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No. 547

WAGES AND HOURS OF LABOR SERIES

WAGES AND HOURS OF LABOR IN CANE-SUGAR REFINING INDUSTRY 1930



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WAGES AND HOURS OF LABOR IN THE CANE-SUGAR REFINING INDUSTRY, 1930

In 1930 a study of wages and hours of labor of wage earners, by occupations, in the cane-sugar refining industry in continental United States was made by the Bureau of Labor Statistics. The study included workers in all processes, beginning with the receipt of the raw-cane sugar at the refineries, including all operations or occupations in the process of refining, and ending with the work of packing and shipping the refined sugar from the plants in the form of granulated, cube, powdered, and brown sugar.

The United States Census of Manufactures reported an average of 13,920 wage earners in cane-sugar refineries in continental United States in 1929. The bureau's study covered 11,027 male and 863 female employees of 21 refineries and therefore represents practically the entire industry.

AVERAGE HOURS AND EARNINGS, 1930, BY OCCUPATION AND SEX

The study showed that the average full-time hours per week for males in this industry ranged, in the various occupations, from 51.7 for boilermakers to 64.3 for blow-up tankmen. The occupation of packer was the only one in which women were employed, with the exception of a small number (too small to be tabulated separately) included in the group of "other employees"; the hours of the woman packers averaged 50.8 per week. For all employees in the industry the average was 58.7 per week. In plants with a 2-shift cycle in which employees alternated, working on the day shift one week and the night shift the next week, the average for each employee for the two shifts was used in computing average full-time hours per week for them. The hours of employees who worked 13 consecutive days, followed by 2 days off duty, were adjusted to a full-time week basis.

By occupations, average earnings per hour for males ranged from 41.3 cents for laborers to 69.4 cents for sugar boilers. The average for packers, female, was 28.9 cents; for females in the group of "other employees," 29 cents. For both sexes in all occupations combined the average was 46.1 cents per hour. Average full-time earnings per week for males ranged from \$24.74 for laborers to \$37.13 for sugar boilers; the average for packers, female, was \$14.68, for females in the group of "other employees," \$16.97; and for both sexes in all occupations combined, \$27.06.

Details are shown in Table 1.

WAGES AND HOURS—CANE-SUGAR REFINING

TABLE 1.—Average full-time hours and earnings in the cane-sugar refining industry, 1930, by occupation and sex

Occupation	Sex	Number of establishments	Number of wage earners	Average full-time hours per week	Average earnings per hour	Average full-time weekly earnings
Minglers.....	Male.....	19	49	60.2	\$0.434	\$26.13
Centrifugal tenders.....	do.....	21	841	60.6	.463	28.06
Melters.....	do.....	21	94	63.0	.461	29.04
Pumpmen.....	do.....	19	90	63.6	.451	28.68
Blow-up tankmen.....	do.....	21	77	64.3	.444	28.55
Filter pressmen.....	do.....	21	268	61.8	.453	28.00
Char-house laborers.....	do.....	21	507	62.2	.442	27.49
Char-kiln firemen.....	do.....	21	138	62.3	.500	31.15
Liquor runners.....	do.....	21	79	60.0	.529	31.74
Evaporator tenders.....	do.....	20	65	58.8	.530	31.16
Tankmen.....	do.....	19	118	62.5	.461	28.81
Sugar boilers.....	do.....	21	225	53.5	.694	37.13
Crystallizers and mixers.....	do.....	21	108	62.1	.447	27.76
Granulators.....	do.....	21	68	62.3	.474	29.53
Packers.....	do.....	21	1,323	60.6	.440	26.66
	Female.....	18	780	50.8	.289	14.68
Weighers and checkers.....	Male.....	21	355	58.7	.504	29.58
Oilers.....	do.....	21	183	63.2	.477	30.15
Laborers.....	do.....	21	3,956	59.9	.413	24.74
Boilermakers.....	do.....	10	37	51.7	.682	35.26
Electricians.....	do.....	20	145	55.5	.657	36.46
Elevator men.....	do.....	18	69	59.4	.469	27.86
Pipe fitters.....	do.....	19	99	52.9	.663	35.07
Other employees.....	do.....	21	2,133	55.9	.556	31.08
	Female.....	14	83	58.5	.290	16.97
All employees.....	Male.....	21	11,027	59.3	.472	27.99
	Female.....	19	863	51.5	.289	14.88
All employees, male and female.....		21	11,890	58.7	.461	27.06

AVERAGE HOURS AND EARNINGS, 1930, BY SEX AND DISTRICT

Average full-time hours per week, earnings per hour, and full-time earnings per week for wage earners of each sex and for both sexes in all occupations combined, or the industry, are presented in Table 2 by districts. (The averages are shown by districts instead of by States to avoid presenting wage figures for one refinery.) District 1 includes the cane-sugar refineries in Massachusetts, New York, and New Jersey; district 2, those in Pennsylvania and Maryland; district 3, those in Georgia, Louisiana, and Texas; and district 4, those in California.

Average full-time hours per week for males ranged in the various districts from 47.8 to 61.8, the average for all districts combined being 59.3; for females the average ranged from 48 to 54, the average for all districts combined being 51.5. For both sexes combined the range was from 47.8 to 61.

By districts average earnings per hour of males ranged from 30.3 to 63.3 cents and for all districts combined averaged 47.2 cents; those of females ranged from 19.1 to 42.2 cents and averaged 28.9 cents; and those of both sexes combined ranged from 29.5 to 62.2 cents. Average full-time earnings per week of males ranged from \$18.30 to \$32.38; and for all districts averaged \$27.99; those of females ranged from \$10.31 to \$20.26, and for all districts combined averaged \$14.88; and those of males and females combined ranged from \$17.67 to \$31.48 per week.

AVERAGE AND CLASSIFIED EARNINGS

TABLE 2.—Average hours and earnings in the cane-sugar refining industry, 1930, by sex and district

Sex and district	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Males:					
District No. 1.....	8	4,514	61.8	\$0.524	\$32.38
District No. 2.....	4	2,015	60.6	.490	29.74
District No. 3.....	7	2,982	60.4	.303	18.30
District No. 4.....	2	1,516	47.8	.633	30.33
Total.....	21	11,027	59.3	.472	27.99
Females:					
District No. 1.....	7	310	49.2	.362	17.85
District No. 2.....	4	183	53.6	.282	14.04
District No. 3.....	6	274	54.0	.191	10.31
District No. 4.....	2	96	48.0	.422	20.26
Total.....	19	863	51.5	.289	14.88
Males and females:					
District No. 1.....	8	4,824	61.0	.516	31.48
District No. 2.....	4	2,198	60.0	.475	28.50
District No. 3.....	7	3,256	59.9	.295	17.67
District No. 4.....	2	1,612	47.8	.622	29.73
Total.....	21	11,890	58.7	.461	27.06

AVERAGE AND CLASSIFIED EARNINGS PER HOUR

Table 3 presents average earnings per hour and a percentage distribution by average earnings per hour of the wage earners in each occupation in the industry, and also in all occupations combined.

The 841 centrifugal tenders (the second occupation in the table) employed by the 21 refineries included in the study earned an average of 46.3 cents per hour. The earnings per hour of 6 per cent of them were within the classified group of 25 and under 27½ cents per hour. The earnings of the other wage earners in this occupation ranged by classified groups from 27½ and under 30 cents to 65 and under 70 cents per hour.

Approximately 11 per cent of all employees in all occupations combined earned an average of less than 25 cents per hour, while 4 per cent earned an average of 75 cents or more. The earnings of 85 per cent of the whole group fell within these extremes. The very wide range in earnings was due largely to variance in wage rates from one refinery to another, rather than to difference in earnings of wage earners in an occupation in the same plant, there usually being little difference in average earnings per hour of employees in an occupation within the same refinery.

WAGES AND HOURS—CANE-SUGAR REFINING

TABLE 3.—Average hourly earnings and per cent earning each classified amount per hour in the cane-sugar refining industry, 1930, by occupation and sex

Occupation.....	Min- glers	Centri- fugal tend- ers	Melt- ers	Pump- men	Blow- up tank- men	Filter press- men	Char- house labor- ers	Char- kiln fire- men	Liquor run- ners	Evap- orator tend- ers
Sex.....	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.
Number of establishments.....	19	21	21	19	21	21	21	21	21	20
Number of employees.....	49	841	14	90	77	298	507	138	79	65
Average earnings per hour.....	\$0.434	\$0.463	\$0.461	\$0.451	\$0.444	\$0.453	\$0.442	\$0.500	\$0.529	\$0.530

Per cent earning each classified amount per hour

CLASSIFIED EARNINGS

12 and under 13 cents.....	2									
13 and under 14 cents.....							1			
14 and under 15 cents.....			1				(1)			
15 and under 16 cents.....			2				1			
16 and under 17 cents.....			3				(1)			
17 and under 18 cents.....							2			
18 and under 19 cents.....	10			2	10	1	4			
19 and under 20 cents.....	2		1				(1)			
20 and under 21 cents.....				4		1		1		
21 and under 22 cents.....				2	4	2	1			
22 and under 23 cents.....				6	3	4	(1)	1	3	
25 and under 27½ cents.....		6	2		1	1	1	1	3	
27½ and under 30 cents.....		3	1		1	4	3	1	3	
30 and under 32½ cents.....	4	(1)				5	2			3
32½ and under 35 cents.....		1	4	2		4	3		3	3
35 and under 37½ cents.....	6	8	4	1		1	7			
37½ and under 40 cents.....	2	8	5	7		4	3	3		6
40 and under 42½ cents.....	2	2	3	3	3	1	2	6	3	5
42½ and under 45 cents.....	2	3				3	5		3	
45 and under 47½ cents.....	10	17	11	6	6	17	8	7	9	3
47½ and under 50 cents.....	4	6	6	11	14	6	11	13	6	6
50 and under 55 cents.....	33	29	37	33	32	28	36	33	27	37
55 and under 60 cents.....	8	8	10	18	6	2	4	12	20	6
60 and under 65 cents.....	10				5	15	9	12	6	11
65 and under 70 cents.....		(1)	4	4				4	3	6
70 and under 75 cents.....					4	2		3	5	9
75 and under 80 cents.....									5	8
80 and under 85 cents.....									4	

Occupation.....	Tank- men	Sugar boilers	Crys- tallizers and mixers	Gran- ulators	Packers		Weigh- ers and check- ers	Oilers	La- borers
Sex.....	M.	M.	M.	M.	M.	F.	M.	M.	M.
Number of establishments.....	19	21	21	21	21	18	21	21	21
Number of employees.....	118	225	108	68	1,323	780	355	183	3,956
Average earnings per hour.....	\$0.461	\$0.694	\$0.447	\$0.474	\$0.440	\$0.289	\$0.504	\$0.477	\$0.413

Per cent earning each classified amount per hour

CLASSIFIED EARNINGS

11 and under 12 cents.....						2			(1)
12 and under 13 cents.....									1
13 and under 14 cents.....					(1)	7			1
14 and under 15 cents.....									5
14 and under 16 cents.....	1		3		2	(1)			2
16 and under 17 cents.....					1	(1)			2
17 and under 18 cents.....	2		1						1
18 and under 19 cents.....	5		4		4				
19 and under 20 cents.....			1			1	1		(1)
20 and under 21 cents.....			1	3	(1)	9		2	1
21 and under 22 cents.....	2					(1)	3	8	1
22 and under 23 cents.....			1	1	(1)	14	(1)	4	1
23 and under 24 cents.....					(1)				(1)
24 and under 25 cents.....					1	5	1	1	(1)
25 and under 27½ cents.....			2		1	5	3	3	1
27½ and under 30 cents.....			3	4	2	8		3	2
30 and under 32½ cents.....	6				5	13	2	7	7
32½ and under 35 cents.....			5		3	7	1	2	6
35 and under 37½ cents.....	6		4	1	6	7	4	1	6
37½ and under 40 cents.....	3		7		3	7	4	5	2

¹ Less than 1 per cent.

TABLE 3.—Average hourly earnings and per cent earning each classified amount per hour in the cane-sugar refining industry, 1930, by occupation and sex—Continued

Occupation	Tank-men	Sugar boilers	Crystallizers and mixers	Granulators	Packers	Weighters and checkers	Others	Labors
CLASSIFIED EARNINGS—CON.								
Per cent earning each classified amount per hour								
40 and under 42½ cents	2		3	4	6	3	4	7
42½ and under 45 cents	14		8	15	8	4	7	1
45 and under 47½ cents	3	2	6	13	5	3	9	2
47½ and under 50 cents	32	8	35	31	36	(1)	21	34
50 and under 55 cents	17	12	11	7	7		8	17
55 and under 60 cents	7	20	6	10	4		16	5
60 and under 65 cents	1	7			1		8	6
65 and under 70 cents		9			(1)		3	2
70 and under 75 cents		15					3	
75 and under 80 cents		13					2	
80 and under 85 cents		3						
85 and under 90 cents		5						
90 and under 95 cents		3						
95 and under 100 cents		1						
100 and under 110 cents								
CLASSIFIED EARNINGS								
Per cent earning each classified amount per hour								
8 and under 9 cents					(1)		(1)	(1)
11 and under 12 cents						1		(1)
12 and under 13 cents						(1)	(1)	(1)
13 and under 14 cents					(1)	5	1	7
14 and under 15 cents					(1)		(1)	(1)
15 and under 16 cents					(1)	1	2	(1)
16 and under 17 cents					(1)	12	1	1
17 and under 18 cents					(1)		1	1
18 and under 19 cents					1	1	2	(1)
19 and under 20 cents					(1)		(1)	1
20 and under 21 cents					2	5	1	9
21 and under 22 cents					(1)		1	(1)
22 and under 23 cents					2	5	1	13
23 and under 24 cents		1	1		(1)		(1)	(1)
24 and under 25 cents					(1)		(1)	(1)
25 and under 27½ cents		1	1		1	8	1	5
27½ and under 30 cents		2	3		1	18	2	9
30 and under 32½ cents			3	2	2	6	4	12
32½ and under 35 cents		1	1		1	2	3	7
35 and under 37½ cents				1	2	7	4	6
37½ and under 40 cents			7		1	8	3	7
40 and under 42½ cents		1	6		5	6	6	3
42½ and under 45 cents		1	6	2	2	5	3	4
45 and under 47½ cents	3	1	7		3	2	8	4
47½ and under 50 cents			14		3		6	3
50 and under 55 cents	11	1	41	4	18	2	27	(1)
55 and under 60 cents	8	14	9	17	12	2	8	(1)
60 and under 65 cents	8	21		11	11	1	7	(1)
65 and under 70 cents	22	16		21	9		3	(1)
70 and under 75 cents	5	12		18	7		2	
75 and under 80 cents	8	8		3	4		1	
80 and under 85 cents	32	7		14	6		2	
85 and under 90 cents	3	11		3	2		1	
90 and under 95 cents		2			1			
95 and under 100 cents				2	1			
100 and under 110 cents					(1)		(1)	(1)
110 and under 120 cents					(1)		(1)	(1)
140 and under 150 cents					(1)		(1)	(1)
170 and under 180 cents					(1)		(1)	(1)

¹ Less than 1 per cent.

FULL-TIME HOURS PER WEEK AND PER DAY

Full-time hours per week and per day are the regular hours of operation as fixed by the regular time of beginning and quitting work on each day, less the regular time off duty for lunch or dinner, with no overtime, and without deducting time lost for any cause. The full-time hours in Table 4 are the hours that would have been worked had each wage earner in each occupation or in all occupations combined worked no more nor less than full-time.

The table shows for the wage earners in each occupation and also for those in all occupations combined, or the industry, average full-time hours per week, and the per cent in each classified group of full-time hours per week. For a distribution of the number of wage earners in each occupation and in all occupations combined, or the industry, in each district by full-time hours, see Table C, pages 24 to 27.

Average full-time hours per week for the 11,890 wage earners of both sexes combined in all occupations, or the industry, as shown at the end of the table, were 58.7. The percentage distribution by classified groups of full-time hours per week is less than 1 per cent at 44; 25 per cent at 48; 5 per cent at over 48 and under 54; 14 per cent at 54; less than 1 per cent at over 54 and under 60; 17 per cent at 60; 1 per cent at over 60 and under 66; 17 per cent at 66; 7 per cent at over 66 and under 72; 12 per cent at 72; and less than 1 per cent at over 72.

TABLE 4.—Average and classified full-time hours per week, in all occupations, 1930, by sex

Occupation and sex	Number of establishments	Number of wage earners	Average full-time hours per week	Per cent of employees whose full-time hours per week were—										
				44	48	Over 48 and under 54	54	Over 54 and under 60	60	Over 60 and under 66	66	Over 66 and under 72	Over 72	
Minglers, male.....	19	49	60.2		39				8		20	8	24	
Centrifugal tenders, male..	21	841	60.6		37				12		10	17	24	
Melters, male.....	21	94	63.0		30				7		12	9	43	
Pumpmen, male.....	19	90	63.6		23			4	9		7	21	36	
Blow-up tankmen, male.....	21	77	64.3		29				9		14	8	40	
Filter pressmen, male.....	21	268	61.8		28		7		6		10	30	19	
Char-house laborers, male..	21	507	62.2		27				15		21	10	27	
Char-kiln firemen, male.....	21	138	62.3		33			2	8		2	15	40	
Liquor runners, male.....	21	79	60.0		47				5			9	37	
Evaporator tenders, male..	20	65	58.8		54							6	42	
Tankmen, male.....	19	118	62.5		34				2		9	20	35	
Sugar boilers, male.....	21	225	53.5		76		(1)					4	19	
Crystallizers and mixers, male	21	108	62.1		34				4		19	4	39	
Granulators, male.....	21	68	62.3		31				12		12	7	38	
Packers, male.....	21	1,323	60.6		19		14	1	13		37	10	5	
Packers, female.....	18	780	50.8		39		28	31					2	
Weights and checkers, male	21	355	58.7	3	18		7	14	1	22	3	12	14	6 (1)
Oilers, male.....	21	183	63.2		25			2	6	10	(1)	9	43	4
Laborers, male.....	21	3,956	59.9		17		16	11	(1)	26	3	26	7	5
Boilermakers, male.....	10	37	51.7	19	22		30	11		11	8			
Electricians, male.....	20	145	55.5		38		11	21		12		1	17	
Elevator men, male.....	18	69	59.4		35		1	10		7	1	14	7	23
Pipe fitters, male.....	19	99	52.9	6	29		19	24	1	17			3	8
Other employees, male.....	21	2,133	55.9	4	23		13	20	(1)	23	1	6	2	8 (1)
Other employees, female.....	14	83	58.5		29		24	6			1		1	40
Total, males.....	21	11,027	59.3	(1)	24		3	13	(1)	19	1	18	8	12 (1)
Total, females.....	19	863	51.5		38		28	29			(1)			5
Total, males and females.....	21	11,890	58.7	(1)	25		5	14	(1)	17	1	17	7	12 (1)

¹ Less than 1 per cent.

OVERTIME AND WORK ON SUNDAY AND HOLIDAYS

Overtime is any time worked in excess of regular full-time hours per day or per week regardless of the rate of pay for the time worked in excess of regular working hours. Work on Sunday and holidays is extra time only when performed by employees whose regular hours per day and per week do not provide for work on those days.

In reply to inquiries concerning overtime and work on Sunday and holidays it was found that in 16 of the 21 refineries covered in the study there was provision for the payment to all or to a specified part of the wage earners in them of a higher rate for either overtime or extra work on Sunday and holidays or for both than for regular working time.

In six refineries there was provision for the payment to all wage earners in them of one and one-half times the regular rate for overtime and also for extra work on Sunday and holidays.

In six refineries there was provision for the payment to all wage earners of the regular rate for overtime and of one and one-half times the regular rate for each hour of extra work on Sunday and holidays.

In one refinery the rate to sugar boilers was one and one-half times the regular rate for overtime and two times the regular rate for extra work on Sunday and holidays, and the rate to all wage earners except sugar boilers was one and one-half times the regular rate for overtime and for extra work on Sunday and holidays.

In one refinery the rate for overtime to wage earners in the mechanical department was the same as for regular working time and for extra work on Sunday and holidays was one and one-half times the regular rate. The rate to all except those in the mechanical department was the same for overtime and for extra work on Sunday and holidays as for regular working time.

In one refinery the rate for overtime and for extra work on Sunday and holidays to mechanics and warehouse workers was one and one-half times the rate for regular working time. The rate for overtime and for extra work on Sunday and holidays to all except mechanics and warehouse workers was the same as for regular working time.

In one refinery the rate for overtime to mechanics was the same as for regular working time and for extra work on Sunday and holidays was one and two-sevenths times the regular rate. The rate for overtime and for extra work on Sunday and holidays to all except mechanics was the same as for regular working time. In five refineries the rate for overtime and for extra work on Sunday and holidays was the same as for regular working time.

BONUS SYSTEMS

A bonus as generally understood is compensation in addition to earnings of wage earners at regular basic time or piece rates. In 11 of the 21 cane-sugar refineries that were included in the study in 1930 there was provision for increasing the earnings of all or of a specified part of the wage earners of each refinery by the addition of certain bonus payments.

Table 5 shows the number of refineries in which there were bonus systems, the kind or basis of each bonus, the wage earners who were entitled to get the bonus, and the amount and conditions of the bonus.

WAGES AND HOURS—CANE-SUGAR REFINING

TABLE 5.—*Bonus system in 11 sugar-cane refineries*

Number of establishments	Kind of bonus	Wage earners entitled	Amount	Conditions
1	Attendance	Females and boys in package department.	2 cents for each hour.....	Perfect attendance in pay period.
1	do.....	All except sugar driers..	10 per cent of earnings at basic rates.	Perfect attendance for 12 weeks.
1	do.....	Laborers, colored.....	\$2 per pay period of 2 weeks. Also \$3 per 6 months.	Perfect attendance for 2 weeks and also for 6 months.
1	Production	Females in small-package department.	15 cents for each two packages over 10 per hour.	Production in excess of 10 packages per hour.
1	do.....	Females in packing department.	Not reported.....	Production in excess of set standard.
1	do.....	Packers of small packages.	15 cents for each package over set standard.	Production in excess of set standard per week.
1	do.....	Packers.....	0.63 cent for each package over set standard limited to 50 packages or 31½ cents per day.	Production in excess of set standard per day.
1	do.....	{Packers in crystal dom- ino department. Trimmers and feeders..	{10 per cent of earnings at basic rates. 5 per cent of earnings at basic rates.	{Production equal to or in excess of set standard.
1	do.....	Packing department and machinists.	Not reported.....	Production in excess of set standard per hour.
1	Safety.....	Truck drivers.....	\$5 per month.....	No accident in month.
1	Service.....	All at 40 cents per hour or less.	5 per cent of earnings in year at basic rates.	In service 60 days or more in year and at end of season in December.
1	do.....	{All at hourly rates..... {All at monthly rates.....	{5 per cent of earnings in year at basic rates. Half of monthly rate.....	{In service at end of calen- dar year.

INDEX NUMBERS OF EMPLOYMENT AND OF PAY ROLLS,
1923 TO 1930

Index numbers of employment and of pay rolls in the cane-sugar refining industry are presented in Table 6 for each month, April, 1923, to December, 1930, and for each of the years 1923 to 1930, inclusive. These numbers were computed from the volume of employment and the amount of the pay rolls for each of the months and years, with the 1926 average taken as the base or 100 per cent, and are as published by the bureau in monthly reports on "Trend of employment" in the United States. The figures in this table are for 16 sugar refineries, while those in the other tables in this report are for 21, or almost the entire industry.

During the period April, 1923, to December, 1930, monthly employment was highest at an index of 128.2 in April, 1923, and lowest at 76.4 in December, 1923. Pay rolls were highest at 123.1 in June, 1924, and lowest at 77.9, in January, 1924. Index numbers of employment by years ranged from 91.1 in 1928 to 106.8 for the 9 months in 1923, and of pay rolls from 94.4 in 1930 to 105.4 in 1924.

TABLE 6.—Index numbers of employment and of pay rolls, April, 1923, to December, 1930, by month and year

[Average for 1926=100]

Month	Employment								Pay-roll totals							
	1923	1924	1925	1926	1927	1928	1929	1930	1923	1924	1925	1926	1927	1928	1929	1930
January	78.4	85.3	98.2	88.8	83.3	90.4	90.6	77.9	86.9	95.0	87.4	86.1	92.8	95.0		
February	110.8	105.0	108.9	90.1	87.7	92.4	89.9	112.3	104.2	109.5	91.7	91.4	95.8	92.0		
March	111.0	112.6	107.3	96.0	89.5	98.1	93.8	110.9	115.3	109.1	95.7	96.9	104.0	100.4		
April	128.2	108.2	108.2	106.0	99.4	92.2	98.1	94.8	118.3	107.6	107.0	106.4	98.8	95.1	105.7	94.0
May	125.1	116.0	111.1	103.1	103.0	86.6	94.4	97.4	120.6	117.4	110.6	105.0	105.4	89.0	102.5	102.8
June	119.0	117.2	109.1	103.8	105.4	85.0	97.5	93.5	116.4	123.1	109.0	104.1	109.2	83.3	103.6	99.4
July	111.0	115.9	110.1	99.6	106.8	95.0	96.4	99.8	103.7	113.3	107.2	97.3	105.6	98.8	97.8	103.6
August	97.0	110.4	107.3	99.8	105.4	95.8	99.2	92.6	92.5	113.3	108.8	100.3	104.8	100.0	104.8	94.8
September	100.9	113.4	105.1	97.5	101.6	93.4	89.5	91.3	101.6	113.6	105.6	94.4	99.6	96.4	92.1	95.5
October	102.7	100.5	102.2	94.3	102.5	96.3	96.8	87.3	106.8	99.9	98.7	98.0	101.8	101.7	103.0	89.0
November	101.4	89.7	98.2	95.0	96.3	95.9	90.8	88.0	99.9	89.5	100.6	91.9	95.1	96.9	90.5	87.1
December	76.4	83.7	98.5	86.1	90.5	92.1	84.2	79.8	81.8	86.5	100.9	88.8	90.1	97.8	89.5	79.2
Average	106.8	104.6	104.5	100.0	98.8	91.1	94.0	91.6	104.6	105.4	104.6	100.0	98.8	94.9	98.5	94.4

¹ For 9 months, April to December.

IMPORTANCE OF CANE-SUGAR REFINING

Table 7 shows for the cane-sugar refining industry in the United States the number of refineries; average number of wage earners; amount paid in wages; cost of fuel, power, and materials; value of products; value added by manufacture or refining; and tons of raw cane sugar melted in 1914, 1919, 1921, 1923, 1925, 1927, and 1929. From these figures, which are from the Census of Manufactures, averages per wage earner of yearly wages, cost of materials, value of products, value added by manufacture, and of tons of cane sugar melted have been computed by the bureau. The per cent that wages were of the value added by manufacture have also been computed and are given in the table.

Average annual wages per wage earner, which were \$695 in 1914, increased to \$1,248 in 1919, and from year to year to \$1,349 in 1925; dropped to \$1,265 in 1927, and then increased to \$1,282 in 1929.

Tons of sugar melted per wage earner were less in 1919 and more in 1925 than in any of the other years in the table.

In 1929 wages were only 26 per cent of the value added by manufacture, as compared with 39 per cent in 1927; 33 per cent in 1925 and 1919; 45 per cent in 1923; 49 per cent in 1921; and 31 per cent in 1914.

TABLE 7.—Number of establishments, wage earners, cost of materials, value of products, value added by manufacture, and meltings in the sugar refining industry, 1914 to 1929

[From the United States Census of Manufactures]

Year	Number of establishments	Average number of wage earners	Wages (in thousands)	Cost of fuel, power, and materials, (in thousands)	Value of products (in thousands)	Value added by manufacture (in thousands)
1914	18	11,253	\$7,823	\$264,085	\$289,399	\$25,313
1919	20	18,202	22,710	662,144	730,987	68,843
1921	20	15,437	19,463	426,601	466,602	40,001
1923	20	15,254	20,044	681,880	726,242	44,361
1925	21	14,502	18,955	549,896	608,633	56,737
1927	21	13,996	17,707	551,594	597,446	45,861
1929	21	13,920	17,850	438,664	607,389	68,726

TABLE 7.—*Number of establishments, wage earners, cost of materials, value of products, value added by manufacture, and meltings in the sugar refining industry, 1914 to 1929—Continued*

Year	Sugar melted, tons (in thousands)	Average annual wages per wage earner	Cost of materials per wage earner	Value of products per wage earner	Value added by manufacture per wage earner	Sugar melted, tons per wage earner	Per cent wages are of value added
1914.....	3,560	\$695	\$23,468	\$25,717	\$2,249	316	31
1919.....	4,298	1,248	36,378	40,160	3,782	236	33
1921.....	3,980	1,259	27,599	30,187	2,588	257	49
1923.....	4,647	1,314	44,702	47,610	2,908	305	45
1925.....	5,726	1,349	37,919	41,831	3,912	395	33
1927.....	5,468	1,265	39,411	42,687	3,276	391	39
1929.....	5,350	1,282	31,513	36,450	4,937	384	28

SCOPE AND METHOD

The wage figures presented in the various tables in this bulletin are limited to the wage earners in cane-sugar refineries in continental United States. In compiling the tables the bureau did not include any wage data for executives, supervisors, chemists, clerks, and persons engaged in the construction of new or the repair of old buildings.

The figures used in the report were collected by a representative of the bureau directly from the pay rolls of each of the 21 refineries that were included in the study of the industry and were for a representative pay period in 1930. The length of the pay period was every week in 16 refineries, every two weeks in 3, and twice each month in 2. Data for each of those with a pay period of more than one week were reduced to a 1-week basis. The bureau here expresses its appreciation of the cooperation and courtesies extended by the officials of all the refineries that were visited by the agent of the bureau.

Average full-time hours per week of wage earners in each occupation were obtained by dividing the aggregate full-time hours of all wage earners in the occupation by the number of wage earners. The full-time hours per week of each wage earner were used in arriving at this average, even though some employees may have worked more or less than full time on account of overtime, sickness, disability, or other cause.

Average earnings per hour of wage earners in each occupation in the various tables in this report were computed by dividing the combined earnings of all wage earners in the occupation by the total hours worked by them.

Average full-time earnings per week of wage earners in each occupation were computed by multiplying the average earnings per hour by the average full-time hours per week. This shows what the earnings would have been had all wage earners in the occupation worked full time, no more nor less, at the same average earnings per hour as in the one week covered in the 1930 study of the industry.

BRIEF DESCRIPTION OF CANE-SUGAR REFINING AND DEFINITIONS OF OCCUPATIONS

The occupations for which data are presented in this bulletin are arranged below as nearly as possible in order of process or operation. In the description of refining each of these occupations is italicized.

Minglers.	Granulators.
Centrifugal tenders.	Packers.
Melters.	Weighers and checkers.
Blow-up tankmen.	Pumpmen, all departments.
Filter pressmen.	Laborers, all departments.
Char-house laborers.	Oilers, all departments.
Char-kiln firemen.	Boilermakers.
Liquor runners.	Electricians.
Evaporator tenders.	Elevator men, all departments.
Tankmen.	Pipe fitters.
Sugar boilers.	Other employees.
Crystalizers and mixers.	

Receiving at refineries.—About 97 per cent of the cane sugar refined in the United States comes from without the continental area of of the country. It is carried by ships from the islands on which it is produced and delivered to the docks of the refineries. The sugar is in jute bags; the weight per bag, if from Hawaii, Porto Rico, and the Philippine Islands, is from 100 to 140 pounds, and from 300 to 325 pounds if from Cuba.

The bags of raw sugar are unloaded from the ships by cranes to the docks of the refineries and weighed. Samples are taken from the bags for the purpose of determining the grade or purity of the sugar by the polariscope test. Raw cane sugar grading 96 degrees by this test is the commercial standard. One hundred pounds of standard raw sugar contains 96 pounds of pure sugar, 1 pound of moisture, and 3 pounds of impurities and foreign substance. After being weighed and sampled the bags are moved, by mechanical conveyors, slings hung from traveling cranes, or trucks, from the docks to the refinery warehouse or to the melt house where the sugar is emptied from the bags, mixed with liquid, washed, and melted. Raw sugar is refined to remove the moisture, impurities, and color.

The various occupational terms found in this department or division of the refineries are cranemen, longshoremen, weighers, samplers, conveyor men, truckers, *laborers*, pilers, warehousemen, sweepers, and inspectors.

Emptying bags and mixing with liquor.—From the docks or the refinery warehouse the raw sugar is transferred to the melt house, and as the bags arrive in the house they are opened and emptied into a hopper. The sugar passes from the hopper to the mingler or vat trough between pronged (*meisching*) rolls which crush any lumps which may have formed while the sugar was in the bags. As the sugar enters the mingler it is sprayed with a gaged stream of "affination liquor," sweetened water, or molasses, and thoroughly mixed, making a thick liquid mass called "magma." This liquid is added to dissolve a thin film of sirup or molasses which covers each crystal of raw sugar, and also that the sugar may flow freely from the mingler to centrifugal separators. This thin film of molasses contains most of the impurities in raw sugar. The various occupational terms found in this department or division of the refineries are cutters, cutters-in, dumpers, *minglers*, grating men, conveyor men, *oilers*, and trolley-men.

The empty sugar bags, after being shaken to obtain from them as much sugar as possible, are sent to the bag laundry and repair department where they are washed or brushed to recover the sugar that still adheres when the bags are emptied and shaken. The bags are then used again for packing refined sugar or sold for bagging for cotton bales and for other usage. In a refinery in which 2,500 tons of raw sugar is refined per day, approximately 12,500 pounds of sugar is recovered each day from empty bags. The various occupational terms found in the bag laundry and repair department of the refineries are bag washers, brushers, hangers, dryers, turners, sorters, menders, makers, sewers, liners, and trimmers.

Washing or purifying.—The centrifugal separators or washing machines run at a speed of from 100 to 1,200 revolutions per minute. The revolutions cause the "magma" in them to rise against the inside screen or wall of the separators and also force the "affination liquor" or other liquid, which was mixed with the raw sugar in the mingler, through the perforations or screen of the machine. The impurities and any adhering liquor or molasses are then almost entirely washed from the sugar crystals by a timed and measured spray of water, thrown against the wall of sugar while the machine is still in operation. This leaves the sugar approximately 99 per cent pure and almost white. Other operations are necessary to further reduce the impurities until the sugar is almost 100 per cent pure. As the machine stops revolving, the washed and crystallized sugar is removed from the centrifugal separators by hand or automatic scraper, dropping it through the bottom of the machine, and then conveyed to the melter pans. The various occupational terms found in this department of the refineries are centrifugal engineers, *centrifugal tenders*, *oilers*, mechanics, *laborers*, helpers, sweepers, belt men, and water tenders.

The water used in washing the sugar in the centrifugals, with the impurities therein, is now a sirup and is called "affination liquor." This liquor is drawn from the machine and part of it returned to the mingler to be mixed with other incoming raw sugar, while the remainder is transferred to low-grade remelt pans for the recovery of the sugar that was dissolved by washing.

Melting.—The sugar, after being washed and purified in the centrifugal separators, is conveyed to the melter pans where it is dissolved and changed by steam and hot water to sirup or liquor called "massacuite." Sugar melts at 160° F. While the sugar is being melted, it is agitated or stirred by machinery, and milk of lime is added to correct acidity. The sirup is then pumped from the melter pans in the melt house to the defecators or "blow-up" tanks. The various occupational terms found in this department of the refineries are *melters*, *laborers*, sweepers, and *pump men*.

Filtering.—After the sirup is delivered to the defecators or "blow-up" tanks, it is heated by steam coils in the tanks to, and kept at, a temperature of 180 to 185 degrees. This temperature decreases the glutinous thickness of the sirup. Milk of lime as well as filter aid in the form of kieselgur (diatomaceous earth), paper pulp, or phosphoric-acid paste are added to the sirup. These are thoroughly agitated and mixed by jets of compressed air forced through perforated pipes, around the bottom of the tanks, and up through the mixture in the tanks.

In forcing the sirup or liquor from the tanks through the filter presses, the kieselghur or the paper pulp forms a porous coating against the screens or filter cloths of the filters and assists materially in removing insoluble impurities from the liquor as it passes through the screens. Phosphoric acid precipitates the impurities, causing them to float off in the scum of the surface of the liquid in the filtration tanks by the heating and flotation process.

The liquor leaves the filter presses practically free of insoluble impurities and passes through the liquor gallery for grading and passage to the bone-char filtration tanks. These tanks are cylindrical, 25 feet deep and 10 feet in diameter, and filled with screened bone charcoal. The charcoal is made from bones of animals, the bones having been thoroughly cleaned and purified by chemical treatment and then ground into small pieces. The liquor enters at the top of the tanks and flows slowly down through the charcoal, which absorbs all soluble impurities and coloring matter, resulting in nearly 100 per cent pure, colorless, liquid sugar.

The various occupational terms found in this department of the refineries are *pump men*, defecators or *blow-up tank men*, sweepers, helpers, *laborers*, lime watermen, and kieselghurmen, *filter pressmen*, press operators, press laborers, press cleaners, water tenders, sweepers, blanket sewers, menders, mud cartmen, truckers, kieselghur regenerators, mechanics, *char-house laborers*, *char-kiln firemen*, *pump men*, *liquor runners*, liquor galley men, swivel men, fillers, emptiers, cleaners, washers, dryers, filter top men, dust sackers, conveyor men, wet belt men, helpers, and *oilers*.

Crystallizing.—The liquor from the char fillers is run into vacuum pans or boilers where by boiling under vacuum at low temperature the surplus moisture is driven off or evaporated. This causes crystallization which is hastened by adding dry sugar crystals at certain stages of density or concentration of the liquor. On the completion of crystallization the contents (*magma*) of the pans or boilers, consisting of sugar and molasses, are dropped from the bottom of the vacuum pans to a vat which is called a mixer, and slowly agitated to prevent setting and to blend different shades of color while being conveyed to centrifugal machines. These machines, by revolving motions, spin off the molasses, leaving the white sugar crystals on the wall of the machine. The crystals are then washed by a spray of distilled water, while the machine is still in operation, and also partially dried. The various occupational terms found in this department of refineries are *evaporator tenders*, *tank men*, *sugar boilers*, helpers, pan droppers, *laborers*, sweepers, *crystallizers*, *mixers*, *centrifugal tenders*, belt men, and repair men.

Drying, finishing, and sorting.—The partially dried sugar crystals are conveyed from the centrifugal machines to the driers or granulators, consisting of long cylindrical tubes or series of tubes 4 to 6 feet in diameter. The sugar crystals in passing through the tubes are agitated and thoroughly dried, by means of a current of hot air which absorbs the moisture in the sugar. The last section of the tube may or may not be equipped with screens for the purpose of sorting the crystals by sizes—coarse, medium, and fine granulated sugar. Sugar in all refineries is sorted.

Powdered sugar is made by running the granulated crystals through grinders or mills. Other specialties of different shapes, such as cube, loaf, etc., are also made. One shape (cube) is made from refined white granulated sugar dampened with sirup and pressed in special revolving presses. Another is made by running the sirup from a special vacuum pan into a mold, then centrifuged, dried in slabs, and baked, after which the slabs are sawed crosswise and split into domino shape. The various kinds of sugar are then ready for transfer to the packing room to be placed in containers for shipment. The various occupational terms found in this department of the refineries are wet-sugar bin men, *granulators*, driers, *laborers*, sweepers, hummer-screen tenders, bolters, powder millers and helpers, *sugar boilers*, oven men, pressmen, truckers, conveyor men, mold men, *centrifugal tenders*, crane men, *packers*, sawyers, choppers.

Packing in containers.—Each of the many different grades of refined sugar is packed in various types and sizes of containers—barrels of about 300 pounds capacity, bags of 1 to 100 pounds, and cardboard boxes of 1 to 10 pounds. The sugar is fed into the containers from overhead spouts leading from storage bins, the spouts usually being equipped with automatic weighing and dumping devices. The container while being filled is also on a scale or passes over one later for checkweighing. To insure an even standard of packing, barrels and large bags, while being filled, are placed on platforms equipped with automatic jolting devices. The machines used in filling small cartons also have devices to shake the sugar down into the packages. Barrels, cartons, and most of the large bags are lined with paper or light cotton cloth to prevent leakage. After the containers have been filled, the barrels are headed by coopers, the open end or tops of bags are closed by semiautomatic sewing machines, and the tops of cardboard boxes are glued and sealed. The filled containers are then moved by mechanical conveyors, or hand or power trucks, to the shipping room or to cars for shipment from the refinery. The various occupational terms found in this department of the refineries are *packers*, *weighers*, gluers, conveyor men, carton-machine operators, filling-machine tenders, mechanics, sewing-machine operators, *laborers*, bag-closers, sweepers, liners, turners, coopers, trimmers, truckers, shippers, and talley men.

Boilermakers repair boilers, tanks, and other sheet-metal work.

Electricians do electrical repair and installation work in all departments.

Elevator men operate freight and passenger elevators in all departments.

Pipe fitters, including plumbers and steam fitters, install and repair all pipes for steam, water, and transfer of melted or liquid sugar.

"*Other employees*" include all wage earners in those occupations in the cane-sugar refining industry in which there was an insufficient number of employees to warrant publishing wage figures for any one occupation.

GENERAL TABLES

In addition to the preceding text tables, data as to days, hours, and earnings of wage earners by occupations and districts, are presented in three general tables as follows:

TABLE A.—Average number of days on which employees worked, average full-time, and actual hours and earnings per week, average earnings per hour, and per cent of full time worked, 1930, by occupation, sex, and district.

The purpose of this table is to show all of the various averages that have been computed for the wage earners in each occupation in each district; for wage earners in all occupations combined in each district; and also for all districts or the industry. The presentation of "Average full-time hours per week," "Average hours actually worked in one week," and the "Per cent of full time worked" make easy the comparison of the figures as to hours, one district with another. "Average full-time earnings per week" and "Average actual earnings in one week" are given in the last two columns of the table. One column shows the average amount that each employee would have earned in one week had all employees in an occupation, a district, or the industry worked full time at the same average earnings per hour as was earned in the hours actually worked in the one week covered by the study. The other column shows the amount actually earned in the one week.

The figures for the 286 centrifugal tenders, male, in 8 refineries in district 1, the second occupation in the table, are here given in explanation of the table. The days on which they worked in one week averaged 5.4. (Any part of a day was counted a day.) Their full-time hours per week averaged 68.1, but they actually worked 58.7 hours in one week, or 86.2 per cent of full time. They earned an average of 49.1 cents per hour, or \$28.82 in one week. Had they worked the full time of 68.1 hours in the week at 49.1 cents per hour, the same as was earned in the 58.7 hours actually worked in the week, they would have earned an average of \$33.44. The 841 employees in this occupation in the 21 refineries covered in this report in all districts averaged 5.6 days in one week. Their full-time hours averaged 60.6 per week; they actually worked 56.1 hours in one week, or 92.6 per cent of full time. They earned an average of 46.3 cents per hour, or \$25.97 in one week, and had they worked full time at the same average per hour as was earned in the 56.1 hours they would have earned an average of \$28.06 in one week. For like averages for males and females separately and for both sexes combined in all occupations see end of the table, page 18.

TABLE B.—Average and classified earnings per hour in 23 specified occupations, 1930, by sex and district.

TABLE C.—Average and classified full-time hours per week in 23 specified occupations, 1930, by sex and district.

TABLE A.—Average number of days on which employees worked, average full-time and actual hours and earnings per week, average earnings per hour, and per cent of full time worked, 1930, by occupation, sex, and district

[District 1.—Massachusetts, New York, and New Jersey. District 2.—Pennsylvania and Maryland. District 3.—Georgia, Louisiana, and Texas. District 4.—California]

Occupation, sex, and district	Number of establishments	Number of employees	Average days on which employees worked in week	Average full-time hours per week	Average hours actually worked in week	Per cent of full time worked	Average earnings per hour	Average full-time earnings per week	Average actual earnings in week
Minglers, male:									
District 1.....	7	16	5.6	68.3	60.0	87.8	\$0.497	\$33.95	\$29.81
District 2.....	4	9	6.1	60.0	61.5	102.5	.478	28.68	29.41
District 3.....	6	14	5.6	60.0	54.9	91.5	.238	14.28	13.04
District 4.....	2	10	5.7	48.0	45.6	95.0	.578	27.74	26.35
Total.....	19	49	5.7	60.2	55.9	92.9	.434	26.13	24.24
Centrifugal tenders, male:									
District 1.....	8	286	5.4	68.1	58.7	86.2	.491	33.44	28.82
District 2.....	4	177	5.9	60.5	59.9	99.0	.475	28.74	28.46
District 3.....	7	238	5.6	59.1	54.5	92.2	.946	20.45	18.87
District 4.....	2	140	6.0	48.0	48.6	101.3	.597	28.66	29.04
Total.....	21	841	5.6	60.6	56.1	92.6	.463	28.06	25.97
Melters, male:									
District 1.....	8	35	5.0	69.6	55.2	79.3	.500	34.80	27.63
District 2.....	4	19	6.2	62.8	65.9	104.9	.490	30.77	32.29
District 3.....	7	25	5.5	62.9	55.6	88.4	.291	18.30	16.17
District 4.....	2	15	6.0	48.0	48.1	100.2	.631	30.29	30.33
Total.....	21	94	5.5	63.0	56.3	89.4	.461	29.04	25.95
Pumpmen, male:									
District 1.....	8	39	5.6	67.5	63.7	94.4	.513	34.63	32.68
District 2.....	3	15	6.2	62.4	64.7	103.7	.499	31.14	32.25
District 3.....	6	25	6.0	64.2	62.5	97.4	.276	17.72	17.25
District 4.....	2	11	5.9	50.2	47.3	94.2	.592	29.72	27.99
Total.....	19	90	5.8	63.6	61.5	95.7	.451	28.63	27.75
Blow-up tankmen, male:									
District 1.....	8	28	5.5	70.1	61.8	88.2	.503	35.26	31.06
District 2.....	4	11	6.2	60.0	62.6	104.3	.499	29.94	31.21
District 3.....	7	27	5.6	62.9	57.1	90.8	.292	18.37	16.65
District 4.....	2	11	6.3	48.0	50.2	104.6	.614	29.47	30.82
Total.....	21	77	5.7	64.3	58.6	91.1	.444	28.55	26.00
Filter pressmen, male:									
District 1.....	8	110	5.5	67.9	60.8	89.5	.495	33.61	30.10
District 2.....	4	40	6.1	59.7	62.1	104.0	.470	28.06	29.21
District 3.....	7	77	5.8	61.6	58.5	95.0	.301	18.54	17.61
District 4.....	2	41	6.2	48.0	50.1	104.1	.626	30.05	31.32
Total.....	21	268	5.8	61.8	58.7	95.0	.453	28.00	26.57
Char-house laborers, male:									
District 1.....	8	183	5.5	66.8	60.1	90.0	.492	32.87	29.55
District 2.....	4	131	5.7	64.2	61.5	95.8	.474	30.43	29.16
District 3.....	7	127	5.9	60.9	59.5	97.7	.268	16.32	15.92
District 4.....	2	66	5.8	48.0	47.1	98.1	.604	28.99	28.44
Total.....	21	507	5.7	62.2	58.6	94.2	.442	27.49	25.89
Char-kiln firemen, male:									
District 1.....	8	58	5.7	67.5	63.9	94.7	.525	35.44	33.54
District 2.....	4	39	6.0	62.2	61.7	99.2	.484	30.10	29.86
District 3.....	7	23	6.3	60.5	61.7	102.0	.371	22.45	22.86
District 4.....	2	18	6.1	48.0	48.5	101.0	.655	31.44	31.81
Total.....	21	138	6.0	62.3	60.9	97.8	.500	31.15	30.49
Liquor runners, male:									
District 1.....	8	36	5.6	63.6	61.2	96.2	.530	33.71	32.43
District 2.....	4	14	6.4	58.3	63.1	108.2	.503	29.32	31.71
District 3.....	7	16	6.2	63.0	63.5	100.8	.401	25.26	25.45
District 4.....	2	13	6.3	48.0	50.5	105.2	.758	36.38	38.25
Total.....	21	79	6.0	60.0	60.2	100.3	.529	31.74	31.85

TABLE A.—Average number of days on which employees worked, average full-time and actual hours and earnings per week, average earnings per hour, and per cent of full time worked, 1930, by occupation, sex, and district—Continued

Occupation, sex, and district	Number of establishments	Number of employees	Average days on which employees worked in week	Average full time hours per week	Average hours actually worked in week	Per cent of full-time worked	Average earnings per hour	Average full-time earnings per week	Average actual earnings in week
Evaporator tenders, male:									
District 1.....	8	26	6.0	60.2	60.3	100.2	\$0.592	\$35.64	\$35.72
District 2.....	4	17	6.4	59.3	63.9	107.8	.533	31.61	34.06
District 3.....	6	17	6.4	59.3	61.4	103.5	.407	24.14	24.98
District 4.....	2	5	6.0	48.0	48.0	100.0	.688	33.00	33.00
Total.....	20	65	6.2	58.8	60.6	103.1	.530	31.16	32.11
Tankmen, male:									
District 1.....	7	58	5.9	60.1	64.0	92.6	.500	34.55	32.01
District 2.....	3	9	5.9	61.3	60.7	99.0	.480	29.42	29.15
District 3.....	7	29	5.7	60.6	57.0	94.1	.280	16.97	15.99
District 4.....	2	22	6.0	48.0	47.8	99.6	.595	28.56	28.44
Total.....	19	118	5.8	62.5	59.0	94.4	.461	28.81	27.19
Sugar boilers, male:									
District 1.....	8	98	6.0	56.0	56.3	100.5	.695	38.92	39.18
District 2.....	4	51	5.7	51.8	50.4	97.3	.722	37.44	36.37
District 3.....	7	49	6.1	53.5	54.5	101.9	.594	31.78	32.38
District 4.....	2	27	6.1	48.0	48.6	101.3	.835	40.06	40.53
Total.....	21	225	6.0	53.5	53.7	100.4	.694	37.13	37.22
Crystallizers and mixers, male:									
District 1.....	8	33	5.4	67.3	69.4	88.3	.511	34.39	30.34
District 2.....	4	26	6.0	63.7	63.0	98.9	.485	30.89	30.58
District 3.....	7	37	5.5	60.8	54.6	89.8	.304	18.48	16.62
District 4.....	2	12	6.4	48.0	51.4	107.1	.607	29.14	31.19
Total.....	21	108	5.7	62.1	57.7	92.9	.447	27.76	26.79
Granulators, male:									
District 1.....	8	27	5.6	60.0	61.6	89.3	.499	34.43	30.71
District 2.....	4	11	6.4	62.2	66.8	107.4	.491	30.54	32.78
District 3.....	7	20	5.7	60.3	55.2	91.5	.366	22.07	20.22
District 4.....	2	10	6.3	48.0	50.4	105.0	.606	29.09	30.56
Total.....	21	68	5.9	62.3	58.9	94.5	.474	29.63	27.94
Packers, male:									
District 1.....	8	578	5.2	63.5	62.8	83.1	.484	30.73	25.55
District 2.....	4	251	5.7	63.4	62.2	98.1	.446	28.28	27.71
District 3.....	7	280	5.4	61.7	55.0	89.1	.264	15.67	13.97
District 4.....	2	214	6.1	48.0	49.3	102.7	.573	27.60	28.24
Total.....	21	1,323	5.5	60.8	54.5	89.9	.440	26.66	23.94
Packers, female:									
District 1.....	7	284	4.7	49.3	38.6	78.3	.359	17.70	13.86
District 2.....	4	178	5.6	53.6	48.5	91.0	.268	13.68	12.66
District 3.....	5	232	6.1	51.6	41.1	79.7	.186	9.56	7.62
District 4.....	2	86	5.1	48.0	40.7	84.8	.426	20.40	17.28
Total.....	18	780	6.0	50.8	41.9	82.5	.289	14.66	12.11
Weighers and checkers, male:									
District 1.....	8	163	5.8	69.6	57.2	86.0	.448	26.70	31.38
District 2.....	4	71	5.9	58.2	60.3	103.6	.523	30.44	31.50
District 3.....	7	82	6.5	62.5	57.2	91.5	.327	20.44	18.68
District 4.....	2	39	6.2	48.0	49.3	102.7	.678	32.54	33.41
Total.....	21	355	6.8	58.7	57.0	97.1	.504	29.58	28.70
Oilers, male:									
District 1.....	8	75	6.1	64.9	64.8	99.8	.555	36.02	35.99
District 2.....	4	42	6.5	62.6	67.4	107.7	.508	31.86	34.36
District 3.....	7	53	6.6	66.1	67.7	104.0	.510	20.18	20.95
District 4.....	2	18	6.2	48.0	49.3	102.7	.672	32.26	33.12
Total.....	21	188	6.3	63.2	66.1	103.0	.477	30.15	31.06

TABLE A.—Average number of days on which employees worked, average full-time and actual hours and earnings per week, average earnings per hour, and per cent of full time worked, 1930, by occupation, sex, and district—Continued

Occupation, sex, and district	Number of establishments	Number of employees	Average days on which employees worked in week	Average full time hours per week	Average hours actually worked in week	Per cent of full-time worked	Average earnings per hour	Average full-time earnings per week	Average actual earnings in week
Laborers, male:									
District 1.....	8	1,553	5.4	61.5	53.6	87.2	\$0.479	\$29.46	\$25.67
District 2.....	4	678	5.8	61.6	60.0	97.4	.445	27.41	26.70
District 3.....	7	1,254	5.0	61.4	50.0	81.4	.243	14.92	12.17
District 4.....	2	471	6.0	48.0	48.3	100.6	.580	27.84	28.03
Total.....	21	3,956	5.4	59.9	52.9	88.3	.413	24.74	21.85
Beller makers, male:									
District 1.....	8	11	5.6	54.5	51.6	94.7	.652	35.53	33.67
District 2.....	3	7	6.3	57.0	63.8	111.9	.599	34.14	38.21
District 3.....	2	4	6.8	55.5	59.0	106.3	.532	29.53	31.38
District 4.....	2	15	5.5	46.1	46.1	100.0	.812	37.43	37.43
Total.....	10	37	5.8	51.7	52.5	101.5	.682	35.26	35.80
Electricians, male:									
District 1.....	4	58	6.1	57.9	60.5	104.5	.670	38.79	40.53
District 2.....	4	33	6.6	55.6	63.5	114.2	.680	37.81	43.18
District 3.....	6	26	6.5	58.2	62.6	107.6	.482	28.05	30.15
District 4.....	2	28	6.0	48.0	48.6	101.0	.797	38.26	38.66
Total.....	20	145	6.3	55.5	59.2	106.7	.667	36.46	38.91
Elevator men, male:									
District 1.....	8	27	5.9	62.9	61.5	97.8	.600	31.45	30.76
District 2.....	4	21	6.5	61.7	67.2	108.9	.473	29.18	31.81
District 3.....	4	10	5.6	57.6	53.9	93.6	.313	18.03	16.89
District 4.....	2	11	6.2	48.0	50.5	105.2	.618	24.86	26.17
Total.....	18	69	6.1	59.4	60.4	101.7	.469	27.86	28.34
Pipe fitters, male:									
District 1.....	7	37	5.8	53.5	51.4	96.1	.699	37.40	35.96
District 2.....	4	23	5.9	55.8	53.1	95.2	.636	35.49	33.73
District 3.....	6	18	6.3	54.7	54.8	100.2	.605	27.62	27.68
District 4.....	2	21	6.2	46.9	49.6	105.5	.779	36.54	38.57
Total.....	19	99	6.0	52.9	52.0	98.3	.663	35.07	34.49
Other employees, male:									
District 1.....	8	979	5.8	57.3	55.0	96.0	.599	34.32	32.94
District 2.....	4	320	6.2	57.1	59.8	104.7	.668	32.43	33.96
District 3.....	7	531	6.0	57.5	55.3	96.2	.587	22.25	21.40
District 4.....	2	303	6.0	47.1	47.6	101.1	.728	34.29	34.63
Total.....	21	2,133	5.9	55.9	54.8	98.0	.556	31.06	30.46
Other employees, female:									
District 1.....	6	26	5.6	49.2	47.3	96.1	.385	18.94	18.22
District 2.....	2	5	5.0	52.4	45.0	85.9	.364	19.07	16.38
District 3.....	5	42	5.5	67.6	59.1	87.4	.214	14.47	12.66
District 4.....	1	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Total.....	14	83	5.5	58.5	53.1	90.8	.290	16.97	15.38
All occupations, male:									
District 1.....	4	4,514	5.5	61.8	55.7	90.1	.524	32.38	29.17
District 2.....	4	2,015	5.9	60.6	60.6	100.0	.490	25.74	29.74
District 3.....	7	2,982	5.5	60.4	53.8	89.1	.303	18.30	16.27
District 4.....	2	1,516	6.0	47.8	48.4	101.3	.633	30.26	30.63
Total.....	21	11,027	5.7	59.3	55.1	92.9	.472	27.99	26.96
All occupations, female:									
District 1.....	7	310	4.8	49.3	39.3	79.7	.362	17.85	14.22
District 2.....	4	183	5.4	53.6	48.7	90.9	.262	14.04	12.76
District 3.....	6	274	5.1	54.0	43.8	81.1	.191	10.31	8.39
District 4.....	2	96	5.2	48.0	41.3	86.0	.422	20.26	17.44
Total.....	19	863	5.1	51.5	43.0	83.5	.289	14.88	12.43
All occupations, male and female:									
District 1.....	8	4,824	5.5	61.0	54.6	89.5	.516	31.45	28.21
District 2.....	4	2,198	5.9	60.0	59.6	99.3	.475	28.50	28.33
District 3.....	7	3,256	5.4	59.9	52.9	88.3	.266	17.67	15.61
District 4.....	2	1,612	6.0	47.8	48.0	100.4	.622	29.73	29.85
Total.....	21	11,890	5.6	58.7	54.2	92.3	.461	27.06	26.09

¹ Data included in total.

WAGES AND HOURS—CANE-SUGAR REFINING

TABLE C.—Average and classified full-time hours per week in 23 specified occupations, 1930, by sex and district

(District 1.—Massachusetts, New York, and New Jersey. District 2.—Pennsylvania and Maryland. District 3.—Georgia, Louisiana, and Texas. District 4.—California)

Occupation, sex, and district	Number of—		Average full-time hours per week	Number of employees whose full-time hours per week were—										
	Establishments	Wage earners		44	48	Over 48 and under 54	54	Over 54 and under 60	60	Over 60 and under 66	66	Over 66 and under 72	72	Over 72
Minglers, male:														
District 1.....	7	16	68.3						2		4	4		6
District 2.....	4	9	60.0		3				2		2			2
District 3.....	6	14	60.0		6						4			4
District 4.....	2	10	48.0		10									
Total.....	19	49	60.2		19				4		10	4		12
Centrifugal tenders, male:														
District 1.....	8	289	68.1						58			144		84
District 2.....	4	177	60.5		63				44					70
District 3.....	7	238	59.1		106						86			46
District 4.....	2	140	48.0		140									
Total.....	21	844	60.6		309				102		88	144		200
Melters, male:														
District 1.....	8	35	69.6						5			8		22
District 2.....	4	19	62.8		4				2		9			4
District 3.....	7	25	62.9		9						2			14
District 4.....	2	15	48.0		15									
Total.....	21	94	63.0		28				7		11	8		40
Pumpmen, male:														
District 1.....	8	39	67.5		3				2		4	19		11
District 2.....	3	15	62.4		3				6					6
District 3.....	6	25	64.2		7				1		2			15
District 4.....	2	11	50.2		8				3					
Total.....	19	90	63.6		21				4	8	6	19		32
Blow-up tankmen, male:														
District 1.....	8	28	70.1						3			6		19
District 2.....	4	11	60.0		3				4		2			2
District 3.....	7	27	62.9		8						9			10
District 4.....	2	11	48.0		11									
Total.....	21	77	64.3		22				7		11	6		31
Filter pressmen, male:														
District 1.....	8	110	67.9		6				6			30		18
District 2.....	4	40	59.7		14				10		6			10
District 3.....	7	77	61.6		13		20				21			23
District 4.....	2	41	48.0		41									
Total.....	21	268	61.8		74		20		16		27	30		51
Char-house laborers, male:														
District 1.....	8	183	66.8						44		46	51		42
District 2.....	4	131	64.2		19				32		31			49
District 3.....	7	127	60.9		51						31			45
District 4.....	2	66	48.0		66									
Total.....	21	507	62.2		136				76		108	51		136
Char-kiln firemen, male:														
District 1.....	8	58	67.5		7				1		3	21		26
District 2.....	4	39	62.2		11				10					18
District 3.....	7	23	60.5		9				3					11
District 4.....	2	18	48.0		18									
Total.....	21	138	62.3		45				3	11	3	21		55

TABLE C.—Average and classified full-time hours per week in 23 specified occupations, 1930, by sex and district—Continued

Occupation, sex, and district	Number of—		Average full-time hours per week	Number of employees whose full-time hours per week were—										
	Establishments	Wage earners		44	48	Over 48 and under 54	54	Over 54 and under 60	60	Over 60 and under 66	66	Over 66 and under 72	72	Over 72
Liquor runners, male:														
District 1.....	8	36	63.6		12							5	19	
District 2.....	4	14	58.3		6				4				4	
District 3.....	7	16	63.0		6								10	
District 4.....	2	13	48.0		13									
Total.....	21	79	60.0		37				4			5	33	
Evaporator tenders, male:														
District 1.....	8	26	60.2		12							6	8	
District 2.....	4	17	59.3		9								8	
District 3.....	6	17	59.3		9								8	
District 4.....	2	5	48.0		5									
Total.....	20	65	58.8		35							6	24	
Tankmen, male:														
District 1.....	7	58	69.1		3						6	20	29	
District 2.....	3	9	61.3		3				2				4	
District 3.....	7	29	60.6		12						5	4	8	
District 4.....	2	22	48.0		22									
Total.....	19	118	62.5		40				2		11	24	41	
Sugar boilers, male:														
District 1.....	8	96	56.0		64							10	24	
District 2.....	4	51	51.8		43								8	
District 3.....	7	49	53.5		37	1							11	
District 4.....	2	27	48.0		27									
Total.....	21	225	53.5		171	1						10	43	
Crystallizers and mixers, male:														
District 1.....	8	33	67.3		3				2		8	4	16	
District 2.....	4	26	63.7		8				2				16	
District 3.....	7	37	60.8		14						13		10	
District 4.....	2	12	48.0		12									
Total.....	21	108	62.1		37				4		21	4	42	
Granulators, male:														
District 1.....	8	27	69.0						4		3	5	15	
District 2.....	4	11	62.2		3				2		2		4	
District 3.....	7	20	60.3		8				2		3		7	
District 4.....	2	10	48.0		10									
Total.....	21	68	62.3		21				8		8	5	26	
Packers, male:														
District 1.....	8	578	63.5		41		34	13	94		266	130		
District 2.....	4	251	63.4				51		47		114		39	
District 3.....	7	290	61.7				100		34		114		32	
District 4.....	2	214	48.0		214									
Total.....	21	1,323	60.6		255		185	13	175		494	130	71	
Packers, female:														
District 1.....	7	284	49.3		82	262								
District 2.....	4	178	53.6			17	161							
District 3.....	5	232	51.6		136		82						14	
District 4.....	2	86	48.0		86									
Total.....	18	780	50.8		364	219	243						14	
Weighers and checkers, male:														
District 1.....	8	163	59.6	9	22	11		3	59	11	9	34	4	1
District 2.....	4	71	58.2			15	22		10		22		2	
District 3.....	7	82	62.5		3		26		10		12	16	15	
District 4.....	2	39	48.0		39									
Total.....	21	355	58.7	9	64	26	48	3	79	11	43	50	21	1

WAGES AND HOURS—CANE-SUGAR REFINING

TABLE C.—Average and classified full-time hours per week in 23 specified occupations, 1930, by sex and district—Continued

Occupation, sex, and district	Number of—		Average full-time hours per week	Number of employees whose full-time hours per week were—										
	Establishments	Wage earners		44	48	Over 48 and under 54	54	Over 54 and under 60	60	Over 60 and under 66	66	Over 66 and under 72	72	Over 72
Oilers, male:														
District 1.....	8	75	64.9		15		2	1	1	1	17		38	
District 2.....	4	42	62.6		6		2		18				16	
District 3.....	7	53	65.1		12			10					24	7
District 4.....	2	13	48.0		13									
Total.....	21	183	63.2		46		4	11	19	1	17		78	7
Laborers, male:														
District 1.....	8	1,553	61.5		148		95	10	620	121	283	247	29	
District 2.....	4	678	61.0		6		142	9	249		200		72	
District 3.....	7	1,254	61.4		35		414		149		530	16	110	
District 4.....	2	471	48.0		471									
Total.....	21	3,956	59.9		660		651	19	1,018	121	1,013	263	211	
Boiler makers, male:														
District 1.....	3	11	54.5			8			3					
District 2.....	3	7	57.0			3	1		3					
District 3.....	2	4	55.5				3							
District 4.....	2	15	46.1	7	8				1					
Total.....	10	37	51.7	7	8	11	4		4	3				
Electricians, male:														
District 1.....	8	58	57.9		15	16	6		4				17	
District 2.....	4	33	55.6		3		18		12					
District 3.....	6	28	58.2		9		6		2		2		7	
District 4.....	2	28	48.0		28									
Total.....	20	145	55.5		55	16	30		18		2		24	
Elevator men, male:														
District 1.....	8	27	62.9		3		3		4	1	9	3	4	
District 2.....	4	21	61.7		6	1	2				1	2	9	
District 3.....	4	10	57.6		4		2		1				3	
District 4.....	2	11	48.0		11									
Total.....	18	69	59.4		24	1	7		5	1	10	5	16	
Pipe fitters, male:														
District 1.....	7	37	53.5		5	19	5		8					
District 2.....	4	23	55.8				16		7					
District 3.....	6	18	54.7		9		3	1	2				3	
District 4.....	2	21	46.9	6	15									
Total.....	19	99	52.9	6	29	19	24	1	17				3	
Other employees, male:														
District 1.....	8	979	57.3	7	114	246	124		319	4	70	39	56	
District 2.....	4	320	57.1	4	22	39	122	3	75	6	15		32	2
District 3.....	7	531	57.5		124		179	6	88	2	53		79	
District 4.....	2	303	47.1	66	237									
Total.....	21	2,133	55.9	77	497	285	425	9	482	12	138	39	167	2
Other employees, female:														
District 1.....	6	26	49.2		8	18								
District 2.....	2	5	52.4			2	3							
District 3.....	5	42	67.6		6		2				1		33	
District 4.....	1	(¹)	(¹)		(¹)									
Total.....	14	83	58.5		24	20	5				1		33	

¹ Data included in total.

GENERAL TABLES

TABLE C.—Average and classified full-time hours per week in 23 specified occupations, 1930, by sex and district—Continued

Occupation, sex, and district	Number of—		Average full-time hours per week	Number of employees whose full-time hours per week were—										
	Establishments	Wage earners		44	48	Over 48 and under 54	54	Over 54 and under 60	60	Over 60 and under 66	66	Over 66 and under 72	72	Over 72
All occupations, male:														
District 1.....	8	4,514	61.8	16	473	300	269	28	1238	138	728	836	487	1
District 2.....	4	2,015	60.6	4	235	58	376	12	538	9	404	2	375	2
District 3.....	7	2,982	60.4		491		754	21	289	2	887	36	495	7
District 4.....	2	1,516	47.8	79	1434			3						
Total.....	21	11,027	59.3	99	2,633	358	1,399	64	2,065	149	2,019	874	1,357	10
All occupations, female:														
District 1.....	7	310	49.3		90	220								
District 2.....	4	183	53.6			19	164							
District 3.....	6	274	54.0		142					1			47	
District 4.....	2	96	48.0		96									
Total.....	19	863	51.5		328	239	248			1				47
All occupations, male and female:														
District 1.....	5	4,824	61.0	16	563	520	269	28	1238	138	728	836	487	1
District 2.....	4	2,198	60.0	4	235	77	540	12	538	9	404	2	375	2
District 3.....	7	3,256	59.9		633		838	21	289	3	887	36	542	7
District 4.....	2	1,612	47.8	79	1530			3						
Total.....	21	11,890	58.7	99	2,961	597	1,647	64	2,065	150	2,019	874	1,404	10

LIST OF BULLETINS OF THE BUREAU OF LABOR STATISTICS

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

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

Conciliation and arbitration (including strikes and lockouts).

- *No. 124. Conciliation and arbitration in the building trades of Greater New York. [1913.]
- *No. 133. Report of the industrial council of the British Board of Trade on its inquiry into industrial agreements. [1913.]
- No. 139. Michigan copper district strike. [1914.]
- *No. 144. Industrial court of the cloak, suit, and skirt industry of New York City. [1914.]
- *No. 145. Conciliation, arbitration, and sanitation in the dress and waist industry of New York City. [1914.]
- *No. 191. Collective bargaining in the anthracite-coal industry. [1916.]
- *No. 198. Collective agreements in the men's clothing industry. [1916.]
- No. 233. Operation of the industrial disputes investigation act of Canada. [1918.]
- No. 255. Joint industrial councils in Great Britain. [1919.]
- No. 263. History of the Shipbuilding Labor Adjustment Board, 1917 to 1919.
- No. 287. National War Labor Board: History of its formation, activities, etc. [1921.]
- *No. 303. Use of Federal power in settlement of railway labor disputes. [1922.]
- No. 341. Trade agreement in the silk-ribbon industry of New York City. [1923.]
- No. 402. Collective bargaining by actors. [1926.]
- No. 468. Trade agreements, 1927.
- No. 481. Joint industrial control in the book and job printing industry. [1928.]

Cooperation.

- No. 313. Consumers' cooperative societies in the United States in 1920.
- No. 314. Cooperative credit societies (credit unions) in America and in foreign countries. [1922.]
- No. 437. Cooperative movement in the United States in 1925 (other than agricultural).
- *No. 531. Consumers' credit, and productive cooperative societies, 1929.

Employment and unemployment.

- *No. 100. Statistics of unemployment and the work of employment offices in the United States [1913.]
- *No. 172. Unemployment in New York City, N. Y. [1915.]
- *No. 183. Regularity of employment in the women's ready-to-wear garment industries. [1915.]
- *No. 195. Unemployment in the United States. [1916.]
- *No. 196. Proceedings of Employment Managers' Conference held at Minneapolis, Minn., January 19 and 20, 1916.
- *No. 202. Proceedings of the conference of Employment Managers' Association of Boston, Mass., held May 10, 1916.
- *No. 206. The British system of labor exchanges. [1916.]
- *No. 227. Proceedings of the Employment Managers' Conference, Philadelphia, Pa., April 2 and 3, 1917.
- *No. 235. Employment system of the Lake Carriers' Association. [1918.]
- *No. 241. Public employment offices in the United States. [1918.]
- *No. 247. Proceedings of Employment Managers' Conference, Rochester, N. Y., May 9-11, 1918.
- *No. 310. Industrial unemployment: A statistical study of its extent and causes. [1922.]
- No. 409. Unemployment in Columbus, Ohio, 1921 to 1925.
- No. 520. Social and economic character of unemployment in Philadelphia, April, 1925.
- No. 542. Report of the Advisory Committee on Employment Statistics. [1930.]
- No. 544. Unemployment benefit plans in the United States and unemployment insurance in foreign countries. [1931.]

Foreign labor laws.

- *No. 142. Administration of labor laws and factory inspection in certain European countries. [1914.]
- No. 494. Labor legislation of Uruguay. [1929.]
- No. 510. Labor legislation of Argentina. [1930.]
- No. 529. Workmen's compensation legislation of Latin American countries. [1930.]

Housing.

- *No. 158. Government aid to home owning and housing of working people in foreign countries. [1914.]
- No. 263. Housing by employers in the United States. [1920.]
- No. 295. Building operations in representative cities in 1920.
- No. 545. Building permits in the principal cities of the United States in [1921 to] 1930.

Industrial accident and hygiene.

- *No. 104. Lead poisoning in potteries, tile works, and porcelain enameled sanitary ware factories [1912.]
- No. 120. Hygiene of painters' trade. [1913.]
- *No. 127. Danger to workers from dusts and fumes, and methods of protection. [1913.]
- *No. 141. Lead poisoning in the smelting and refining of lead. [1914.]
- *No. 157. Industrial accident statistics. [1915.]
- *No. 165. Lead poisoning in the manufacture of storage batteries. [1914.]
- *No. 179. Industrial poisons used in the rubber industry. [1915.]
- No. 188. Report of British departmental committee on the danger in the use of lead in the painting of buildings. [1916.]
- *No. 201. Report of the committee on statistics and compensation insurance costs of the International Association of Industrial Accident Boards and Commissions. [1916.]
- *No. 209. Hygiene of the printing trades. [1917.]
- *No. 219. Industrial poisons used or produced in the manufacture of explosives. [1917.]
- No. 221. Hours, fatigue, and health in British munition factories. [1917.]
- No. 230. Industrial efficiency and fatigue in British munition factories. [1917.]
- *No. 231. Mortality from respiratory diseases in dusty trades (inorganic dusts). [1918.]
- *No. 234. The safety movement in the iron and steel industry, 1907 to 1917.
- No. 236. Effects of the air hammer on the hands of stonecutters. [1918.]
- No. 249. Industrial health and efficiency. Final report of British Health of Munitions Workers Committee. [1919.]
- *No. 251. Preventable death in the cotton-manufacturing industry. [1919.]
- No. 256. Accidents and accident prevention in machine building. [1919.]
- No. 267. Anthrax as an occupational disease. [1920.]
- No. 276. Standardization of industrial accident statistics. [1920.]
- *No. 280. Industrial poisoning in making coal-tar dyes and dye intermediates. [1921.]
- *No. 291. Carbon monoxide poisoning. [1921.]
- *No. 293. The problem of dust phthisis in the granite-stone industry. [1922.]
- No. 298. Causes and prevention of accidents in the iron and steel industry. 1910-1919.
- No. 306. Occupation hazards and diagnostic signs: A guide to impairments to be looked for in hazardous occupations. [1922.]
- No. 392. Survey of hygienic conditions in the printing trades. [1925.]
- No. 405. Phosphorus necrosis in the manufacture of fireworks and in the preparation of phosphorus. [1926.]
- No. 427. Health survey of the printing trades, 1922 to 1925.
- No. 428. Proceedings of the Industrial Accident Prevention Conference, held at Washington, D. C., July 14-16, 1926.
- No. 460. A new test for industrial lead poisoning. [1928.]
- No. 466. Settlement for accidents to American seamen. [1928.]
- No. 488. Deaths from lead poisoning, 1925-1927.
- No. 490. Statistics of industrial accidents in the United States to the end of 1927.
- No. 507. Causes of death, by occupation. [1929.]

Industrial relations and labor conditions.

- No. 237. Industrial unrest in Great Britain. [1917.]
- No. 340. Chinese migrations, with special reference to labor conditions. [1923.]
- No. 349. Industrial relations in the West Coast lumber industry. [1923.]
- No. 361. Labor relations in the Fairmont (W. Va.) bituminous-coal field. [1924.]
- No. 380. Postwar labor conditions in Germany. [1925.]
- No. 383. Works council movement in Germany. [1925.]
- No. 384. Labor conditions in the shoe industry in Massachusetts, 1920-1924.
- No. 399. Labor relations in the lace and lace-curtain industries in the United States. [1925.]
- No. 534. Labor conditions in the Territory of Hawaii, 1929-1930.

Labor laws of the United States (including decisions of courts relating to labor).

- No. 211. Labor laws and their administration in the Pacific States. [1917.]
- No. 229. Wage payment legislation in the United States. [1917.]
- No. 285. Minimum wage laws of the United States: Construction and operation. [1921.]
- No. 321. Labor laws that have been declared unconstitutional. [1922.]
- No. 322. Kansas Court of Industrial Relations. [1923.]
- No. 343. Laws providing for bureaus of labor statistics, etc. [1923.]
- No. 370. Labor laws of the United States, with decisions of courts relating thereto. [1925.]
- No. 408. Laws relating to payment of wages. [1926.]
- No. 517. Decisions of courts and opinions affecting labor, 1927-1928.
- No. 528. Labor legislation, 1929.

Proceedings of annual conventions of the Association of Governmental Officials in Industry of the United States and Canada. (Name changed in 1935 from Association of Governmental Labor Officials of the United States and Canada.)

- *No. 266. Seventh, Seattle, Wash., July 13-15, 1920.
- No. 307. Eighth, New Orleans, La., May 2-6, 1921.
- *No. 323. Ninth, Harrisburg, Pa., May 22-23, 1922.
- *No. 352. Tenth, Richmond, Va., May 1-4, 1923.
- *No. 389. Eleventh, Chicago, Ill., May 19-23, 1924.
- *No. 411. Twelfth, Salt Lake City, Utah, August 13-15, 1925.
- *No. 429. Thirteenth, Columbus, Ohio, June 7-10, 1926.
- *No. 455. Fourteenth, Paterson, N. J., May 31 to June 3, 1927.
- *No. 490. Fifteenth, New Orleans, La., May 21-24, 1928.
- No. 508. Sixteenth, Toronto, Canada, June 4-7, 1929.
- No. 530. Seventeenth, Louisville, Ky., May 20-23, 1930.

Proceedings of annual meetings of the International Association of Industrial Accident Boards and Commissions.

- No. 210. Third, Columbus, Ohio, April 25-28, 1916.
- No. 248. Fourth, Boston, Mass., August 21-25, 1917.
- No. 264. Fifth, Madison, Wis., September 24-27, 1918.
- *No. 273. Sixth, Toronto, Canada, September 23-26, 1919.
- No. 281. Seventh, San Francisco, Calif., September 20-24, 1920.
- No. 304. Eighth, Chicago, Ill., September 19-23, 1921.
- No. 333. Ninth, Baltimore, Md., October 9-13, 1922.
- *No. 359. Tenth, St. Paul, Minn., September 24-26, 1923.
- *No. 385. Eleventh, Halifax, Nova Scotia, August 26-28, 1924.
- No. 395. Index to proceedings, 1914-1924.
- No. 406. Twelfth, Salt Lake City, Utah, August 17-20, 1925.
- No. 432. Thirteenth, Hartford, Conn., September 14-17, 1926.
- *No. 456. Fourteenth, Atlanta, Ga., September 27-29, 1927.
- No. 485. Fifteenth, Paterson, N. J., September 11-14, 1928.
- No. 511. Sixteenth, Buffalo, N. Y., October 8-11, 1929.
- No. 536. Seventeenth, Wilmington, Del., September 22-26, 1930.

Proceedings of annual meetings of the International Association of Public Employment Services.

- No. 192. First, Chicago, December 19 and 20, 1913; second, Indianapolis, September 24 and 25, 1914; third, Detroit, July 1 and 2, 1915.
- *No. 220. Fourth, Buffalo, N. Y., July 20 and 21, 1916.
- No. 311. Ninth, Buffalo, N. Y., September 7-9, 1921.
- No. 337. Tenth, Washington, D. C., September 11-13, 1922.
- No. 355. Eleventh, Toronto, Canada, September 4-7, 1923.
- No. 400. Twelfth, Chicago, Ill., May 19-23, 1924.
- No. 414. Thirteenth, Rochester, N. Y., September 15-17, 1925.
- No. 478. Fifteenth, Detroit, Mich., October 25-28, 1927.
- No. 501. Sixteenth, Cleveland, Ohio, September 18-21, 1928.
- No. 538. Seventeenth, Philadelphia, September 24-27, 1929, and eighteenth, Toronto, Canada, September 9-12, 1930.

Productivity of labor.

- No. 326. Productivity costs in the common-brick industry. [1924.]
- No. 360. Time and labor costs in manufacturing 100 pairs of shoes, 1923.
- No. 407. Labor cost of production and wages and hours of labor in the paper box-board industry. [1926.]
- *No. 412. Wages, hours, and productivity in the pottery industry, 1925.
- No. 441. Productivity of labor in the glass industry. [1927.]
- No. 474. Productivity of labor in merchant blast furnaces. [1928.]
- No. 475. Productivity of labor in newspaper printing. [1929.]

Retail prices and cost of living.

- *No. 121. Sugar prices, from refiner to consumer. [1913.]
- *No. 130. Wheat and flour prices, from farmer to consumer. [1913.]
- *No. 164. Butter prices, from producer to consumer. [1914.]
- No. 170. Foreign food prices as affected by the war. [1915.]
- No. 357. Cost of living in the United States. [1924.]
- No. 369. The use of cost-of-living figures in wage adjustments. [1925.]
- No. 465. Retail prices, 1890 to 1923.

Safety codes.

- *No. 331. Code of lighting: Factories, mills, and other work places.
- No. 336. Safety code for the protection of industrial workers in foundries.
- No. 350. Rules for governing the approval of headlighting devices for motor vehicles.
- *No. 351. Safety code for the construction, care, and use of ladders.
- No. 375. Safety code for laundry machinery and operations.
- *No. 382. Code of lighting school buildings.
- No. 410. Safety code for paper and pulp mills.
- *No. 430. Safety code for power presses and foot and hand presses.
- No. 433. Safety codes for the prevention of dust explosions.
- No. 447. Safety code for rubber mills and calenders.
- No. 451. Safety code for forging and hot-metal stamping.
- No. 463. Safety code for mechanical power-transmission apparatus—first revision.
- No. 509. Textile safety code.
- No. 512. Code for identification of gas-mask canisters.
- No. 519. Safety code for woodworking plants, as revised, 1930.
- No. 527. Safety code for the use, care, and protection of abrasive wheels.

Vocational and workers' education.

- *No. 159. Short-unit courses for wage earners, and a factory school experiment. [1915.]
- *No. 162. Vocational education survey of Richmond, Va. [1915.]
- *No. 199. Vocational education survey of Minneapolis, Minn. [1917.]
- No. 271. Adult working-class education in Great Britain and the United States. [1920.]
- No. 459. Apprenticeship in building construction. [1928.]

Wages and hours of labor.

- *No. 146. Wages and regularity of employment and standardization of piece rates in the dress and waist industry of New York City [1914.]
- *No. 147. Wages and regularity of employment in the cloak, suit, and skirt industry. [1914.]
- No. 161. Wages and hours of labor in the clothing and cigar industries, 1911 to 1913.
- No. 163. Wages and hours of labor in the building and repairing of steam railroad cars, 1907 to 1913.
- *No. 190. Wages and hours of labor in the cotton, woolen, and silk industries, 1907 to 1914.
- No. 204. Street-railway employment in the United States. [1917.]
- No. 218. Wages and hours of labor in the iron and steel industry, 1907 to 1915, with a glossary of occupations.
- No. 225. Wages and hours of labor in the lumber, millwork, and furniture industries, 1915.
- No. 265. Industrial survey in selected industries in the United States, 1919.
- No. 297. Wages and hours of labor in the petroleum industry, 1920.
- No. 356. Productivity costs in the common-brick industry. [1924.]
- No. 358. Wages and hours of labor in the automobile-tire industry, 1923.
- No. 360. Time and labor costs in manufacturing 100 pairs of shoes, 1923.
- No. 365. Wages and hours of labor in the paper and pulp industry, 1923.
- No. 394. Wages and hours of labor in metalliferous mines, 1924.
- No. 407. Labor costs of production and wages and hours of labor in the paper box-board industry. [1926.]
- *No. 412. Wages, hours, and productivity in the pottery industry, 1925.
- No. 416. Hours and earnings in anthracite and bituminous coal mining, 1922 and 1924.
- No. 476. Union scales of wages and hours of labor: Supplement to Bulletin 457.
- No. 484. Wages and hours of labor of common street laborers, 1928.
- No. 497. Wages and hours of labor in the lumber industry in the United States, 1928.
- No. 498. Wages and hours of labor in the boot and shoe industry, 1910 to 1928.
- No. 499. History of wages in the United States from colonial times to 1928.
- No. 502. Wages and hours of labor in the motor-vehicle industry, 1928.
- No. 503. Wages and hours of labor in the men's clothing industry, 1911 to 1928.
- No. 504. Wages and hours of labor in the hosiery and underwear industries, 1907 to 1928.
- No. 513. Wages and hours of labor in the iron and steel industry, 1929.
- No. 514. Pennsylvania Railroad wage data. From report of Joint Fact Finding Committee in wage negotiations in 1927.
- No. 516. Hours and earnings in bituminous coal mining, 1929.
- No. 522. Wages and hours of labor in foundries and machine shops, 1929.
- No. 523. Hours and earnings in the manufacture of airplanes and aircraft engines, 1929.
- No. 525. Wages and hours of labor in the Portland cement industry, 1929.
- No. 526. Wages and hours of labor in the furniture industry, 1910 to 1929.
- No. 532. Wages and hours of labor in the cigarette manufacturing industry, 1930
- No. 533. Wages and hours of labor in woolen and worsted goods manufacturing, 1910 to 1930.
- No. 535. Wages and hours of labor in the slaughtering and meat-packing industry, 1929.
- No. 537. Wages and hours of labor in the dyeing and finishing of textiles, 1930.
- No. 539. Wages and hours of labor in cotton-goods manufacturing, 1910 to 1930.
- No. 540. Union scales of wages and hours of labor, May 15, 1930.
- No. 546. Wages and hours in rayon and other synthetic textile manufacturing, 1930.

Welfare work.

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

Wholesale prices.

- *No. 284. Index numbers of wholesale prices in the United States and foreign countries. [1921.]
- No. 453. Revised index numbers of wholesale prices, 1923 to July, 1927.
- No. 543. Wholesale prices, 1930.

Women and children in industry.

- No. 116. Hours, earnings, and duration of employment of wage-earning women in selected industries in the District of Columbia. [1913.]
- *No. 117. Prohibition of night work of young persons. [1913.]
- *No. 118. Ten-hour maximum working-day for women and young persons. [1913.]
- No. 119. Working hours of women in the pea canneries of Wisconsin. [1913.]
- *No. 122. Employment of women in power laundries in Milwaukee. [1913.]
- *No. 160. Hours, earnings, and conditions of labor of women in Indiana mercantile establishments and garment factories. [1914.]
- *No. 167. Minimum-wage legislation in the United States and foreign countries. [1915.]
- *No. 175. Summary of the report on condition of woman and child wage earners in the United States. [1915.]
- *No. 176. Effect of minimum-wage determinations in Oregon. [1915.]
- *No. 180. The boot and shoe industry in Massachusetts as a vocation for women. [1915.]
- *No. 182. Unemployment among women in department and other retail stores of Boston, Mass. [1916.]
- No. 193. Dressmaking as a trade for women in Massachusetts. [1916.]
- No. 215. Industrial experience of trade-school girls in Massachusetts. [1917.]
- *No. 217. Effect of workmen's compensation laws in diminishing the necessity of industrial employment of women and children. [1918.]
- *No. 223. Employment of women and juveniles in Great Britain during the war. [1917.]
- No. 253. Women in the lead industries. [1919.]
- No. 467. Minimum wage legislation in various countries. [1928.]

Workmen's insurance and compensation (including laws relating thereto).

- *No. 101. Care of tuberculous wage earners in Germany. [1912.]
- *No. 102. British national insurance act, 1911.
- No. 103. Sickness and accident insurance law in Switzerland. [1912.]
- No. 107. Law relating to insurance of salaried employees in Germany. [1913.]
- *No. 155. Compensation for accidents to employees of the United States. [1914.]
- *No. 212. Proceedings of the conference on social insurance called by the International Association of Industrial Accident Boards and Commissions, Washington, D.C., December 5-9, 1916.
- *No. 243. Workmen's compensation legislation in the United States and foreign countries, 1917 and 1918.
- No. 301. Comparison of workmen's compensation insurance and administration. [1922.]
- No. 312. National health insurance in Great Britain, 1911 to 1921.
- No. 379. Comparison of workmen's compensation laws of the United States as of January 1, 1925.
- No. 477. Public-service retirement systems, United States and Europe [1929.]
- No. 496. Workmen's compensation legislation of the United States and Canada as of January 1, 1929. (With text of legislation enacted in 1927 and 1928.)
- No. 529. Workmen's compensation legislation of the Latin American countries. [1930.]

Miscellaneous series.

- *No. 174. Subject index of the publications of the United States Bureau of Labor Statistics up to May 1, 1915.
- No. 208. Profit sharing in the United States. [1916.]
- No. 242. Food situation in central Europe, 1917.
- No. 254. International labor legislation and the society of nations. [1919.]
- No. 268. Historical survey of international action affecting labor. [1920.]
- No. 282. Mutual relief associations among Government employees in Washington, D. C. [1921.]
- No. 319. The Bureau of Labor Statistics: Its history, activities, and organization. [1922.]
- No. 326. Methods of procuring and computing statistical information of the Bureau of Labor Statistics. [1923.]
- No. 342. International Seamen's Union of America: A study of its history and problems. [1923.]
- No. 346. Humanity in government. [1923.]
- No. 372. Convict labor in 1923.
- No. 386. Cost of American almshouses. [1925.]
- No. 398. Growth of legal-aid work in the United States. [1926.]
- No. 401. Family allowances in foreign countries. [1926.]
- No. 461. Labor organizations in Chile. [1928.]

Miscellaneous series—Continued.

- No. 462. Park recreation areas in the United States. [1928.]
- *No. 465. Beneficial activities of American trade-unions. [1928.]
- No. 479. Activities and functions of a State department of labor. [1928.]
- No. 483. Conditions in the shoe industry in Haverhill, Mass., 1928.
- *No. 489. Care of aged persons in the United States. [1929.]
- No. 505. Directory of homes for the aged in the United States. [1929.]
- No. 506. Handbook of American trade-unions: 1929 edition.
- No. 518. Personnel research agencies: 1930 edition.
- No. 541. Handbook of labor statistics: 1931 edition.

