers:</b>																				
Eastern.....	1	8	5.5	10.7	58.8	12		3	9			31.58	79.2	42.53	.537	88.5	47.35	.535		
Pittsburgh.....	5	99	5.6	11.0	61.4	131		92		39		34.14	88.8	49.44	.556	110.0	61.20	.556		
G. L. and M. W.....	3	6	5.8	9.7	56.3	7	3	2		2		32.37	78.7	45.28	.575	102.9	60.22	.585		
Southern.....	1	1	6.0	9.5	57.0	1		1				25.42	124.8	55.66	.448	124.8	55.66	.446		
<b>Total.....</b>	<b>10</b>	<b>114</b>	<b>5.6</b>	<b>10.9</b>	<b>60.9</b>	<b>151</b>	<b>3</b>	<b>98</b>	<b>9</b>	<b>41</b>		<b>33.80</b>	<b>87.9</b>	<b>48.74</b>	<b>.555</b>	<b>108.0</b>	<b>60.01</b>	<b>.555</b>		
<b>Laborers:</b>																				
Eastern.....	3	21	5.8	10.2	59.4	22		5	17			28.45	118.7	56.85	.479	118.7	56.86	.479		
Pittsburgh.....	6	207	6.0	11.6	69.6	405		39	27	146	186	38.75	75.0	39.62	.528	115.3	63.28	.549		
G. L. and M. W.....	7	131	5.9	10.4	62.0	276	51	23	28	136	38	32.61	59.6	31.36	.526	116.6	65.43	.561		
Southern.....	4	59	6.0	9.7	58.4	113		93	20			22.25	63.9	24.34	.381	96.5	37.26	.390		
<b>Total.....</b>	<b>20</b>	<b>418</b>	<b>6.0</b>	<b>10.9</b>	<b>65.1</b>	<b>816</b>	<b>51</b>	<b>160</b>	<b>92</b>	<b>282</b>	<b>224</b>	<b>33.12</b>	<b>69.4</b>	<b>35.18</b>	<b>.506</b>	<b>113.1</b>	<b>60.23</b>	<b>.529</b>		

Roughers and hotbed men were the occupations selected in the bar-mill department for which to show classified earnings per hour.

Table E (8) shows for each of these occupations by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings fell in each group of classified rates per hour.

Out of the 319 roughers in all districts, 90 per cent earned between 60 cents and \$1.50 per hour, while the average for all was \$1.034.

Out of 727 hotbed men in all districts more than one-half earned between 50 and 70 cents per hour. The average for all hotbed men was 61.8 cents per hour.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (8).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—BAR MILLS.

[For explanation of this table see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Employees whose earnings per hour were—											
			Under 30 cents.	30 and under 40 cents.	40 and under 50 cents.	50 and under 60 cents.	60 and under 70 cents.	70 and under 80 cents.	80 and under 90 cents.	90 cents and under \$1.	\$1 and under \$1.25.	\$1.25 and under \$1.50.	\$1.50 and under \$1.75.	\$1.75 and over.
<b>ROUGHERS.</b>														
Eastern.....	57	\$0.927					8	18	8	1	20	2		
Pittsburgh.....	154	1.008	1	1	6	7	15	8	31	32	23	25	4	1
G. L. & M. W. ....	66	1.301							2		17	42	4	1
Southern.....	42	.852	1		5		5	7	10	8	4	2		
<b>Total.....</b>	<b>319</b>	<b>1.034</b>	<b>2</b>	<b>1</b>	<b>11</b>	<b>7</b>	<b>28</b>	<b>33</b>	<b>51</b>	<b>41</b>	<b>64</b>	<b>71</b>	<b>8</b>	<b>2</b>
<b>HOTBED MEN.</b>														
Eastern.....	115	.553		16	10	55	22	11	1					
Pittsburgh.....	348	.637	1	8	23	160	62	35	30	13	12	4		
G. L. & M. W. ....	172	.687		9	22	44	5	32	25	16	19			
Southern.....	92	.498		21	27	28	13	3						
<b>Total.....</b>	<b>727</b>	<b>.618</b>	<b>1</b>	<b>54</b>	<b>82</b>	<b>287</b>	<b>102</b>	<b>81</b>	<b>56</b>	<b>29</b>	<b>31</b>	<b>4</b>		

The customary turns per week, hours per turn, and full-time hours per week in the bar-mill department are shown in detail, by districts and all districts combined, for the year 1920, in Table F (8).

This table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the bar-mill department was obtained from 25 plants and covers 6,685 actual employees—6,303 in part 1 of the table and 382 in part 2. However, the sum of the figures in this table would show 7,126 persons, due to 441 duplications, or repeated employees, appearing in part 2.

Bar mills, as is generally the case with all rolling mills, are seldom operated more than 6 days per week, and 46 per cent of all employees reported in Table F (8) customarily worked that number of turns, although almost as many employees, 42 per cent, worked 6 days and

5 nights alternately. Sunday work in this department was confined chiefly to those employees working in the mechanical department, but few of the regular productive crew being Sunday workers. A total of 1,897 (including duplications), or 27 per cent of all employees, were found on Sunday work, and of that number 1,058 worked every other Sunday, 615 were relieved one Sunday out of 3 or some such period, and 224 worked every Sunday. It must not be assumed that the 224 men who worked every Sunday were all 7-day workers, however, as in many instances the men were relieved on some other day of the week. A total of 3,929 employees worked fewer hours on Saturday than on the regular Monday to Friday shifts and 69 worked a smaller number of hours on Sunday. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turn, the night turns usually being of equal length.

Of the 6,303 employees reported as working at one combination of hours and turns, 4,818 employees, or 76 per cent, alternated weekly from day to night work, 20 per cent worked days only, while the remaining 3 per cent worked nights only. Of the 4,818 employees alternating from day to night work, 55 per cent worked 6 days and 5 nights in alternate weeks, 32 per cent worked 6 turns either day or night, 11 per cent worked 7 days and 6 nights or 7 nights and 6 days alternately, 2 per cent worked 5 turns, either day or night, and less than 1 per cent worked 7 days and 5 nights alternately.

The 12-hour turn was most common among these employees, 2,617, or 54 per cent, working on shifts of that length. The 8-hour turn was also well represented, 922, or 19 per cent, being found on a 3-shift basis. The length of the day turn is not always the same as that of the night turn, as shown by the fact that 1,031, or 21 per cent of the total number of alternating employees, worked turns of different lengths, varying from a 9½-hour day turn and a 10½-hour night turn to an 11-hour day turn and a 13-hour night turn.

Of the 1,289 persons who worked days only, 95 per cent worked 6 days per week, 3 per cent worked 5 days, and 2 per cent worked 7 days. Among the day workers a 10-hour workday predominated, as 674, or 52 per cent, of the 1,289 employees, were found on 10-hour shifts, while 282, or 22 per cent, worked 12 hours per day. The remaining 333 employees worked hours varying from 8 to 11½ hours per day.

A total of 105, or 54 per cent of the 196 employees reported as working night turns only, worked 6 nights per week and out of that number 72, or 69 per cent, worked 12 hours per turn. Those whose working time per week was 5 nights numbered 85 and of that total 46, or 54 per cent, worked 12 hours per night. The 6 employees who worked 7 nights per week all worked 12 hours per night.

The 823 employees (including duplications) presented in part 2 of the table are divided into the following classes: Those alternating from day to night, numbering 449, or 55 per cent; those working days only, numbering 301, or 37 per cent; and those working nights only, numbering 73, or 9 per cent. Out of the 449 employees who worked days one week and nights the next, 176, or 39 per cent, worked 6 days and 5 nights alternately, 117, or 26 per cent, worked 6 turns either day or night, and the remaining 156, or 35 per cent, worked on a 3-shift basis, varying from 5 days, 6 days, and 6 days in rotation to 6 days, 7 days, and 7 days in rotation. The customary length of





TABLE F (8).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BAR MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.								Number of employees who worked each specified customary combination of turns and hours by districts.				
Day turns.				Night turns.				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.					

Employees who alternated weekly from day to night turns—Concluded.

6	11	7	.....	62	5	11	.....	55	.....	209	.....	209
6	11	5	.....	60	5	12	.....	60	45	.....	.....	45
6	10½	10½	.....	63	5	11½	.....	57½	.....	8	.....	8
6	10	10	.....	60	6	14	.....	84	.....	92	.....	92
6	10	10	.....	60	6	13	.....	78	.....	12	.....	12
6	10	10	.....	60	6	10	10	60	.....	2	.....	2
6	10	10	.....	60	5	10	.....	50	.....	1	.....	1
6	10	8	.....	58	5	12	.....	60	.....	51	.....	51
6	10	7½	.....	57½	5	14	.....	70	.....	2	.....	2
6	10	6	.....	56	5	12	.....	60	.....	33	.....	33
6	10	5½	.....	55½	5	12	.....	60	5	.....	.....	5
6	10	5	.....	55	5	11	.....	55	162	.....	.....	162
6	9½	9½	.....	57	5	10½	.....	52½	.....	160	.....	160
6	8	9	.....	49	5	8	.....	40	.....	70	.....	70
6	8	8	.....	48	7	8	.....	56	.....	358	.....	358
6	8	8	.....	48	6	8	8	56	.....	.....	.....	358
6	8	8	.....	48	6	8	.....	50	.....	3	.....	3
6	8	8	.....	48	6	8	8	48	.....	3	.....	3
6	8	8	.....	48	6	8	.....	46	.....	3	.....	3
6	8	8	.....	48	5	8	.....	40	.....	163	.....	163
6	8	8	.....	48	5	8	.....	40	.....	200	.....	200
6	8	8	.....	46	5	8	.....	40	.....	.....	.....	200
5	8	8	.....	46	5	8	.....	40	100	.....	.....	100
5	11	.....	.....	55	5	11	.....	55	1	.....	.....	14
5	10	.....	.....	50	5	11	.....	55	59	.....	.....	59
5	8	.....	.....	40	5	8	.....	40	3	.....	.....	3

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

Employees who worked day turns.

7	10	10	5	65	.....	.....	.....	.....	.....	13	.....	13
6	12	12	.....	72	.....	.....	.....	.....	.....	2	40	42
6	12	11	.....	71	.....	.....	.....	.....	.....	7	.....	7
6	12	10	.....	70	.....	.....	.....	.....	.....	6	.....	6
6	12	9	.....	69	.....	.....	.....	.....	.....	1	.....	1
6	12	8	.....	68	.....	.....	.....	.....	.....	1	.....	1
6	11	10	.....	65	.....	.....	.....	.....	.....	2	.....	2
6	11	7	.....	62	.....	.....	.....	.....	.....	1	.....	1
6	10	10	.....	60	.....	.....	.....	.....	.....	82	1	105
6	10	9	.....	59	.....	.....	.....	.....	.....	.....	24	24
6	10	8	.....	58	.....	.....	.....	.....	.....	8	.....	8
6	10	7	.....	57	.....	.....	.....	.....	.....	.....	4	4
6	10	6½	.....	56½	.....	.....	.....	.....	.....	.....	9	9
6	10	5	.....	55	.....	.....	.....	.....	.....	38	.....	40
6	9½	8½	.....	57	.....	.....	.....	.....	.....	.....	1	1
6	9½	9½	.....	57	.....	.....	.....	.....	.....	.....	.....	1
6	9½	6½	.....	52½	.....	.....	.....	.....	.....	.....	1	10
6	9	.....	.....	52	.....	.....	.....	.....	.....	.....	16	16
6	9	5	.....	50	.....	.....	.....	.....	.....	.....	.....	1
6	8½	8½	.....	51	.....	.....	.....	.....	.....	.....	4	4
6	8	8	.....	48	.....	.....	.....	.....	.....	1	2	3
5	11	.....	.....	55	.....	.....	.....	.....	1	.....	.....	1
5	10	.....	.....	50	.....	.....	.....	.....	1	.....	.....	1

TABLE F (8).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—BAR MILLS—Concluded.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.									Number of employees who worked each specified customary combination of turns and hours, by districts.				
Day turns.				Night turns.				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.

Employees who worked night turns.

.....	.....	.....	.....	.....	7	12	12	12	84	.....	1	.....	.....	1
.....	.....	.....	.....	.....	6	12	13	12	73	.....	.....	.....	1	1
.....	.....	.....	.....	.....	6	12	.....	12	72	.....	18	.....	.....	18
.....	.....	.....	.....	.....	6	10	10	.....	60	.....	.....	.....	7	7
.....	.....	.....	.....	.....	5	13	.....	.....	65	.....	1	.....	.....	1
.....	.....	.....	.....	.....	5	12½	.....	.....	62½	1	.....	.....	.....	1
.....	.....	.....	.....	.....	5	12	.....	.....	60	.....	43	.....	.....	43
.....	.....	.....	.....	.....	5	11	.....	.....	55	.....	1	.....	.....	1

Employees who alternated weekly from day to night turns.<sup>2</sup>

7	12	12	5	77	6	12	.....	17	77	.....	.....	.....	1	1
7	10	17	9½	76½	6	14	.....	14½	84½	.....	15	.....	.....	15
7	10	17	9½	76½	6	14	.....	14	84	.....	4	.....	.....	4
7	8	8	8	56	6	8	.....	8	48	.....	7	.....	.....	7
7	8	8	8	56	7	8	8	8	56	.....	15	.....	.....	15
6	8	8	8	48	.....	.....	.....	.....	.....	.....	90	.....	.....	90
6	8	8	8	56	6	8	.....	8	48	.....	.....	.....	.....	.....
6	12	12	.....	72	7	12	7	12	79	.....	.....	3	.....	3
6	12	12	.....	72	6	12	12	12	72	.....	.....	1	.....	1
6	12	12	.....	72	6	12	12	.....	72	.....	4	.....	.....	4
6	12	12	.....	72	6	12	.....	12	72	.....	4	.....	21	33
6	12	12	.....	72	5	12	.....	.....	60	.....	12	.....	25	32
6	12	11	.....	71	6	12	.....	12	72	.....	10	.....	.....	10
6	12	10	.....	70	6	12	.....	12	72	.....	47	.....	.....	47
6	12	10	.....	70	5	12	.....	.....	60	.....	17	.....	.....	17
6	12	9	.....	69	6	12	.....	12	72	.....	7	.....	.....	7
6	12	9	.....	69	6	12	9	.....	69	.....	.....	4	.....	4
6	12	9	.....	69	5	12	.....	.....	60	.....	1	.....	.....	1
6	12	8	.....	68	5	12	.....	.....	60	.....	.....	39	.....	39
6	11½	8½	.....	66	5	12½	.....	.....	62½	1	.....	.....	.....	1
6	11	9	.....	64	5	11	.....	.....	55	.....	17	.....	.....	17
6	11	7	.....	62	5	11	.....	.....	55	.....	5	.....	.....	5
6	10	10	.....	60	6	14	.....	14	84	.....	35	.....	.....	35
6	10	10	.....	60	6	13	.....	13	78	.....	6	.....	.....	6
6	10	10	.....	60	6	10	.....	10	60	.....	2	.....	.....	2
6	10	10	.....	60	5	12	.....	.....	60	.....	.....	1	.....	1
6	10	8	.....	58	5	12	.....	.....	60	.....	3	.....	.....	3
6	10	8	.....	58	5	10	.....	.....	50	.....	2	.....	.....	2
6	10	6	.....	56	5	12	.....	.....	60	.....	5	.....	.....	5
6	10	5	.....	55	5	11	.....	.....	55	.....	1	.....	.....	1
6	9½	9½	.....	57	5	10½	.....	.....	52½	.....	.....	1	.....	1
6	8	.....	8	48	7	8	8	8	56	.....	19	.....	.....	19
6	8	8	.....	48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6	8	8	.....	48	5	8	.....	.....	40	.....	.....	.....	1	1
6	8	8	.....	48	5	8	.....	.....	40	.....	.....	2	.....	2

<sup>2</sup> In the Pittsburgh district out of 87 employees reported as working 6 days and 6 nights per week alternately 2 per cent worked 1 day extra every eighth week, and out of 109 employees working 6 days, 6 days and 7 days in rotation 13 per cent worked 1 day extra every ninth week.

## SHEET MILLS.<sup>16</sup>

In 1920 the average hourly earnings in sheet mills in the principal productive occupations combined were 19 per cent higher than in 1919, 129 per cent higher than in 1913, and 173 per cent higher than in 1910. Average full-time hours per week were the same as in 1913 and 2 per cent lower than in 1910. Average full-time weekly earnings in 1920 show an increase of 23 per cent as compared with 1919, 140 per cent as compared with 1913, and 182 per cent as compared with 1910 (see p. 3).

The most significant facts concerning average hours per week, average hourly earnings, and average full-time weekly earnings for each of the principal productive occupations in this department for the years 1910 to 1920 are shown in Table A (9). The data for 1920 cover 13 plants, representing 5,257 employees in selected occupations and 8,527 employees in all occupations. The average earnings per hour in 1920 for this department as a whole, including all employees, both selected and all others, were \$1.039.

In sheet mills the custom of two rollers working level-handed (dividing the pay evenly), instead of one roller working with a helper, has been increasing in recent years. This condition also holds true in the occupations of sheet heaters and openers. Since 1913 sheet heaters, level-handed, have been included in the bureau's reports, and in this report for 1920 rollers, level-handed, and openers, level-handed, are presented. Feeders also appear for the first time in this report.

As hot-mill crews work in three shifts, either 5, 5, and 6, or 5, 6, and 6 days per week in rotation, 8 hours per day, there was little change in the average full-time hours per week of employees in these crews. The slight increases of 1 or 2 per cent (see Table B (9)) shown in the later years were due to one or two plants which work three shifts, making two of them 6 days and one 5 days, instead of two 5 days and one 6 days, as had been the custom in previous years. Picklers' average full-time hours per week show the greatest change—from 70.8 in 1910 to 51.1 in 1920. This decrease was caused by a partial change in system, from two to three shifts per day. The average full-time hours per week of laborers decreased from 63.1 in 1910 to 59.5 in 1920. This change also was due to the introduction of the three-shift system in some plants.

Average hourly earnings in 1920 for all occupations shown when compared with any other year for which similar data are presented show a substantial increase. In 1910 the average hourly earnings for laborers were 16.4 cents as compared with 19 cents in 1913, 33.1 cents in 1917, 46.2 cents in 1919, and 53.6 cents in 1920. The 1920 average is over  $3\frac{1}{4}$  times that of 1910.

Average full-time weekly earnings show an increase in all occupations in 1920 when compared with former years. In the occupation of shearmen's helpers in 1910 the average full-time weekly earnings were \$11.99 and in 1913, \$10.77, in 1917 they had increased to \$23.06,

<sup>16</sup> Summary figures relating to the sheet-mill department are given with figures for other departments of the iron and steel industry on pp. 1 to 12; and an explanation of the scope of the investigation is given on p. 13.

in 1919 to \$29.80, and in 1920 the average full-time weekly earnings were \$42.91, or over 3½ times those of 1910.

The distribution of average hours per week show but slight change from year to year except in two occupations—picklers and laborers—where there has been a decided tendency toward the 48-hour week.

TABLE A (9).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—SHEET MILLS.

[For explanation of this table see p. 13.]

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—				
						48 and under.	Over 48 and under 60.	Over 60 and under 72.	Over 72 and under 84.	84
<b>Pair heaters:</b>										
9 plants.....	1910	210	42.7	\$0.466	\$19.89	100				
	1911	255	42.7	.502	21.42	100				
	1912	249	42.7	.517	22.06	100				
13 plants.....	1913	336	42.8	.543	23.23	100				
15 plants.....	1914	399	42.8	.540	23.10	100				
	1915	354	42.8	.518	22.17	100				
8 plants.....	1917	276	43.7	1.038	45.48	100				
11 plants.....	1919	382	43.4	1.046	45.40	100				
13 plants.....	1920	521	43.4	1.386	60.13	100				
<b>Rollers:</b>										
9 plants.....	1910	215	42.7	1.242	52.98	100				
	1911	259	42.7	1.380	58.89	100				
	1912	252	42.7	1.416	60.41	100				
13 plants.....	1913	335	42.8	1.476	63.21	100				
15 plants.....	1914	394	42.8	1.431	61.20	100				
	1915	348	42.9	1.280	54.80	100				
8 plants.....	1917	276	43.7	2.591	113.47	100				
11 plants.....	1919	342	43.5	2.536	110.32	100				
13 plants.....	1920	464	43.4	2.976	129.10	100				
<b>Rollers, level-handed:</b>										
5 plants.....	1920	44	42.7	1.516	64.73	100				
<b>Rollers' helpers or finishers:</b>										
6 plants.....	1912	115	42.7	.474	20.21	100				
8 plants.....	1913	171	42.7	.503	21.48	100				
10 plants.....	1914	264	42.9	.555	23.77	100				
	1915	233	42.9	.461	19.77	100				
	1919	271	43.0	1.010	43.43	100				
11 plants.....	1920	437	42.8	1.092	46.90	100				
<b>Roughers:</b>										
9 plants.....	1910	215	42.7	.558	23.82	100				
	1911	255	42.7	.603	25.71	100				
	1912	252	42.7	.616	26.29	100				
13 plants.....	1913	336	42.8	.642	27.49	100				
15 plants.....	1914	399	42.8	.648	27.73	100				
	1915	353	42.8	.619	26.51	100				
8 plants.....	1917	276	43.7	1.285	56.27	100				
11 plants.....	1919	367	43.5	1.289	56.07	100				
13 plants.....	1920	528	43.4	1.584	68.69	100				
<b>Catchers:</b>										
9 plants.....	1910	215	42.7	.544	23.19	100				
	1911	258	42.7	.587	25.03	100				
	1912	252	42.7	.603	25.71	100				
13 plants.....	1913	336	42.8	.629	26.92	100				
15 plants.....	1914	399	42.8	.636	27.23	100				
	1915	350	42.8	.595	25.49	100				
8 plants.....	1917	276	43.7	1.256	54.92	100				
11 plants.....	1919	407	43.6	1.199	52.28	100				
13 plants.....	1920	552	43.4	1.532	66.43	100				
<b>Matchers:</b>										
9 plants.....	1910	210	42.7	.387	16.53	100				
	1911	255	42.7	.418	17.83	100				
	1912	249	42.7	.429	18.30	100				
13 plants.....	1913	336	42.8	.448	19.16	100				
15 plants.....	1914	399	42.8	.484	20.70	100				
	1915	354	42.8	.475	20.34	100				
8 plants.....	1917	276	43.7	.946	41.39	100				
11 plants.....	1919	398	43.5	.981	42.67	100				
13 plants.....	1920	642	43.4	1.225	53.12	100				

TABLE A (9).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—SHEET MILLS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—					
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.
<b>Doublers:</b>											
9 plants.....	1910	210	42.7	\$0.372	\$15.86	100					
	1911	252	42.7	.401	17.10	100					
	1912	246	42.7	.412	17.58	100					
13 plants.....	1913	336	42.8	.429	18.34	100					
15 plants.....	1914	399	42.8	.462	19.75	100					
	1915	354	42.8	.453	19.42	100					
8 plants.....	1917	276	43.7	.906	39.57	100					
11 plants.....	1919	437	43.4	.921	39.97	100					
13 plants.....	1920	558	43.4	1.206	52.32	100					
<b>Sheet heaters:</b>											
9 plants.....	1910	215	42.7	.883	37.68	100					
	1911	259	42.7	.911	38.88	100					
	1912	253	42.7	.949	40.51	100					
12 plants.....	1913	307	42.8	.993	42.50	100					
14 plants.....	1914	364	42.8	.956	41.34	100					
	1915	324	42.9	.868	37.19	100					
8 plants.....	1917	276	43.7	1.879	82.36	100					
11 plants.....	1919	332	43.5	1.849	80.43	100					
13 plants.....	1920	424	43.4	2.151	93.29	100					
<b>Sheet heaters, level handed:</b>											
2 plants.....	1913	14	42.7	.707	30.17	100					
	1914	56	42.7	.782	32.65	100					
	1915	34	42.7	.686	29.27	100					
3 plants.....	1919	15	42.7	1.316	56.19	100					
8 plants.....	1920	94	43.0	1.661	71.45	100					
<b>Sheet heaters' helpers:</b>											
8 plants.....	1910	174	42.7	.377	16.07	100					
	1911	215	42.7	.436	18.59	100					
	1912	208	42.7	.439	18.71	100					
10 plants.....	1913	230	42.9	.483	20.70	100					
13 plants.....	1914	309	42.8	.485	20.73	100					
	1915	275	42.9	.458	19.60	100					
6 plants.....	1917	216	43.2	.859	37.21	100					
11 plants.....	1919	286	43.1	.928	39.91	100					
12 plants.....	1920	367	42.7	1.140	48.68	100					
<b>Shearmen:</b>											
7 plants.....	1910	85	46.0	.680	30.79	86			14		
	1911	104	44.9	.722	32.86	90			10		
	1912	105	44.9	.768	34.67	90			10		
8 plants.....	1913	114	42.9	.814	34.90	100					
10 plants.....	1914	136	42.9	.860	36.84	100					
	1915	115	43.0	.827	35.48	100					
7 plants.....	1917	149	43.5	1.399	60.90	100					
11 plants.....	1919	221	43.3	1.463	63.35	100					
8 plants.....	1920	122	43.5	1.891	82.22	100					
<b>Shearmen's helpers:</b>											
6 plants.....	1910	62	46.4	.261	11.99	84			16		
	1911	83	44.9	.308	13.59	90			10		
	1912	77	45.1	.290	12.88	90			10		
7 plants.....	1913	111	42.9	.251	10.77	100					
9 plants.....	1914	128	42.9	.282	12.09	100					
	1915	146	43.8	.242	10.59	95	2		3		
6 plants.....	1917	120	43.2	.533	23.06	100					
11 plants.....	1919	196	43.7	.682	29.80	98			2		
7 plants.....	1920	155	43.7	.983	42.91	100					
<b>Openers:</b>											
7 plants.....	1910	138	46.0	.274	12.57	86			14		
	1911	167	45.2	.275	12.35	89			11		
	1912	180	45.8	.289	13.04	87			13		
6 plants.....	1913	168	45.4	.279	12.56	88			12		
9 plants.....	1914	200	42.8	.282	12.06	100					
	1915	180	43.6	.273	11.93	96	2		2		
6 plants.....	1917	175	43.3	.662	28.70	100					
10 plants.....	1919	266	43.6	.656	28.60	99			1		
6 plants.....	1920	193	44.0	1.188	52.13	100					

TABLE A (9).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—SHEET MILLS—Concluded.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—							
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84	
Openers, level-handed: 1 plant.....	1920	40	42.7	\$1.114	\$47.57	100							
Picklers:													
4 plants.....	1910	50	70.8	.181	12.75			10		90			
5 plants.....	1911	58	71.2	.177	12.54			9	16	69			7
	1912	39	71.7	.186	13.23				13	15	56		15
8 plants.....	1913	71	68.1	.216	14.49	11		7	8	73			
9 plants.....	1914	121	69.6	.211	14.55	7		4	8	81			
	1915	126	69.8	.209	14.44	6		3	6	84			
7 plants.....	1919	67	68.3	.600	40.98		6	24		70			
	1920	65	51.5	.792	41.13	77		5	17	2			
Feeders:													
5 plants.....	1920	41	56.8	.704	39.39	41		20	39				
Laborers:													
9 plants.....	1910	347	63.1	.164	10.35		4	64	13	16	1	3	
	1911	361	63.6	.166	10.54		5	53	25	16		2	
	1912	354	63.5	.169	10.72		4	54	26	15	1		
13 plants.....	1913	351	64.9	.190	12.28		17	37	13	28	4	1	
15 plants.....	1914	378	65.9	.188	12.37		10	26	32	26	3	2	
	1915	394	65.0	.188	12.21		10	32	30	18	8	1	
8 plants.....	1917	656	61.8	.331	20.46			73	26	2			
9 plants.....	1919	270	64.5	.462	29.80		8	51	13	28			
11 plants.....	1920	866	59.5	.536	32.01	32	10	20	11	22	5		

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings for the principal productive occupations in this department, for the years 1910 to 1920, are presented in Table B (9). These are simply percentages computed from the averages of Table A (9), with the average for 1913 as the base, or 100 per cent. These index numbers make clearer the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A (9).

For index numbers for this department as a whole (all selected occupations combined) see page 3.

TABLE B (9).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—SHEET MILLS.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Fair heaters:</b>				<b>Sheet heaters—Con.</b>			
1910.....	100	86	86	1914.....	100	97	97
1911.....	100	92	92	1915.....	100	87	88
1912.....	100	95	95	1917.....	102	189	194
1913.....	100	100	100	1919.....	102	186	189
1914.....	100	99	99	1920.....	101	217	220
1915.....	100	95	95	<b>Sheet heaters, level-</b>			
1917.....	102	191	195	<b>handed:</b>			
1919.....	101	193	195	1913.....	100	100	100
1920.....	101	255	259	1914.....	100	108	108
<b>Rollers:</b>				1915.....	100	97	97
1910.....	100	84	84	1919.....	100	186	186
1911.....	100	93	93	1920.....	101	235	237
1912.....	100	96	96	<b>Sheet heaters' helpers:</b>			
1913.....	100	100	100	1910.....	100	78	78
1914.....	100	97	97	1911.....	100	90	90
1915.....	100	87	87	1912.....	100	91	90
1917.....	102	175	180	1913.....	100	100	100
1919.....	102	172	175	1914.....	100	100	100
1920.....	101	202	204	1915.....	100	95	95
<b>Rollers' helpers or fin-</b>				1917.....	101	177	180
<b>ishers:</b>				1919.....	100	192	193
1912.....	100	94	94	1920.....	100	236	235
1913.....	100	100	100	<b>Shearmen:</b>			
1914.....	100	110	111	1910.....	107	85	88
1915.....	100	92	92	1911.....	105	89	94
1919.....	101	201	202	1912.....	105	94	99
1920.....	100	217	218	1913.....	100	100	100
<b>Roughers:</b>				1914.....	100	106	106
1910.....	100	87	87	1915.....	100	102	102
1911.....	100	94	94	1917.....	101	172	175
1912.....	100	96	96	1919.....	101	180	182
1913.....	100	100	100	1920.....	101	232	236
1914.....	100	101	101	<b>Shearmen's helpers:</b>			
1915.....	100	96	96	1910.....	108	104	111
1917.....	102	200	205	1911.....	105	123	126
1919.....	102	201	204	1912.....	105	116	120
1920.....	101	247	250	1913.....	100	100	100
<b>Catchers:</b>				1914.....	100	112	112
1910.....	100	87	86	1915.....	102	96	98
1911.....	100	93	93	1917.....	101	220	214
1912.....	100	96	96	1919.....	102	272	277
1913.....	100	100	100	1920.....	102	392	398
1914.....	100	101	101	<b>Openers:</b>			
1915.....	100	95	95	1910.....	101	98	100
1917.....	102	200	204	1911.....	100	99	98
1919.....	102	191	194	1912.....	101	104	104
1920.....	101	244	247	1913.....	100	100	100
<b>Matchers:</b>				1914.....	94	101	96
1910.....	100	86	86	1915.....	96	98	95
1911.....	100	93	93	1917.....	95	237	229
1912.....	100	96	96	1919.....	96	235	228
1913.....	100	100	100	1920.....	97	426	415
1914.....	100	108	108	<b>Picklers:</b>			
1915.....	100	106	106	1910.....	104	84	88
1917.....	102	211	216	1911.....	105	82	87
1919.....	102	219	223	1912.....	105	86	91
1920.....	101	273	277	1913.....	100	100	100
<b>Doublers:</b>				1914.....	102	98	100
1910.....	100	87	86	1915.....	102	97	100
1911.....	100	93	93	1919.....	100	278	283
1912.....	100	96	96	1920.....	76	367	284
1913.....	100	100	100	<b>Laborers:</b>			
1914.....	100	108	108	1910.....	97	86	84
1915.....	100	106	106	1911.....	98	87	86
1917.....	102	211	216	1912.....	98	89	87
1919.....	101	215	218	1913.....	100	100	100
1920.....	101	281	285	1914.....	102	99	101
<b>Sheet heaters:</b>				1915.....	100	99	99
1910.....	100	89	89	1917.....	95	174	167
1911.....	100	92	91	1919.....	99	243	243
1912.....	100	96	95	1920.....	92	282	261
1913.....	100	100	100				

The customary working days per week of employees in the sheet-mill department have been classified and the number and per cent of employees under each classification are shown in Table C (9) for the years 1910 to 1920.

The number of employees reported in 1920 is not always the actual number of employees, as the totals in most cases contain some duplications, or repeated employees, as has been explained in the general description of Table C (p. 14). Of the 5,317 employees reported in selected occupations for all districts combined, 5,257 were actually engaged and the 8,738 employees shown in all occupations represents 8,527 actual employees.

The number of employees reported, together with the number of actual employees for selected and all occupations in each district and all districts combined, are shown in Table 16.

TABLE 16.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS—SHEET MILLS.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Pittsburgh.....	3,086	17	3,079	5,410	132	5,278
Great Lakes and Middle West.....	2,221	43	2,178	3,328	79	3,249
Total.....	5,317	60	5,257	8,738	211	8,527

In all of the plants covered the regular turn employees, comprising the employees in most of the selected occupations, were divided into three crews, each working eight hours per turn. The employees shown under the heading "5 days, 5 days, and 6 days in rotation" work 5 turns per week, Monday to Friday, inclusive, with one crew working an extra turn Saturday morning. Each crew advances one turn each week, thus giving to each the extra Saturday turn every third week. Those working 5 days, 6 days, and 6 days in rotation follow the same plan except that two turns are worked on Saturday instead of one.

Considering the selected occupations alone, a considerable change is seen in the later years in the percentage of employees working in the various groups. These changes are due to a change of custom in a few plants; that is, working two shifts on Saturday instead of only one, as in the earlier years.

Laborers and other unskilled employees in sheet mills frequently put in six days regularly. In one plant, which has largely increased its equipment of hot mills, laborers in 1920 were on a three-shift basis—each working six days—thereby largely increasing the number of laborers. This fact is reflected in the increased percentage of six-day workers in 1920 for selected occupations. Employees reported in the unclassified occupations are largely mechanics or unskilled workers, and for the most part among the six-day workers. This is shown in the totals for all occupations as compared with the totals for selected occupations. In 1920 the percentage of six-day workers was 33 when all occupations are considered, although only 16 for selected occupations alone.

TABLE C (9).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—*SHEET MILLS.*

[For explanation of this table see p. 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—							Per cent of employees whose customary working time per week was—						
				5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	7 days.	5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	7 days.
<b>PITTSBURGH.</b>																	
Selected occupations.....	1910	9	2,346	2	46	1,907	.....	380	.....	11	(1)	2	81	.....	16	.....	1
	1911	9	2,781	2	40	2,326	.....	400	.....	13	(1)	1	84	.....	14	.....	1
	1912	9	2,716	2	46	2,281	.....	370	.....	13	(1)	2	84	.....	14	(1)	1
	1913	9	2,455	2	10	2,155	.....	278	.....	10	(1)	(1)	88	.....	11	.....	(1)
	1914	10	2,824	.....	10	2,521	.....	268	.....	25	.....	(1)	89	.....	9	.....	1
	1915	10	2,532	2	48	2,179	.....	266	.....	37	(1)	.....	86	.....	11	.....	1
	1917	4	1,489	.....	69	525	.....	765	.....	130	.....	5	35	.....	9	.....	.....
	1919	7	2,076	.....	4	1,453	.....	456	.....	163	.....	(1)	70	.....	8	.....	.....
	1920	9	3,096	2	18	2,092	.....	669	.....	284	.....	1	68	.....	9	.....	1
All occupations.....	1914	10	4,150	3	110	2,521	.....	1,282	.....	234	(1)	3	61	.....	31	.....	6
	1915	10	3,808	20	144	2,179	.....	1,208	.....	237	1	4	57	.....	32	.....	6
	1920	9	5,410	40	193	3,330	.....	1,669	.....	68	110	1	62	.....	31	.....	2
<b>GREAT LAKES AND MIDDLE WEST.</b>																	
Selected occupations.....	1913	4	1,090	34	.....	732	.....	195	.....	107	17	5	67	.....	18	.....	.....
	1914	5	1,521	2	.....	1,102	.....	216	.....	197	2	2	72	.....	14	.....	.....
	1915	5	1,408	2	.....	936	.....	252	.....	186	2	.....	69	.....	18	.....	.....
	1917	4	1,759	.....	.....	1,068	.....	234	.....	457	.....	.....	61	.....	13	.....	.....
	1919	4	2,181	38	6	1,424	.....	581	.....	132	.....	2	65	.....	27	.....	.....
	1920	4	2,221	1	24	1,245	.....	370	.....	581	.....	(1)	56	.....	17	.....	.....
All occupations.....	1914	5	2,154	12	9	1,144	.....	216	.....	705	57	11	53	.....	10	.....	3
	1915	5	1,928	12	6	994	.....	252	.....	625	31	8	52	.....	13	.....	.....
	1920	4	3,328	12	51	1,342	.....	519	.....	1,252	.....	152	40	.....	16	.....	5

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

TABLE C (9).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—SHEET MILLS—Concluded.

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—							Per cent of employees whose customary working time per week was—						
				5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	7 days.	5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	5 days, 6 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	7 days.
<b>TOTAL.</b>																	
Selected occupations.....	1910	9	2,346	2	46	1,907	.....	380	.....	11	( <sup>1</sup> )	2	81	.....	16	.....	1
	1911	9	2,781	2	40	2,326	.....	400	.....	13	( <sup>1</sup> )	1	84	.....	14	.....	1
	1912	9	2,716	2	46	2,281	.....	370	4	13	( <sup>1</sup> )	2	84	.....	14	( <sup>1</sup> )	1
	1913	13	3,545	36	10	2,887	.....	385	17	15	1	( <sup>1</sup> )	81	6	11	( <sup>1</sup> )	( <sup>1</sup> )
	1914	15	4,345	2	10	3,623	216	465	2	27	( <sup>1</sup> )	( <sup>1</sup> )	83	5	11	( <sup>1</sup> )	1
	1915	15	3,940	4	48	3,145	252	452	2	37	( <sup>1</sup> )	1	80	6	11	( <sup>1</sup> )	1
	1917	8	3,248	.....	69	1,593	999	587	.....	.....	.....	2	49	31	18	.....	.....
	1919	11	4,257	38	10	2,877	1,037	295	.....	.....	1	( <sup>1</sup> )	68	24	7	.....	.....
	1920	13	5,317	3	42	3,337	1,039	365	.....	31	( <sup>1</sup> )	1	63	20	16	.....	1
All occupations.....	1914	15	6,304	15	119	3,665	216	1,987	57	245	( <sup>1</sup> )	2	58	3	32	1	4
	1915	15	5,736	32	150	3,173	252	1,833	51	245	1	3	55	4	32	1	4
	1920	13	8,738	52	244	4,672	519	2,921	68	262	1	3	53	6	33	1	3

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

Table D (9) shows by districts for each of the principal productive occupations in 13 sheet-mill plants the number of employees, the customary full time, and the actual working time and earnings of employees in 1920, together with the additional time and earnings of the same employees at occupations other than the one specified.

Taking the first occupation, pair heaters, as an illustration: In the 13 plants, 521 different men were employed in the 401 positions during the pay-roll period. These men customarily worked an average of 5.4 turns per week, of 8 hours each, making a total of 43.4 hours. During the pay-roll period under discussion these men worked an average of 62.6 hours as pair heaters, earning \$1.386 per hour, but during the same period they worked an average of 13.5 hours at other occupations, for which they received an average of \$16.41 additional pay.

The members of the heating, rolling, and shearing crews for the most part all followed the custom of pair heaters as to working time during the entire period, but differences appeared in the occupations of picklers, feeders, and laborers. These employees customarily worked a greater number of turns and longer hours, laborers in particular averaging 6 turns of nearly 10 hours each, more than one-fourth of the total number having worked 72 hours or more per week.

The highest average earnings per hour were those of rollers, about \$3, followed by those of sheet heaters, with an average of \$2.151, and shearers with an average of \$1.891.

The lowest average earnings per hour were those of laborers, 53.6 cents; this, however, is within one-tenth of a cent of the highest average earnings of laborers in any other department. The average earnings per hour of the selected occupations combined, in this department, \$1.39, were the highest average for any department of the industry.

Average earnings in the several occupations for the entire pay-roll period of one-half month ranged from \$40.47 for laborers to \$203.91 for rollers, and when other work done in the same period is considered, average earnings were \$60.86 for the men reported as laborers and \$217.39 for those reported as rollers.







The two occupations, rollers and matchers, were selected in the sheet-mills department for which to show classified earnings per hour.

Table E (9) shows for each occupation, by districts, the number of employees in 1920, the average earnings per hour, and the number of employees whose average earnings fell in each group of classified rates per hour. There was a very wide range in the classified earnings in each district for both occupations. The classified earnings per hour for rollers in the Pittsburgh district ranged from \$1 to \$4.75 per hour, and in the Great Lakes and Middle West district the range was from \$1 to \$4.75 per hour. The largest number in any one group was found in that at \$2.75 to \$3 per hour, and the average was \$2.976 per hour. Out of the 464 rollers 273, or 59 per cent, earned between \$2.50 and \$3.25 per hour.

The range of matchers' classified earnings was from 35 cents to \$2.25 per hour. However, 608, or 95 per cent of the 642 employees, earned between 80 cents and \$1.75, the average being \$1.225.

The significance of the figures of the extreme groups is explained on page 15.

TABLE E (9).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—SHEET MILLS.

[For explanation of this table see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Employees whose earnings per hour were—											
			\$1 and under \$1.75.	\$1.75 and under \$2.	\$2 and under \$2.25.	\$2.25 and under \$2.50.	\$2.50 and under \$2.75.	\$2.75 and under \$3.	\$3 and under \$3.25.	\$3.25 and under \$3.50.	\$3.50 and under \$3.75.	\$3.75 and under \$4.	\$4 and under \$4.25.	\$4.25 and under \$4.75.
<b>ROLLERS.</b>														
Pittsburgh....	285	\$3.016	3	6	12	20	47	69	50	30	25	13	6	4
G.L. and M.W.	179	2.913	2	3	11	29	28	46	33	9	2	6	7	3
Total....	464	2.976	5	9	23	49	75	115	83	39	27	19	13	7

  

Occupation and district.	Number of employees.	Average earnings per hour.	Employees whose earnings per hour were—											
			35 and under 40 cents.	40 and under 50 cents.	50 and under 60 cents.	60 and under 70 cents.	70 and under 80 cents.	80 and under 90 cents.	90 cents and under \$1.	\$1 and under \$1.25.	\$1.25 and under \$1.50.	\$1.50 and under \$1.75.	\$1.75 and under \$2.	\$2 and under \$2.25.
<b>MATCHERS.</b>														
Pittsburgh....	406	\$1.266	.....	2	1	5	10	11	29	153	152	39	2	2
G.L. and M.W.	236	1.154	1	.....	1	2	4	21	28	111	50	14	3	1
Total....	642	1.225	1	2	2	7	14	32	57	264	202	53	5	3

The customary turns per week, hours per turn, and full-time hours per week in the sheet-mill department are shown in detail, for each of the two districts in which data were secured and for both districts combined, for the year 1920, in Table F (9).

The table is presented in two parts, part 1 relating to those employees whose customary working time remained the same through-

out the pay-roll period, although they may have worked at more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the sheet-mill department was secured from 13 plants and covers 8,527 actual employees—8,084 in part 1 of the table and 443 in part 2. However, the sum of the figures in this table would show 9,003 persons, due to 476 duplications, or repeated employees, appearing in part 2.

Sheet mills, as is generally the case with all rolling mills, are seldom operated more than 6 days per week, and the prevailing custom in force at most of the plants is 6 days and 5 nights each week. Owing to the extreme heat in a sheet mill and the speed with which employees work, practically all producing crews are on a 3-shift basis, and more than one-half of all employees reported in Table F (9) worked turns of 8 hours. Sunday work in this department was confined almost entirely to those employees working in the mechanical department, as none of the hot-mill employees were Sunday workers. A total of 1,163 employees worked fewer hours on Saturday than on the regular Monday to Friday shifts and 151 worked a smaller number of hours on Sunday. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turns, the night turns usually being of equal length.

Of the 8,084 employees reported as working at one combination of hours and turns 6,775, or 84 per cent, alternated weekly from day to night work, 1,140, or 14 per cent, worked days only, and the remaining 2 per cent worked nights only. Of the 6,775 employees alternating from day to night work 67 per cent worked 5 days, 5 days, and 6 days in rotation, 19 per cent worked 6 turns either day or night, 8 per cent worked 5 days, 6 days, and 6 days in rotation, 3 per cent worked 5 days and 6 days alternately, 3 per cent worked 7 turns either day or night, and 1 per cent worked 7 days and 6 nights in alternate weeks.

The 8-hour turn was most common among these employees, 5,601, or 83 per cent, working on a three-shift basis. The 12-hour turn was fairly well represented, 654, or 10 per cent, of the employees working on shifts of that length.

Of the 1,140 men who worked days only, 97 per cent worked 6 days per week, 3 per cent worked 7 days, and less than 1 per cent worked 6 days and 7 days alternately. The 10-hour day predominated among the day workers, as 651, or 57 per cent, were found on shifts of that length, while 207, or 18 per cent, worked turns of 12 hours.

A total of 116, or 68 per cent of the 169 employees reported as working night turns only, worked 6 nights per week, and out of that number 101, or 87 per cent, were on a 12-hour shift. Those whose working time per week was 5 nights numbered 46, and of that total 33, or 72 per cent, worked 12 hours per turn. Seven employees worked 7 nights per week and all were on a 12-hour shift.

The 919 employees (including duplications) presented in part 2 of the table are divided into the following classes: Those alternating from day to night, numbering 508, or 55 per cent; those working days only, numbering 393, or 43 per cent; and those work-

ing nights only, numbering 18, or 2 per cent. Out of the 508 employees who worked days one week and nights the next 289, or 57 per cent, worked 6 turns each week, 165, or 32 per cent, worked 5 days, 5 days, and 6 days in rotation, 44, or 9 per cent, worked 6 days and 5 nights alternately, and 10, or 2 per cent, worked 7 days and 6 nights. The customary length of turn for 165, or 32 per cent, of the alternating employees was 8 hours, while 137, or 27 per cent, worked 12-hour shifts either day or night, and 55, or 11 per cent, worked shifts of 11 hours. A total of 364, or 93 per cent, of these working days only worked 6 days per week, 28, or 7 per cent, worked 7 days, and 1 employee alternated from 6 days one week to 7 days the next. Of these men 225, or 57 per cent, worked 10 hours per day. Of those employed nights only, 11, or 61 per cent, worked 6 nights per week, 6, or 33 per cent, worked 5 nights, and one employee worked 7 nights. The 12-hour work day predominated, 10 employees, or 56 per cent, being found on 12-hour shifts.

In studying the working time in this department it should be noted that about two-thirds of the employees worked only 48 hours per week or less, and only 3 per cent worked over 72 hours per week (see p. 10).

TABLE F (9).—CUSTOMARY FULL-TIME TURNS PER WEEK, AND HOURS PER TURN, BY DISTRICTS, 1920—SHEET MILLS.

[For explanation of this table see p. 15.]

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

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

Employees who worked day turns.

7	12	12	12	84						5		5
7	12	12	10	82						1		1
7	12	12	8	80						1		1
7	12	12	6	78							1	1
7	12	12	5	77						1		1
7	12	10	6	76						5		5
7	11½	11½	11½	80½						2		2
7	11	11	11	77						10	1	11
7	10	10	10	70						1		1
6	10	10		60								
7	10	10	10	70						3		3
7	10	10	9	69						2		2
7	8	8	8	56							6	6
6	12	12		73							30	30
6	12	12		72						31	83	114
6	12	10		70						46	1	47
6	12	6½		66½							1	1
6	12	6		66						1		1
6	11½	11½		69							5	5
6	11½	10½		68							6	6
6	11½	10		67½						1		1
6	11½	9½		67						13		13

180 WAGES AND HOURS OF LABOR—IRON AND STEEL INDUSTRY.

TABLE F (9).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—SHEET MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.			

Employees who worked day turns—Concluded.

6	11½	6	.....	63½	.....	.....	.....	.....	.....	1	.....	1
6	11	11	.....	66	.....	.....	.....	.....	.....	25	15	40
6	11	10	.....	65	.....	.....	.....	.....	.....	2	.....	2
6	11	9	.....	64	.....	.....	.....	.....	.....	2	.....	2
6	10½	10½	.....	64½	.....	.....	.....	.....	.....	1	.....	1
6	10½	14	.....	66½	.....	.....	.....	.....	.....	1	.....	1
6	10½	10½	.....	63	.....	.....	.....	.....	.....	5	.....	5
6	10½	9½	.....	62	.....	.....	.....	.....	.....	20	.....	20
6	10½	10	.....	61½	.....	.....	.....	.....	.....	1	.....	1
6	10½	9½	.....	60½	.....	.....	.....	.....	.....	2	.....	2
6	10½	9	.....	60½	.....	.....	.....	.....	.....	73	.....	73
6	10½	8½	.....	60	.....	.....	.....	.....	.....	72	.....	72
6	10	10	.....	60	.....	.....	.....	.....	.....	182	171	353
6	10	9½	.....	59½	.....	.....	.....	.....	.....	1	4	5
6	10	9	.....	59	.....	.....	.....	.....	.....	156	78	234
6	10	8½	.....	58½	.....	.....	.....	.....	.....	.....	11	11
6	10	8	.....	58	.....	.....	.....	.....	.....	7	.....	7
6	10	5	.....	55	.....	.....	.....	.....	.....	16	3	19
6	9	9	.....	54	.....	.....	.....	.....	.....	16	.....	16
6	9	5	.....	50	.....	.....	.....	.....	.....	1	.....	1
6	8	8	.....	48	.....	.....	.....	.....	.....	.....	10	10
6	8	4	.....	44	.....	.....	.....	.....	.....	.....	7	7

Employees who worked night turns.

.....	.....	.....	.....	.....	7	12	12	12	84	4	.....	7
.....	.....	.....	.....	.....	6	13	13	.....	78	1	3	1
.....	.....	.....	.....	.....	6	13	.....	13	78	1	.....	1
.....	.....	.....	.....	.....	6	12	12	.....	72	3	35	38
.....	.....	.....	.....	.....	6	12	.....	12	72	6	56	62
.....	.....	.....	.....	.....	6	12	10	.....	70	.....	1	1
.....	.....	.....	.....	.....	6	11½	11½	.....	69	11	.....	11
.....	.....	.....	.....	.....	6	11	.....	11	66	.....	1	1
.....	.....	.....	.....	.....	6	10	.....	9	59	.....	1	1
.....	.....	.....	.....	.....	5	12	.....	.....	60	5	8	13
.....	.....	.....	.....	.....	5	11½	.....	.....	57½	33	.....	33

Employees who alternated weekly from day to night turns.

7	12	12	12	84	7	12	12	12	84	38	55	93
7	12	12	12	84	6	12	.....	12	72	41	.....	41
7	12	12	8	80	7	12	6	8	74	.....	2	2
7	12	12	6	78	7	12	12	5	77	.....	4	4
7	12	12	6	78	6	12	.....	12	72	3	.....	3
7	12	10	12	82	7	12	10	12	82	12	.....	12
7	11	11	10	76	6	13	.....	13	78	6	.....	6
7	10	10	10	70	6	14	.....	14	84	7	.....	7
7	8	8	8	56	7	8	.....	8	56	.....	79	79
7	8	8	8	56	.....	.....	.....	.....	.....	.....	.....	.....
6	12	12	.....	72	6	12	12	.....	72	188	27	215
6	12	12	.....	72	6	12	.....	12	72	108	24	132
6	12	12	.....	72	6	12	.....	6	66	2	.....	2
6	12	12	.....	72	5	12	.....	.....	60	16	1	17
6	*12	11	.....	74	6	12	6	.....	66	.....	4	4

\*15 hours on Monday.

TABLE F (9).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—SHEET MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

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

Employees who alternated weekly from day to night turns—Concluded.

6	12	10	.....	70	6	12	12	.....	72	23	.....	23
6	12	10	.....	70	6	12	10	.....	70	.....	12	12
6	12	10	.....	70	6	12	.....	10	70	81	.....	81
6	11½	11½	.....	69	6	12	.....	12	72	26	.....	26
6	11½	10½	.....	68	6	11½	11½	.....	69	13	.....	13
6	11½	10½	.....	68	5	11½	.....	.....	57½	.....	12	12
6	11½	9½	.....	67	5	12	.....	.....	60	.....	16	16
6	11½	9½	.....	67	5	11½	.....	.....	57½	3	.....	3
6	11½	9	.....	65½	6	11½	11½	.....	67½	5	.....	5
6	11	11	.....	66	6	13	13	.....	78	23	.....	23
6	11	11	.....	66	6	12	.....	12	72	.....	7	7
6	11	11	.....	66	6	11	11	.....	66	30	.....	30
6	11	5	.....	60	6	11	11	.....	66	5	.....	5
6	10½	10½	.....	63	6	13½	13½	.....	81	6	.....	6
6	10½	10½	.....	63	6	13	13	.....	78	2	.....	2
6	10½	9½	.....	62	6	12	.....	12	72	10	.....	10
6	10½	10½	.....	61½	5	11½	.....	.....	57½	15	.....	15
6	10½	8½	.....	60	6	11½	.....	11½	69	5	.....	5
6	10	10	.....	60	6	14	14	.....	84	36	.....	36
6	10	10	.....	60	6	12	.....	12	72	4	.....	4
6	10	10	.....	60	6	11	11	.....	66	2	.....	2
6	10	10	.....	60	6	10	.....	10	60	45	.....	45
6	10	10	.....	60	5	12	.....	.....	60	115	.....	115
6	10	9	.....	59	6	12	12	.....	72	5	.....	5
6	10	5	.....	55	6	13½	.....	13½	81	.....	32	32
6	9	9	.....	54	5	9	.....	.....	45	11	.....	11
6	8	8	.....	48	6	8	8	.....	48	8	.....	8
6	8	8	.....	48	6	8	.....	8	48	14	524	538
6	8	8	.....	48	6	8	.....	8	48	.....	1	1
6	8	8	.....	48	5	8	.....	.....	40	.....	519	519
6	8	8	.....	48	.....	.....	.....	.....	40	.....	.....	.....
6	8	8	.....	48	5	8	.....	.....	40	3,246	1,289	4,535
5	8	.....	.....	40	.....	.....	.....	.....	.....	.....	.....	.....
5	12	.....	.....	60	6	12	.....	6	66	13	.....	13

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY TURNS AND HOURS.

[Each employee is counted under each varying combination at which he worked.]

Employees who worked day turns.

7	11½	11½	11½	80½	.....	.....	.....	.....	.....	1	.....	1
7	11	11	11	77	.....	.....	.....	.....	.....	27	.....	27
6	10	10	10	60	.....	.....	.....	.....	.....	.....	.....	.....
7	10	10	10	70	.....	.....	.....	.....	.....	1	.....	1
6	12	12	.....	70	.....	.....	.....	.....	.....	.....	3	3
6	12	10	.....	70	.....	.....	.....	.....	.....	15	.....	15
6	12	6	.....	66	.....	.....	.....	.....	.....	1	.....	1
6	11½	11½	11½	69	.....	.....	.....	.....	.....	1	.....	1
6	11½	11½	11½	69	.....	.....	.....	.....	.....	2	.....	3
6	11½	10½	.....	68	.....	.....	.....	.....	.....	1	21	22
6	11½	9½	.....	67	.....	.....	.....	.....	.....	12	.....	12
6	11	11	.....	66	.....	.....	.....	.....	.....	7	.....	7
6	10½	10½	.....	63	.....	.....	.....	.....	.....	4	.....	4
6	10½	9½	.....	62	.....	.....	.....	.....	.....	2	.....	2

TABLE F (9).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—SHEET MILLS—Concluded.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY TURNS AND HOURS—Concluded.

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

Employees who worked day turns—Concluded.

6	10½	9½	.....	60½	.....	.....	.....	.....	.....	1	.....	1
6	10½	9	.....	60½	.....	.....	.....	.....	.....	18	.....	18
6	10½	8½	.....	60	.....	.....	.....	.....	.....	42	.....	42
6	10	10	.....	60	.....	.....	.....	.....	.....	37	66	103
6	10	9½	.....	59½	.....	.....	.....	.....	.....	11	1	12
6	10	9	.....	59	.....	.....	.....	.....	.....	83	16	99
6	10	8½	.....	58½	.....	.....	.....	.....	.....	.....	10	10
6	9	9	.....	54	.....	.....	.....	.....	.....	9	.....	9

Employees who worked night turns.

.....	.....	.....	.....	.....	7	10	10	10	70	.....	1	1
.....	.....	.....	.....	.....	6	12	12	12	72	2	3	5
.....	.....	.....	.....	.....	6	12	.....	12	72	1	.....	1
.....	.....	.....	.....	.....	5	11½	11½	.....	69	5	.....	5
.....	.....	.....	.....	.....	5	12	.....	.....	60	.....	4	4
.....	.....	.....	.....	.....	5	11½	.....	.....	57½	2	.....	2

Employees who alternated weekly from day to night turns.

7	12	12	12	84	6	12	.....	12	72	5	.....	5
7	12	12	12	84	6	12	12	.....	72	1	.....	1
7	10	10	10	70	6	14	.....	14	84	3	.....	3
6	12	12	.....	72	7	12	12	12	84	1	.....	1
6	12	12	.....	72	6	12	12	.....	72	63	.....	63
6	12	12	.....	72	6	12	.....	12	72	12	10	22
6	12	12	.....	72	6	12	.....	6	66	26	.....	26
6	12	12	.....	72	5	12	.....	.....	60	.....	5	5
6	12	10	.....	70	6	12	12	.....	72	6	.....	6
6	12	10	.....	70	6	12	.....	10	70	6	.....	6
6	11½	10½	.....	68	6	11½	11½	.....	69	4	.....	4
6	11½	10½	.....	68	5	11½	.....	.....	57½	.....	17	17
6	11½	9½	.....	67	5	11½	.....	.....	57½	9	.....	9
6	11	11	.....	66	6	13	13	.....	78	37	.....	37
6	11	11	.....	66	6	11	11	.....	66	.....	.....	.....
6	11	11	.....	66	6	13	13	.....	78	.....	.....	.....
6	11	11	.....	66	6	11	11	.....	66	42	.....	42
6	11	7½	.....	62½	5	11	.....	.....	55	2	.....	2
6	11	5	.....	60	6	11	11	.....	66	11	.....	11
6	10½	10½	.....	63	6	13½	13½	.....	81	9	.....	9
6	10½	10½	.....	61½	5	11½	.....	.....	57½	7	.....	7
6	10½	8½	.....	60	6	11½	.....	11½	69	1	.....	1
6	10	10	.....	60	6	14	14	.....	84	27	.....	27
6	10	10	.....	60	6	10	10	.....	60	1	.....	1
6	10	10	.....	60	6	10	.....	10	60	11	.....	11
6	10	9	.....	59	6	12	12	.....	72	21	.....	21
6	10	5	.....	55	6	13½	.....	13½	81	.....	1	1
6	9	9	.....	54	5	9	.....	.....	45	2	.....	2
6	8	11	.....	51	.....	.....	.....	.....	.....	.....	.....	.....
5	8	.....	.....	40	5	8	.....	.....	40	1	.....	1
5	8	8	.....	48	.....	.....	.....	.....	40	110	54	164
5	8	.....	.....	40	5	8	.....	.....	40	.....	.....	.....
5	12	.....	.....	60	6	12	.....	6	66	2	.....	2

## TIN-PLATE MILLS.<sup>17</sup>

In 1920 the average full-time hours per week for selected occupations in tin-plate mills as a whole were 3 per cent less than in 1910 and 5 per cent less than in 1913. Average hourly earnings for 1920 compared with 1919 show an increase of 15 per cent, compared with 1913 an increase of 152 per cent, and compared with 1910 an increase of 186 per cent. Average full-time weekly earnings followed the course of average hourly earnings very closely (see p. 3).

Table A (10) presents the most significant facts concerning average hours and average earnings for each of the principal productive occupations of this department for the years 1910 to 1920. The data for 1920 cover 9 plants, representing 5,707 employees in selected occupations and 10,366 employees in all occupations. The average earnings per hour in 1920 for all occupations, both the selected occupations and all others, were 94.9 cents.

All occupations of the heating and rolling crews maintained the same average full-time hours per week from 1910 to 1920, while occupations in the shearing crew and in the tinning department, as well as laborers, show various changes in full-time hours per week from year to year. The average full-time hours per week in 1920 for these last occupations, as compared with similar data for 1919, show a decrease in seven occupations and an increase in two occupations, but these two as well as the other seven show a decrease as compared with all previous years other than 1919. Average full-time hours per week for shearmen and shearmen's helpers in 1920 were considerably less than the average full-time hours per week for any year for which data are presented, the former being 44.1 in 1920 as compared with 52.7 in 1910 and 56.5 in 1913, the latter being 49.5 in 1920 as compared with 61.8 in 1910 and 55.8 in 1913. Slight changes only took place in the hours of other occupations, the greatest being in those of female assorters, which were 46.9 in 1920 as compared with 53.7 in 1913.

The average hourly earnings in 1920 as compared with 1919 show an increase in all occupations but two—shearmen and openers—whose average hourly earnings in 1920 were somewhat less than those of 1919, but these reduced averages were more than double the averages of other previous years in the case of shearmen and approximately three times such averages in the case of openers.

Average full-time weekly earnings in 1920, like average hourly earnings, increased in all occupations but shearmen and openers as compared with similar data for 1919. Average full-time weekly earnings for openers in 1910 were \$12.72; in 1913, \$15.58; and in 1919, \$41.84, or an increase of \$26.26 over 1913. In 1920 they were \$40.55, which was \$1.29 less than in 1919 but which was nevertheless \$24.97 greater than in 1913.

The distribution of employees according to average hours of work per week shows no change from year to year for the heating and the

<sup>17</sup> Summary figures relating to the tin-plate mill department are given with figures for other departments of the iron and steel industry on pp. 1 to 12; and an explanation of the scope of this investigation is given on p. 13.

rolling crews. Shearmen show a considerable variation in working time—53 per cent of the employees in 1910 were working 48 hours per week and under; in 1913 this percentage decreased to 6 per cent, but in 1920 it had increased again to 80 per cent. In 1920 there were no laborers working 84 hours per week, but there was a great increase in the number working "over 48 and under 60" hours per week as compared with former years, the year 1910 being the closest in comparison, having 53 per cent as against 62 per cent in 1920.

TABLE A (10).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—TIN-PLATE MILLS.

[For explanation of this table see p. 13.]

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Rollers:</b>												
5 plants.....	1910	174	42.7	\$1.025	\$43.73	100						
6 plants.....	1911	201	42.7	1.109	47.33	100						
	1912	229	42.7	1.097	46.82	100						
9 plants.....	1913	356	42.7	1.139	48.59	100						
10 plants.....	1914	345	42.7	1.115	47.59	100						
	1915	349	42.7	1.106	47.17	100						
9 plants.....	1919	410	42.7	2.248	95.99	100						
	1920	476	42.7	2.542	108.54	100						
<b>Rollers, level-handed:</b>												
7 plants.....	1919	46	42.7	1.362	58.16	100						
	1920	212	42.7	1.599	68.29	100						
<b>Roughers:</b>												
5 plants.....	1910	174	42.7	.425	18.14	100						
6 plants.....	1911	196	42.7	.507	21.63	100						
	1912	216	42.7	.513	21.89	100						
10 plants.....	1913	380	42.7	.533	22.73	100						
11 plants.....	1914	367	42.7	.560	23.87	100						
	1915	366	42.7	.562	23.96	100						
9 plants.....	1919	447	42.7	1.193	50.94	100						
	1920	502	42.7	1.363	58.21	100						
<b>Catchers:</b>												
5 plants.....	1910	174	42.7	.427	18.23	100						
6 plants.....	1911	198	42.7	.487	20.79	100						
	1912	239	42.7	.403	17.20	100						
10 plants.....	1913	354	42.7	.463	19.74	100						
11 plants.....	1914	347	42.7	.468	19.95	100						
	1915	361	42.7	.489	20.87	100						
9 plants.....	1919	507	42.7	1.014	43.30	100						
	1920	541	42.7	1.217	51.95	100						
<b>Screwboys:</b>												
5 plants.....	1910	174	42.7	.308	13.15	100						
6 plants.....	1911	198	42.7	.345	14.72	100						
	1912	221	42.7	.352	15.03	100						
10 plants.....	1913	387	42.7	.366	15.64	100						
11 plants.....	1914	384	42.7	.385	16.43	100						
	1915	372	42.7	.389	16.59	100						
9 plants.....	1919	466	42.7	.818	34.93	100						
9 plants.....	1920	585	42.7	.973	41.54	100						
<b>Doublers:</b>												
5 plants.....	1910	174	42.7	.632	26.97	100						
6 plants.....	1911	205	42.7	.706	30.13	100						
	1912	247	42.7	.677	28.90	100						
10 plants.....	1913	341	42.7	.740	31.58	100						
	1914	324	42.7	.734	31.32	100						
	1915	322	42.7	.718	30.63	100						
8 plants.....	1919	352	42.7	1.408	60.12	100						
9 plants.....	1920	330	42.7	1.655	70.69	100						
<b>Doublers, level-handed:</b>												
4 plants.....	1913	46	42.7	.567	24.20	100						
5 plants.....	1914	54	42.7	.559	23.84	100						
	1915	62	42.7	.561	23.92	100						
	1919	84	42.7	1.114	47.57	100						
8 plants.....	1920	382	42.7	1.290	55.09	100						

TABLE A (10).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—TIN-PLATE MILLS—Continued.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Doublers' helpers:</b>												
5 plants.....	1910	174	42.7	\$0.324	\$13.82	100						
6 plants.....	1911	191	42.7	.351	14.97	100						
	1912	193	42.7	.370	15.81	100						
10 plants.....	1913	344	42.7	.362	15.43	100						
	1914	330	42.7	.387	16.49	100						
	1915	324	42.7	.402	17.17	100						
9 plants.....	1919	406	42.7	.888	37.92	100						
	1920	384	42.7	1.014	43.28	100						
<b>Heaters:</b>												
5 plants.....	1910	174	42.7	.648	27.63	100						
6 plants.....	1911	215	42.7	.714	30.47	100						
	1912	314	42.7	.675	28.78	100						
	1913	312	42.7	.679	28.99	100						
9 plants.....	1914	142	42.7	.752	32.10	100						
	1915	211	42.7	.725	30.95	100						
	1919	288	42.7	1.458	62.26	100						
	1920	182	42.7	1.722	73.51	100						
<b>Heaters, level-handed:</b>												
6 plants.....	1913	414	42.7	.595	25.38	100						
	1914	430	42.7	.622	26.53	100						
	1915	294	42.7	.611	26.08	100						
7 plants.....	1919	272	42.7	1.273	54.36	100						
9 plants.....	1920	756	42.7	1.465	62.57	100						
<b>Heaters' helpers:</b>												
4 plants.....	1910	165	42.7	.348	14.84	100						
5 plants.....	1911	166	42.7	.436	18.60	100						
	1912	109	42.7	.396	16.92	100						
8 plants.....	1913	147	42.7	.430	18.36	100						
	1914	127	42.7	.476	20.32	100						
	1915	202	42.7	.455	19.43	100						
	1919	241	42.7	1.052	44.92	100						
	1920	230	42.7	1.174	50.14	100						
<b>Shearmen:</b>												
5 plants.....	1910	58	52.7	.497	25.68	53	12	34				
6 plants.....	1911	65	52.8	.555	28.72	54	11	35				
	1912	72	51.8	.573	29.00	60	10	31				
9 plants.....	1913	126	56.5	.485	27.34	6	82	13				
	1914	116	56.9	.486	27.61	3	84	14				
8 plants.....	1915	112	57.3	.514	29.55		86	14				
6 plants.....	1919	140	48.3	1.368	66.07	56	44					
	1920	103	44.1	1.280	56.52	80	20					
<b>Shearmen's helpers</b>												
2 plants.....	1910	25	61.8	.118	7.31				80	20		
	1911	31	59.7	.118	7.02		26	74				
3 plants.....	1912	35	57.6	.136	7.71	14	20	63		3		
4 plants.....	1913	43	55.8	.165	9.13	19	51	14	16			
	1914	42	55.3	.168	9.18	17	52	14	17			
3 plants.....	1915	33	56.5	.150	8.51		67	15	18			
2 plants.....	1919	29	53.9	.539	29.05	31	69					
1 plant.....	1920	22	49.5	.731	36.18		100					
<b>Openers, male:</b>												
3 plants.....	1910	94	57.5	.221	12.72		100					
4 plants.....	1911	84	57.3	.266	15.24		100					
5 plants.....	1912	93	56.9	.296	16.86	4	96					
7 plants.....	1913	210	56.9	.274	15.58		100					
	1914	201	56.8	.266	15.14		100					
	1915	227	57.2	.247	14.13		93	7				
5 plants.....	1919	235	52.3	.800	41.84	23	77					
4 plants.....	1920	204	56.2	.728	40.55		100					
<b>Tinners:</b>												
4 plants.....	1910	224	42.9	.402	17.27	98	2					
5 plants.....	1911	283	43.0	.429	18.48	98	2					
	1912	294	43.4	.444	19.28	94	6					
8 plants.....	1913	484	43.6	.433	18.84	95	5	(1)				
	1914	486	43.5	.442	19.22	95	5	(1)				
	1915	487	43.3	.442	19.13	97	3	(1)				
	1919	683	43.0	.977	42.01	97	3					
9 plants.....	1920	702	42.9	1.114	47.85	100						

TABLE A (10).—AVERAGE CUSTOMARY FULL-TIME HOURS PER WEEK, AVERAGE EARNINGS PER HOUR, AND AVERAGE FULL-TIME WEEKLY EARNINGS, BY OCCUPATIONS, 1910 TO 1920—TIN-PLATE MILLS—Concluded.

Occupation and number of plants.	Year.	Number of employees.	Average full-time hours per week.	Average earnings per hour.	Average full-time weekly earnings.	Per cent of employees whose average full-time hours per week were—						
						48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Over 72 and under 84.	84
<b>Redippers:</b>												
1 plant.....	1910	14	46.2	\$0.570	\$26.56	71	29					
	1911	17	47.2	.619	29.32	71	29					
	1912	10	55.0	.592	32.58		100					
3 plants.....	1913	28	53.0	.536	28.03	42	54	4				
	1914	23	53.0	.538	28.55	43	52	4				
	1915	19	51.4	.563	28.81	58	37	5				
2 plants.....	1919	29	46.9	1.272	59.66	55	45					
3 plants.....	1920	27	43.1	1.588	66.26	100						
<b>Risers:</b>												
2 plants.....	1910	34	44.1	.262	11.51	88	12					
3 plants.....	1911	42	44.8	.275	12.30	86	14					
	1912	36	50.1	.299	11.98	40	60					
	1913	34	45.1	.279	12.59	100						
4 plants.....	1914	48	51.3	.268	13.70	52	46	2				
	1915	41	49.5	.286	14.16	66	32	2				
3 plants.....	1919	46	47.4	.642	30.43	50	50					
	1920	41	43.2	.791	34.12	100						
<b>Branners:</b>												
2 plants.....	1910	12	67.8	.170	11.52				100			
	1911	20	67.7	.170	11.50				100			
	1912	16	67.7	.170	11.51				100			
4 plants.....	1913	37	63.7	.190	12.14		43		46	11		
	1914	41	64.1	.198	12.69		39		51	10		
	1915	34	65.4	.203	13.22		24		76			
6 plants.....	1919	60	61.3	.452	27.71	23		30	27	13		7
	1920	48	62.4	.624	38.68	23	10		35	31		
<b>Assorters, female:</b>												
4 plants.....	1910	101	49.7	.128	6.41	46	54					
5 plants.....	1911	120	50.7	.138	7.03	38	62					
	1912	127	51.4	.145	7.39	37	63					
6 plants.....	1913	171	53.7	.163	8.75	25	75					
	1914	172	53.3	.153	8.26	27	73					
	1915	208	55.4	.162	8.98	23	77					
	1919	279	48.5	.417	20.22	44	56					
	1920	295	46.9	.465	21.83	43	57					
<b>Laborers:</b>												
4 plants.....	1910	191	60.6	.165	9.97		53	24	23			
5 plants.....	1911	238	61.0	.164	10.01		37	38	24			
6 plants.....	1912	276	61.6	.167	10.32		30	43	25	(1)		(1)
9 plants.....	1913	575	61.6	.189	11.64		24	18	58	(1)		(1)
	1914	469	62.4	.189	11.73		12	16	72			
	1915	444	61.6	.190	11.72		33	16	51			
6 plants.....	1919	418	64.3	.461	29.64	1	13	36	32	(1)	2	3
8 plants.....	1920	271	60.5	.533	32.19		62	13	21	5		

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

Index numbers for average full-time hours per week, average earnings per hour, and average full-time weekly earnings for the principal productive occupations in this department for the years 1910 to 1920 are presented in Table B (10). These are simply percentages computed from the averages of Table A (10), with the average for 1913 as the base, or 100 per cent. These index numbers make clearer the exact differences appearing from year to year in the actual averages, some of which differences were noted in the text preceding Table A (10).

For index numbers for this department as a whole (all selected occupations combined), see page 3.

TABLE B (10).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—TIN-PLATE MILLS.

[For explanation of this table see p. 14. 1913=100.]

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Rollers:</b>				<b>Heaters' helpers:</b>			
1910.....	100	90	90	1910.....	100	81	81
1911.....	100	97	97	1911.....	100	101	101
1912.....	100	96	96	1912.....	100	92	92
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	98	98	1914.....	100	111	111
1915.....	100	97	97	1915.....	100	106	106
1919.....	100	197	198	1919.....	100	245	245
1920.....	100	223	223	1920.....	100	273	273
<b>Roughers:</b>				<b>Shearmen:</b>			
1910.....	100	80	80	1910.....	93	102	94
1911.....	100	95	95	1911.....	93	114	105
1912.....	100	96	96	1912.....	92	118	106
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	105	105	1914.....	101	100	101
1915.....	100	105	105	1915.....	101	106	108
1919.....	100	224	224	1919.....	85	282	242
1920.....	100	256	256	1920.....	78	264	207
<b>Catchers:</b>				<b>Shearmen's helpers:</b>			
1910.....	100	92	92	1910.....	111	72	80
1911.....	100	105	105	1911.....	107	72	77
1912.....	100	87	87	1912.....	103	82	84
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	101	101	1914.....	99	102	101
1915.....	100	106	106	1915.....	101	91	93
1919.....	100	219	219	1919.....	97	327	318
1920.....	100	263	263	1920.....	89	443	396
<b>Screw boys:</b>				<b>Openers, male:</b>			
1910.....	100	84	84	1910.....	101	81	82
1911.....	100	94	94	1911.....	101	97	98
1912.....	100	96	96	1912.....	100	108	108
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	105	105	1914.....	100	97	97
1915.....	100	106	106	1915.....	101	90	91
1919.....	100	223	223	1919.....	92	292	269
1920.....	100	266	266	1920.....	99	266	260
<b>Doublers:</b>				<b>Tinners:</b>			
1910.....	100	85	85	1910.....	98	93	92
1911.....	100	95	95	1911.....	99	99	98
1912.....	100	91	92	1912.....	100	103	102
1913.....	100	100	100	1913.....	100	100	100
1914.....	100	99	99	1914.....	100	102	102
1915.....	100	97	97	1915.....	99	102	102
1919.....	100	190	190	1919.....	99	226	223
1920.....	100	224	224	1920.....	98	257	254
<b>Doublers, level-handed:</b>				<b>Redippers:</b>			
1913.....	100	100	100	1910.....	87	106	95
1914.....	100	99	99	1911.....	89	115	105
1915.....	100	99	99	1912.....	104	110	116
1919.....	100	196	197	1913.....	100	100	100
1920.....	100	228	228	1914.....	100	100	102
<b>Doublers' helpers:</b>				1915.....	97	105	103
1910.....	100	90	90	1919.....	88	237	213
1911.....	100	97	97	1920.....	81	287	236
1912.....	100	102	102	<b>Risers:</b>			
1913.....	100	100	100	1910.....	98	94	91
1914.....	100	107	107	1911.....	99	99	98
1915.....	100	111	111	1912.....	111	86	95
1919.....	100	245	246	1913.....	100	100	100
1920.....	100	280	280	1914.....	114	96	109
<b>Heaters:</b>				1915.....	110	103	112
1910.....	100	95	95	1919.....	105	230	242
1911.....	100	105	105	1920.....	96	284	271
1912.....	100	99	99	<b>Branners:</b>			
1913.....	100	100	100	1910.....	106	89	95
1914.....	100	111	111	1911.....	106	89	95
1915.....	100	107	107	1912.....	106	89	95
1919.....	100	215	215	1913.....	100	100	100
1920.....	100	254	254	1914.....	101	104	105
<b>Heaters, level-handed:</b>				1915.....	103	107	109
1913.....	100	100	100	1919.....	96	238	228
1914.....	100	105	105	1920.....	98	328	319
1915.....	100	103	103				
1919.....	100	214	214				
1920.....	100	246	247				

TABLE B (10).—INDEX NUMBERS OF CUSTOMARY FULL-TIME HOURS PER WEEK, EARNINGS PER HOUR, AND FULL-TIME EARNINGS PER WEEK, BY OCCUPATIONS, 1910 TO 1920—*TIN-PLATE MILLS*—Concl'd.

Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.	Occupation and year.	Full-time hours per week.	Earnings per hour.	Full-time weekly earnings.
<b>Assorters, female:</b>				<b>Laborers:</b>			
1910.....	93	79	73	1910.....	98	87	86
1911.....	94	85	80	1911.....	99	87	86
1912.....	96	89	84	1912.....	100	88	89
1913.....	100	100	100	1913.....	100	100	100
1914.....	99	94	94	1914.....	101	100	101
1915.....	103	99	103	1915.....	100	101	101
1919.....	90	256	231	1919.....	104	244	255
1920.....	87	285	249	1920.....	98	282	277

The customary working time per week of employees in the tin-plate department has been classified and the number and per cent of employees under each classification are shown in Table C (10) for the years 1910 to 1920.

The number of employees reported in 1920 is not always the actual number of employees, as the totals in most cases contain some duplications, or repeated employees, as stated in the general explanation of Table C. Of the 5,727 employees reported in selected occupations for all districts combined 5,707 are actually engaged and the 10,523 employees shown in all occupations represent 10,366 actual employees.

The number of employees reported together with the number of actual employees for selected occupations and for all occupations in each district and in all districts combined are shown in Table 17.

TABLE 17.—NUMBER OF EMPLOYEES REPORTED, NUMBER OF DUPLICATIONS, AND ACTUAL NUMBER OF EMPLOYEES IN SELECTED OCCUPATIONS AND ALL OCCUPATIONS, BY DISTRICTS, 1920—*TIN-PLATE MILLS*.

District.	Selected occupations.			All occupations.		
	Number reported.	Number of duplications.	Actual number.	Number reported.	Number of duplications.	Actual number.
Pittsburgh.....	3,988	13	3,975	7,266	95	7,171
Great Lakes and Middle West.....	1,739	7	1,732	3,257	62	3,195
Total.....	5,727	20	5,707	10,523	157	10,366

The working time of practically all of the employees in this department was either "5 days, 5 days, and 6 days in rotation" or 6 days. In all of the plants covered the regular turn employees, comprising the employees in most of the selected occupations, were divided into three crews, each working eight hours per turn, five turns per week, Monday to Friday, inclusive, with one crew working an extra turn Saturday morning. Each crew advanced one turn each week, thus giving to each the extra Saturday turn every third week. Most of the employees reported in the unclassified occupations, being largely mechanics or laborers, work 6 days.

Considering the selected occupations alone, in 1920, 84 per cent of the employees were working 5, 5, and 6 days in rotation and 13 per cent 6 days, but when all the occupations are considered the percentages are 55 and 38, respectively.

TABLE C (10).—NUMBER AND PER CENT OF EMPLOYEES WORKING SPECIFIED CUSTOMARY DAYS OF WORK PER WEEK, BY DISTRICTS, 1910 TO 1920—TIN-PLATE MILLS.

[For explanation of this table see page 14.]

District.	Year.	Number of plants.	Number of employees.	Number of employees whose customary working time per week was—							Per cent of employees whose customary working time per week was—						
				5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	7 days.	5 days.	5 days and 6 days alternately.	5 days, 5 days, and 6 days in rotation.	6 days.	6 days and 7 days alternately.	7 days.		
<b>PITTSBURGH.</b>																	
Selected occupations.	1910	5	2,149	2	12	1,702	433	.....	(1)	1	79	20	.....	.....			
	1911	6	2,487	2	11	1,959	514	.....	1	(1)	79	21	.....	(1)			
	1912	6	2,739	.....	48	2,132	552	.....	7	.....	2	78	20	.....	(1)		
	1913	6	2,663	.....	64	1,995	604	.....	.....	.....	2	75	23	.....	.....		
	1914	6	2,560	.....	84	1,927	547	.....	2	.....	3	75	21	.....	(1)		
	1915	6	2,517	.....	41	1,852	624	.....	.....	.....	2	74	25	.....	.....		
	1919	5	3,505	.....	208	2,754	499	.....	44	.....	6	79	14	.....	1		
1920	6	3,988	.....	109	3,500	379	.....	.....	.....	3	88	10	.....	.....			
All occupations.	1914	6	3,518	2	210	2,030	1,238	.....	38	(1)	6	58	35	.....	1		
	1915	6	3,485	3	181	1,984	1,277	6	34	(1)	5	57	37	(1)	1		
	1920	6	7,266	.....	417	4,125	2,682	30	12	.....	6	57	37	(1)	(1)		
<b>G. L. AND M. W.</b>																	
Selected occupations.	1913	4	1,962	.....	.....	1,434	528	.....	.....	.....	73	27	.....	.....			
	1914	4	1,836	.....	.....	1,374	462	.....	.....	.....	75	25	.....	.....			
	1915	5	1,955	.....	.....	1,477	477	.....	1	.....	76	24	.....	(1)			
	1919	4	1,953	9	.....	1,593	350	.....	1	(1)	.....	82	18	.....	(1)		
	1920	3	1,739	45	11	1,319	364	.....	.....	3	1	76	21	.....	.....		
All occupations.	1914	5	2,515	2	4	1,458	1,007	16	28	(1)	(1)	58	40	1	1		
	1915	5	2,662	.....	.....	1,548	1,002	14	98	.....	.....	58	38	1	4		
	1920	3	3,257	65	61	1,702	1,299	20	110	2	2	52	40	1	3		
<b>TOTAL.</b>																	
Selected occupations.	1910	5	2,149	2	12	1,702	433	.....	.....	(1)	1	79	20	.....	.....		
	1911	6	2,487	2	11	1,959	514	.....	1	(1)	(1)	79	21	.....	(1)		
	1912	6	2,739	.....	48	2,132	552	.....	7	.....	2	78	20	.....	(1)		
	1913	10	4,625	.....	64	3,429	1,132	.....	.....	.....	1	74	24	.....	.....		
	1914	10	4,396	.....	84	3,301	1,009	.....	2	.....	2	75	23	.....	(1)		
	1915	11	4,472	.....	41	3,329	1,101	.....	1	.....	1	74	25	.....	(1)		
	1919	9	5,458	9	208	4,347	849	.....	45	(1)	4	80	16	.....	1		
	1919	9	5,727	45	120	4,819	743	.....	.....	1	2	84	13	.....	.....		
	1920	9	10,523	65	478	2,582	3,981	50	122	1	5	55	38	.....	1		
All occupations.	1914	11	6,033	4	214	3,488	2,245	16	66	(1)	4	58	37	(1)	1		
	1915	11	6,147	3	181	3,532	2,279	20	132	(1)	3	57	37	(1)	2		
	1920	9	10,523	65	478	2,582	3,981	50	122	1	5	55	38	(1)	1		

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

<sup>2</sup> Including 12 men who worked 5 days, 6 days, and 7 days in rotation.

<sup>3</sup> Including 6 men who were relieved one turn every three weeks.

Table D (10) shows by districts for each of the principal productive occupations in 9 tin-plate mill plants, the number of employees, the customary full time, and the actual working time and earnings in 1920, together with the additional time and earnings of the same employees at occupations other than the one specified.

Taking the first occupation, rollers, as an illustration: In the 9 plants 399 positions were filled during the pay-roll period considered by 476 different men, who customarily worked 5.3 turns per week of 8 hours each, making a total of 42.7 hours per week. During the one-half month these 476 men worked an average of 64.1 hours each as rollers at an average of \$2.542 per hour, but during the same time they worked an average of 9.6 hours each at other occupations for which they received an average of \$13.65 additional pay.

The members of the rolling and heating crews all followed the custom of the rollers as to working time. Members of the shearing crew, employees in the tinning department, and laborers, on the other hand, were not altogether working the same hours, and some of these, laborers in particular, worked in 2 shifts instead of 3, with correspondingly longer full time.

The employees engaged in heating and rolling in tin-plate mills receive exceptionally high wages, as do such employees in sheet mills. They work in three shifts of eight hours each, at a very high speed, and their earnings as a whole are greater than earnings in any other departments of the iron and steel industry. The average earnings per hour of selected occupations, including laborers, in tin-plate mills in 1920 were \$1.23 and including all occupations the average earnings were 94.9 cents per hour. These averages are 16 and 9 cents, respectively, lower than averages reported in the sheet-mill department.

TABLE D (10).—AVERAGE CUSTOMARY FULL-TIME HOURS WORKED AND AVERAGE ACTUAL EARNINGS PER PAY-ROLL PERIOD AND PER HOUR, BY OCCUPATIONS AND DISTRICTS, 1920—*TIN-PLATE MILLS*.

[For explanation of this table see p. 14.]

Occupation and district.	Number of plants.	Positions.			Employees working in scheduled pay-roll period.					Scheduled pay-roll period (16 days).								
		Number.	Average customary full time of employees in the positions.			Number.	Number whose customary full-time hours per week were—					Specified occupation.			Specified and other occupations.			
			Turns per week.	Hours per turn.	Hours per week.		48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72	Average full-time earnings per week.	Average hours worked.	Average earnings.	Average earnings per hour.	Average hours worked.	Average earnings.	Average earnings per hour.
<b>Rollers:</b>																		
Pittsburgh.....	6	284	5.3	8.0	42.7	333	333	.....	.....	.....	\$109.31	64.7	\$165.53	\$2.560	74.9	\$180.65	\$2.411	
G. L. and M. W.....	3	115	5.3	8.0	42.7	143	143	.....	.....	.....	106.75	62.9	157.35	2.500	70.7	167.57	2.370	
<b>Total.....</b>	<b>9</b>	<b>399</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>476</b>	<b>476</b>	.....	.....	.....	<b>108.54</b>	<b>64.1</b>	<b>163.07</b>	<b>2.542</b>	<b>73.7</b>	<b>176.72</b>	<b>2.399</b>	
<b>Rollers, level-handed:</b>																		
Pittsburgh.....	6	69	5.3	8.0	42.7	205	205	.....	.....	.....	68.36	30.3	48.59	1.601	68.2	140.54	2.061	
G. L. and M. W.....	1	4	5.3	8.0	42.7	7	7	.....	.....	.....	66.14	33.1	51.35	1.549	73.6	130.43	1.771	
<b>Total.....</b>	<b>7</b>	<b>73</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>212</b>	<b>212</b>	.....	.....	.....	<b>68.29</b>	<b>30.4</b>	<b>48.68</b>	<b>1.599</b>	<b>68.4</b>	<b>140.21</b>	<b>2.051</b>	
<b>Roughers:</b>																		
Pittsburgh.....	6	298	5.3	8.0	42.7	358	358	.....	.....	.....	59.48	61.8	86.32	1.393	70.3	95.21	1.355	
G. L. and M. W.....	3	117	5.3	8.0	42.7	144	144	.....	.....	.....	55.04	63.2	81.43	1.289	72.2	93.19	1.291	
<b>Total.....</b>	<b>9</b>	<b>415</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>502</b>	<b>502</b>	.....	.....	.....	<b>58.21</b>	<b>62.3</b>	<b>84.92</b>	<b>1.363</b>	<b>70.8</b>	<b>94.63</b>	<b>1.337</b>	
<b>Catchers:</b>																		
Pittsburgh.....	6	306	5.3	8.0	42.7	398	398	.....	.....	.....	51.15	55.6	66.54	1.198	69.1	78.20	1.131	
G. L. and M. W.....	3	117	5.3	8.0	42.7	143	143	.....	.....	.....	54.19	62.6	79.47	1.269	67.5	83.81	1.242	
<b>Total.....</b>	<b>9</b>	<b>423</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>541</b>	<b>541</b>	.....	.....	.....	<b>51.95</b>	<b>57.4</b>	<b>69.96</b>	<b>1.217</b>	<b>68.7</b>	<b>79.69</b>	<b>1.160</b>	
<b>Screw boys:</b>																		
Pittsburgh.....	6	306	5.3	8.0	42.7	430	430	.....	.....	.....	41.55	56.7	55.16	.973	65.1	62.66	.962	
G. L. and M. W.....	3	117	5.3	8.0	42.7	155	155	.....	.....	.....	41.50	58.4	56.81	.972	64.4	61.94	.962	
<b>Total.....</b>	<b>9</b>	<b>423</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>585</b>	<b>585</b>	.....	.....	.....	<b>41.54</b>	<b>57.2</b>	<b>55.60</b>	<b>.973</b>	<b>64.9</b>	<b>62.47</b>	<b>.962</b>	

TIN-PLATE MILLS.

TABLE D (10).—AVERAGE CUSTOMARY FULL-TIME HOURS WORKED AND AVERAGE ACTUAL EARNINGS PER PAY-ROLL PERIOD AND PER HOUR, BY OCCUPATIONS AND DISTRICTS, 1920—TIN-PLATE MILLS—Concluded.

Occupation and district.	Number of plants.	Positions.			Employees working in scheduled pay-roll period.					Scheduled pay-roll period (16 days).									
		Number.	Average customary full time of employees in the positions.			Number.	Number whose customary full-time hours per week were—					Average full-time earnings per week.	Specified occupation.			Specified and other occupations.			
			Turns per week.	Hours per turn.	Hours per week.		48 and under.	Over 48 and under 60.	60	Over 60 and under 72.	72		Average hours worked.	Average earnings.	Average earnings per hour.	Average hours worked.	Average earnings.	Average earnings per hour.	
<b>Doublers:</b>																			
Pittsburgh.....	6	191	5.3	8.0	42.7	230	230					\$70.84	62.0	\$102.86	\$1.659	75.7	\$120.31	\$1.590	
G. L. and M. W.....	3	85	5.3	8.0	42.7	100	100					70.33	69.3	114.17	1.647	76.5	122.56	1.603	
<b>Total.....</b>	<b>9</b>	<b>276</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>230</b>	<b>230</b>					<b>70.69</b>	<b>64.2</b>	<b>106.29</b>	<b>1.655</b>	<b>75.9</b>	<b>120.99</b>	<b>1.594</b>	
<b>Doublers, level-handed:</b>																			
Pittsburgh.....	6	234	5.3	8.0	42.7	358	358					55.68	53.8	70.15	1.304	87.8	94.61	1.078	
G. L. and M. W.....	2	10	5.3	8.0	42.7	24	24					46.29	36.5	39.54	1.084	58.8	75.43	1.282	
<b>Total.....</b>	<b>8</b>	<b>244</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>382</b>	<b>382</b>					<b>55.09</b>	<b>52.7</b>	<b>68.23</b>	<b>1.200</b>	<b>86.0</b>	<b>93.41</b>	<b>1.091</b>	
<b>Doublers' helpers:</b>																			
Pittsburgh.....	6	164	5.3	8.0	42.7	223	223					43.85	56.0	57.53	1.027	67.8	71.30	1.050	
G. L. and M. W.....	3	139	5.3	8.0	42.7	161	161					42.49	63.3	62.99	.995	68.2	66.40	.974	
<b>Total.....</b>	<b>9</b>	<b>303</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>384</b>	<b>384</b>					<b>43.28</b>	<b>59.1</b>	<b>59.82</b>	<b>1.014</b>	<b>68.0</b>	<b>69.25</b>	<b>1.018</b>	
<b>Heaters:</b>																			
Pittsburgh.....	5	102	5.3	8.0	42.7	137	137					73.91	58.4	101.13	1.731	81.7	133.40	1.633	
G. L. and M. W.....	3	37	5.3	8.0	42.7	45	45					72.29	64.1	108.56	1.693	74.4	120.72	1.623	
<b>Total.....</b>	<b>8</b>	<b>139</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>182</b>	<b>182</b>					<b>73.51</b>	<b>59.8</b>	<b>102.97</b>	<b>1.722</b>	<b>79.9</b>	<b>130.27</b>	<b>1.631</b>	
<b>Heaters, level-handed:</b>																			
Pittsburgh.....	6	424	5.3	8.0	42.7	548	548					63.24	60.3	89.28	1.481	73.9	109.55	1.482	
G. L. and M. W.....	3	162	5.3	8.0	42.7	208	208					60.80	59.9	85.29	1.424	69.7	98.70	1.417	
<b>Total.....</b>	<b>9</b>	<b>586</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>756</b>	<b>756</b>					<b>62.57</b>	<b>60.2</b>	<b>88.18</b>	<b>1.465</b>	<b>72.7</b>	<b>106.57</b>	<b>1.464</b>	
<b>Heaters' helpers:</b>																			
Pittsburgh.....	5	102	5.3	8.0	42.7	127	127					51.92	61.6	74.90	1.216	72.6	89.71	1.236	
G. L. and M. W.....	3	89	5.3	8.0	42.7	103	103					47.95	59.6	66.96	1.123	62.9	70.31	1.117	
<b>Total.....</b>	<b>8</b>	<b>191</b>	<b>5.3</b>	<b>8.0</b>	<b>42.7</b>	<b>230</b>	<b>230</b>					<b>50.14</b>	<b>60.7</b>	<b>71.34</b>	<b>1.174</b>	<b>68.3</b>	<b>81.02</b>	<b>1.183</b>	



Heaters and doublers were the two occupations in the tin-plate department selected for which to show classified earnings per hour, as explained on page 15.

Table E (10) shows for each occupation, by districts, the number of employees, the average earnings per hour, and the number of employees whose average earnings fell in each group of classified rates per hour.

The classified earnings per hour of doublers ranged from 40 cents to \$2.75 per hour, although 93 per cent of the employees earned an average of from \$1.25 to \$2.25 per hour, the average for all being \$1.655. There was only 1.2 cents difference in the average earnings per hour of employees in the two districts.

The earnings for heaters were only slightly higher than those of doublers, and 95 per cent of the heaters fell within the range \$1.25 to \$2.25. The average earnings for heaters in the two districts differed less than 4 cents per hour. The average for both districts combined was \$1.722.

The significance of the figures in the extreme groups is explained on page 15.

TABLE E (10).—AVERAGE AND CLASSIFIED EARNINGS PER HOUR FOR TWO SELECTED OCCUPATIONS, BY DISTRICTS, 1920—TIN PLATE MILLS.

[For explanation of this table see p. 15.]

Occupation and district.	Number of employees.	Average earnings per hour.	Employees whose earnings per hour were—										
			40 and under 50 cents.	50 and under 60 cents.	70 and under 80 cents.	80 and under 90 cents.	90 cents and under \$1.	\$1 and under \$1.25.	\$1.25 and under \$1.50.	\$1.50 and under \$1.75.	\$1.75 and under \$2.	\$2 and under \$2.25.	\$2.25 and under \$2.75.
<b>HEATERS.</b>													
Pittsburgh.....	137	\$1.731				1		5	31	40	43	15	2
G. L. and M. W.....	45	1.693						1	9	15	15	4	1
Total.....	182	1.722				1		6	40	55	58	19	3
<b>DOUBLERS.</b>													
Pittsburgh.....	230	1.659	1		1	2	1	14	55	80	64	9	3
G. L. and M. W.....	100	1.647		1				1	30	36	26	6	
Total.....	330	1.655	1	1	1	2	1	15	85	116	90	15	3

The customary turns per week, hours per turn, and full-time hours per week, in the tin-plate mill department are shown in detail, for each of the two districts in which data were secured and for both districts combined, for the year 1920, in Table F (10).

The table is presented in two parts, part 1 relating to those employees whose customary working time remained the same throughout the pay-roll period, although they may have been engaged in more than one occupation, and part 2 relating to those employees who worked at two or more combinations of customary hours or turns in the period scheduled.

The information for the tin-plate mill department was obtained from 9 plants and covers 10,366 actual employees—9,947 in part 1 of the table and 419 in part 2. However, the sum of the figures in this table would show 10,814 persons, due to 448 duplications, or repeated employees, appearing in part 2.

Tin-plate mills, as is generally the case with all rolling mills, are seldom operated more than 6 days per week, and the prevailing custom in force at most of the plants is 6 days and 5 nights each week. Owing to the extreme heat in a tin-plate mill and the speed with which employees work, practically all producing crews are on a three-shift basis and more than one-half of all employees reported in Table F (10) worked turns of 8 hours. Sunday work in this department was confined almost entirely to those employees working in the mechanical department, as none of the hot-mill employees were Sunday workers. A total of 2,232 employees worked fewer hours on Saturday than on the regular Monday to Friday shifts and 639 worked a smaller number of hours on Sundays. Shifts that are shorter in length than the Monday to Friday turns generally occur on the Saturday or Sunday day turns, the night turns usually being of equal length.

Of the 9,947 employees reported as working at one combination of hours and turns 7,259, or 73 per cent, alternated weekly from day to night work; 2,565, or 26 per cent, worked days only; and the remaining 1 per cent worked nights only. Of the 7,259 employees alternating from day to night work 5,675, or 78 per cent, worked 5 days, 5 days, and 6 days in rotation; 973, or 13 per cent, worked six turns either day or night; 448, or 6 per cent, worked 5 days and 6 days alternately; and the remaining 163, or 2 per cent, worked from 5 to 7 turns each week.

The 8-hour turn was most common among these employees, 5,740, or 79 per cent, working on a three-shift basis. The 12-hour turn was fairly well represented, 711, or 10 per cent, working on 12-hour shifts.

Of the 2,565 men who worked days only, 99 per cent worked 6 days per week, the working week of the remaining 1 per cent varying from 5 to 7 days. Among the day workers a 10-hour workday predominated, as 1,557, or 61 per cent, were found on shifts of that length.

A total of 85, or 69 per cent, of the 123 employees reported as working night turns only, worked 6 nights per week, and out of that number 37, or 44 per cent, were on a 12-hour shift, while 29, or 34 per cent, worked 10 hours per night. Those whose working time per week was 7 nights numbered 33, and of that total 30, or 91 per cent, were on shifts of 10 hours. Two employees alternated from 6 nights one week to 7 nights the next and both worked 10-hour turns.

The 867 employees (including duplications) presented in part 2 of the table are divided into the following classes: Those working days only, numbering 553, or 64 per cent; those alternating from day to night, numbering 296, or 34 per cent; those working nights only, numbering 18, or 2 per cent. Out of the 553 employees who worked days only, 543, or 98 per cent, worked six turns each week; 8, or 1 per cent, worked 5 days; and the remaining 2 employees worked 7 days. The customary length of turn for 281, or 51 per cent of the day workers, was 10 hours per day, while the remaining 49 per cent worked hours varying from 7 to 12. Of the 266 employees working days one week and nights the next, 174, or 59 per cent, worked 5 days, 5 days, and 6 days in rotation; 71, or 23 per cent, worked 6 turns each week; and the remaining 51 employees worked from 5 to 7 turns per week. A total of 191, or 65 per cent, of these employees worked 8-hour shifts and 69, or 23 per cent, worked 12 hours. The working time of those employed nights only was 6 nights or 7 nights per week, 89 per cent working 6 nights. The 10-hour and 11½-hour turns predominated among the night workers, 7 employees working at each set of hours.

In studying the working time in this department it should be noted that some 58 per cent of all employees work only 48 hours per week, or less and only about 8 per cent work 72 hours or over. (See p. 10.)

**TABLE F (10).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—TIN-PLATE MILLS.**

[For explanation of this table see 15.]

**PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.**

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

**Employees who worked day turns.**

7	12	12	12	84							2	2
7	12	12	11	83							2	2
7	12	12	10	82							2	2
7	12	12	9	81							3	3
7	12	12	5	77							2	2
7	12	9	5	74							1	1
7	11	10	5	70							1	1
7	10	10	10	70								
6	10	10		60						5		5
7	10	10	5	65						1		1
7	10	9	5	64							1	1
7	9	9	9	63							1	1
7	8	8	8	56							2	2
6	12	12		72						144	9	153
6	12	11		71							5	5
6	12	10½		70½						8		8
6	12	10		70						24	11	35

TABLE F (10).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—TIN-PLATE MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.			

Employees who worked day turns—Concluded.

6	12	9 $\frac{1}{2}$		69 $\frac{1}{2}$						2		2
6	12	9 $\frac{1}{2}$		69 $\frac{1}{2}$						1		1
6	12	9 $\frac{1}{2}$		69 $\frac{1}{2}$						2		2
6	12	9		69						3		3
6	12	8 $\frac{1}{2}$		68 $\frac{1}{2}$						1		1
6	12	6		66							1	1
6	11 $\frac{1}{2}$	10 $\frac{1}{2}$		68 $\frac{1}{2}$						1		1
6	11 $\frac{1}{2}$	10 $\frac{1}{2}$		68						1	1	2
6	11 $\frac{1}{2}$	10 $\frac{1}{2}$		67 $\frac{1}{2}$						8		8
6	11 $\frac{1}{2}$	9 $\frac{1}{2}$		67						4	7	11
6	11 $\frac{1}{2}$	8 $\frac{1}{2}$		66							1	1
6	11 $\frac{1}{2}$	8		65 $\frac{1}{2}$							3	3
6	11 $\frac{1}{2}$	7 $\frac{1}{2}$		65						8		8
6	11 $\frac{1}{2}$	6		63 $\frac{1}{2}$						1		1
6	11	11		66						8		8
6	11	10 $\frac{1}{2}$		65 $\frac{1}{2}$						4	1	5
6	11	10		65						10	14	24
6	11	9		64						30	15	45
6	11	8 $\frac{1}{2}$		63 $\frac{1}{2}$						10		10
6	11	7 $\frac{1}{2}$		62 $\frac{1}{2}$						1		1
6	11	6 $\frac{1}{2}$		61 $\frac{1}{2}$							2	2
6	10 $\frac{1}{2}$	10		62 $\frac{1}{2}$							1	1
6	10 $\frac{1}{2}$	9 $\frac{1}{2}$		62						3		3
6	10 $\frac{1}{2}$	9		61 $\frac{1}{2}$						5	1	6
6	10 $\frac{1}{2}$	6 $\frac{1}{2}$		59							4	4
6	10 $\frac{1}{2}$	5 $\frac{1}{2}$		58						2		2
6	10 $\frac{1}{2}$	5		57 $\frac{1}{2}$						6		6
6	10 $\frac{1}{2}$	9 $\frac{1}{2}$		60 $\frac{1}{2}$						3		3
6	10 $\frac{1}{2}$	9		60 $\frac{1}{2}$						30		30
6	10 $\frac{1}{2}$	8 $\frac{1}{2}$		60						105		105
6	10 $\frac{1}{2}$	5 $\frac{1}{2}$		56 $\frac{1}{2}$						19		19
6	10	10		60						347	3	350
6	10		10	60						1		1
6	10	9		59						153	214	367
6	10	8 $\frac{1}{2}$		58 $\frac{1}{2}$							6	6
6	10	8		58						238	334	572
6	10	7		57						57	1	58
6	10	6		56						8	2	10
6	10	5 $\frac{1}{2}$		55 $\frac{1}{2}$							6	6
6	10	5		55						82	98	180
6	9 $\frac{1}{2}$	6		53 $\frac{1}{2}$						41		41
6	9	8		53						28	2	30
6	9	7		52						8		8
6	9	5 $\frac{1}{2}$		50 $\frac{1}{2}$						66		66
6	9	5		50						41	70	111
6	9	4 $\frac{1}{2}$		49 $\frac{1}{2}$							23	23
6	9	4		49						3	1	4
6	8 $\frac{1}{2}$	5 $\frac{1}{2}$		48							26	26
6	8	8		48						8	7	15
6	8	6		46							29	29
6	8	5		45							14	14
6	8	4		44						27	28	55
6	8	3		43							8	8
6	7	5		40							32	32
5	8			40							10	10

TABLE F (10).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—TIN-PLATE MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.							
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon-day to Fri-day.	Satur-day.	Sun-day.	Per week.		Mon-day to Fri-day.	Satur-day.	Sun-day.	Per week.			

Employees who worked night turns.

					7	12	12	12	84		2	2
					7	11	11	11	77		1	1
					7	10	10	10	70		30	30
					6	10	10	10	70		2	2
					6	12	12		72	20		20
					6	12		12	72	10	7	17
					6	11½		11½	69		15	15
					6	11		11	66		2	2
					6	11		11	66	2		2
					6	10		10	60		28	28
					6	10		10	60		1	1
					5	11½			57½		3	3

Employees who alternated weekly from day to night turns.

7	12	12	84	7	12	12	12	84	11	3	14
7	12	12	84	6	12	12	12	72		10	10
7	12	12	81	7	12	6	9	75		6	6
7	12	12	81	7	12	6	6	72		7	7
7	12	12	80	7	12	12	6	78		13	13
7	12	12	78	7	12	12	18	90		10	10
7	12	12	78	7	12	6	9	75		2	2
7	12	12	78	6	12	6		66		4	4
7	12	10	82	6	12		12	72		4	4
7	10	10	65	7	10	10	15	75		9	9
5	8		40	6			12	52	12		1
7	13	8	60	7				67		2	2
6	12	12	71	6	11	12		84	25		25
6	12	12	72	7	12	12	12	72	4		4
6	12	12	72	6	12	12		72	89	15	104
6	12	12	72	6	12		12	72	333	23	356
6	12	12	72	5	12			60	40	2	42
6	12	11	74	6	12	6		66		8	8
6	12	10	70	6	12		12	72	43	9	52
6	12	10	70	6	12	10		70		13	13
6	12	10	70	6	12		10	70	4		4
6	12	10	70	6	12	6		66		2	2
6	12	10	70	5	12			60		13	13
6	12	8	68	6	12		12	72		10	10
6	12	7	67	5	12			60		8	8
6	11½		69	6	12		12	72	2		2
6	11½		69	6	11½		11½	69		10	10
6	11½		69	5	11½			57½	73		73
6	11½	10½	68	5	11½			57½		1	1
6	11½	6	63½	6	11½		6½	64		4	4
6	11	11	66	6	13		13	78		2	2
6	11	11	66	6	12		12	72	152		152
6	11	11	66	5	12			60	42		42
6	11	11	66	5	11			55	33		33
6	11	10	65	6	13		13	78		2	2

<sup>1</sup> 13 hours on Monday.

<sup>2</sup> 15 hours on Monday.

TABLE F (10).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—TIN-PLATE MILLS—Continued.

PART 1.—EMPLOYEES WHO WORKED BUT ONE COMBINATION OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.

Customary turns and hours worked.										Number of employees who worked each specified combination of customary turns and hours, by districts.		
Day turns.					Night turns.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sund- day.	Per week.			

Employees who alternated weekly from day to night turns—Concluded.

6	11	9	.....	64	6	12	12	.....	72	1	.....	1
6	11	8	.....	63	6	13	.....	13	78	.....	1	1
6	11	5	.....	60	6	13	.....	13	78	.....	2	2
6	10	10	.....	60	6	14	.....	14	84	68	.....	68
6	10	10	.....	60	6	12	12	.....	72	5	.....	5
6	10	10	.....	60	6	12	12	.....	72	102	.....	102
6	10	10	.....	60	6	11½	.....	11½	69	25	.....	25
6	10	10	.....	60	6	10	.....	10	60	26	.....	26
6	10	10	.....	60	5	12	.....	12	60	44	.....	44
6	10	9	.....	59	6	12	.....	12	72	1	.....	1
6	10	9	.....	59	6	10	.....	8	58	.....	13	13
6	10	9	.....	59	5	12	.....	12	60	9	.....	9
6	10	8	.....	58	5	11	.....	11	55	21	.....	21
6	10	4	.....	54	5	10	.....	10	50	10	.....	10
6	9	9	.....	54	6	9	.....	9	54	.....	2	2
6	9	8	.....	53	5	8	.....	8	40	.....	8	8
5	8	.....	.....	40	5	8	.....	8	40	40	.....	40
5	8	11	.....	40	.....	8	.....	8	40	285	.....	285
5	8	8	.....	48	5	10	.....	10	50	.....	17	17
5	8	8	.....	40	5	8	.....	8	40	3,700	1,645	5,345
6	8	8	.....	48	.....	8	.....	8	40	.....	6	6
6	8	5	.....	45	.....	8	.....	8	40	.....	5	5
5	8	.....	.....	40	5	8	.....	8	40	.....	121	121
6	8	4	.....	44	5	8	.....	8	40	.....	47	47
6	7	7	.....	42	5	8	.....	8	40	.....	47	47
5	8	.....	.....	40	5	8	.....	8	40	.....	47	47
5	8	.....	.....	40	5	8	.....	8	40	.....	47	47

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD.

[Each employee is counted under each varying combination at which he worked.]

Employees who worked day turns.

7	12	12	11	83	.....	.....	.....	.....	.....	.....	1	1
7	12	12	5	77	.....	.....	.....	.....	.....	.....	1	1
6	12	12	.....	72	.....	.....	.....	.....	.....	11	.....	12
6	12	11	.....	71	.....	.....	.....	.....	.....	.....	1	1
6	12	10½	.....	70½	.....	.....	.....	.....	.....	2	.....	2
6	12	10	.....	70	.....	.....	.....	.....	.....	9	.....	12
6	12	9½	.....	69½	.....	.....	.....	.....	.....	1	.....	1
6	11½	10½	.....	67½	.....	.....	.....	.....	.....	1	.....	1
6	11½	9½	.....	67	.....	.....	.....	.....	.....	.....	2	2
6	11½	7½	.....	65	.....	.....	.....	.....	.....	1	.....	1
6	11	11	.....	66	.....	.....	.....	.....	.....	2	.....	2
6	11	10½	.....	65½	.....	.....	.....	.....	.....	1	.....	1
6	11	10	.....	65	.....	.....	.....	.....	.....	2	.....	3
6	11	9	.....	64	.....	.....	.....	.....	.....	15	.....	18

\*9 hours on first turn on Monday.

TABLE F (10).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—TIN-PLATE MILLS—Continued.

PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—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.					Pitts- burgh.	Great Lakes and Middle West.	Total.
Turns per week.	Hours.				Turns per week.	Hours.						
	Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.		Mon- day to Fri- day.	Satur- day.	Sun- day.	Per week.			

Employees who worked day turns—Concluded.

6	11	8½		63½						19		19
6	11	6½		61½							1	1
6	10½	9		61½						3		3
6	10½	6½		59							2	2
6	10½	5½		58						4		4
6	10½	9		60½						6		6
6	10½	8½		60						36		36
6	10½	5½		56½						3		3
6	10	10		60						29	2	31
6	10	9½		59½						1		1
6	10	9		59						10	7	17
6	10	8½		58½							1	1
6	10	8		58						81	110	191
6	10	7		57						22	5	27
6	10	5		55						6	7	13
6	9½	9½		57						1		1
6	9½	6		53½						28		28
6	9	9		54							1	1
6	9	7		52						22		22
6	9	5		50						2	1	3
6	9	4½		49½							1	1
6	8½	5½		48							29	29
6	8	8		48							9	9
6	8	5		45							18	18
6	8	4		44						13	2	15
6	7	5		40							5	5
5	8			40							8	8

Employees who worked night turns.

					7	10	10	10	70		2	2
					6	12	12		72	1		1
					6	12		12	72	2	1	3
					6	11½		11½	69		7	7
					6	10	10		60		5	5

Employees who alternated weekly from day to night turns.

7	12	12	9	81	7	12	6	9	75		2	2
7	12	12	9	81	7	12	6	6	72		2	2
7	10	10	5	65	7	10	10	15	75		2	2
6	12	12		72	6	12	12		72	6	4	10
6	12	12		72	6	12		12	72	18	6	24
6	12	12		72	5	12			60	4		16
6	12	10		70	6	12		12	72	16		16
6	12	10		70	6	12		10	70	1		1
6	12	10		70	6	12	10		70		1	1
6	12	10		70	5	12			60		3	3
6	12	8		68	6	12		12	72		4	4
6	12	7		67	5	12			60		2	2
6	11½	11½		69	5	11½			57½	1		1
6	11½	10½		68	5	11½			57½		2	2

**TABLE F (10).—CUSTOMARY FULL-TIME TURNS PER WEEK AND HOURS PER TURN, BY DISTRICTS, 1920—TIN-PLATE MILLS—Concluded.**

**PART 2.—EMPLOYEES WHO WORKED TWO OR MORE COMBINATIONS OF CUSTOMARY DAYS AND HOURS DURING PAY-ROLL PERIOD—Concluded.**

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

**Employees who alternated weekly from day to night turns—Concluded.**

6	11	11	.....	66	6	12	.....	12	72	1	.....	1
6	10	10	.....	60	6	12	.....	12	72	3	.....	3
6	10	10	.....	60	6	11½	.....	11½	69	1	.....	1
6	10	10	.....	60	6	10	.....	10	60	3	.....	3
6	10	8	.....	58	6	11½	.....	11½	69	.....	1	1
6	10	8	.....	58	5	11	.....	.....	55	14	.....	14
6	10	4	.....	54	5	10	.....	.....	50	5	.....	5
5	8	.....	.....	40	5	8	.....	.....	40	27	.....	27
6	8	11	.....	51	7	8	.....	8	56	.....	1	1
6	8	8	.....	48	6	8	.....	8	48	.....	5	5
6	8	8	.....	48	5	10	.....	.....	50	.....	3	3
6	8	8	.....	48	5	8	.....	.....	40	66	57	123
5	8	.....	.....	48	6	8	.....	6	46	.....	1	1
6	8	6	.....	46	5	8	.....	.....	40	.....	2	2
6	8	5	.....	45	5	8	.....	.....	40	.....	24	24
5	8	.....	.....	40	5	8	.....	.....	40	.....	.....	.....
6	8	4	.....	44	5	8	.....	.....	40	.....	8	8
5	8	.....	.....	40	5	8	.....	.....	40	.....	.....	.....
5	8	.....	.....	40	5	8	.....	.....	40	.....	.....	.....

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