

UNITED STATES DEPARTMENT OF LABOR

W. N. DOAK, Secretary

BUREAU OF LABOR STATISTICS

CHARLES E. BALDWIN, Acting Commissioner

BULLETIN OF THE UNITED STATES }
BUREAU OF LABOR STATISTICS } No. 573

WAGES AND HOURS OF LABOR SERIES

**WAGES AND HOURS OF LABOR
IN METALLIFEROUS MINES**

1924 AND 1931



JANUARY, 1933

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1933

For sale by the Superintendent of Documents, Washington, D. C. - - - - Price 10 cents

Contents

	Page
Trend of hours and earnings, by district and State.....	2
Average hours and earnings, 1924 and 1931, by kind of work and occupation.....	3
Number of mines, by kind of metals produced, 1931.....	5
Average and classified earnings per hour, 1924 and 1931, by occupation....	7
Full-time hours per week and per day, 1924 and 1931.....	9
Changes in full-time hours per week since June 1, 1929.....	13
Changes in wage rates since June 1, 1929.....	13
Overtime and Sunday and holiday work, 1931.....	14
Bonus systems.....	15
Index numbers of employment and of pay rolls, 1929 to 1931.....	16
Scope and method.....	17
Occupations.....	18
General tables.....	18
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, 1931, by occupation, district, and State.....	19
TABLE B.—Average and classified earnings per hour in six specified occupations, 1931, by district and State.....	39
TABLE C.—Average and classified full-time hours per week in six specified occupations, 1931, by district and State.....	44
TABLE D.—Average and classified hours actually worked in one week in six specified occupations, 1931, by district and State.....	46
TABLE E.—Average and classified actual earnings in one week in six specified occupations, 1931, by district and State.....	50
APPENDIX.—Mine terms and occupations, with definitions, and classification by Bureau of Labor Statistics.....	54

BULLETIN OF THE U. S. BUREAU OF LABOR STATISTICS

NO. 573

WASHINGTON

JANUARY, 1933

WAGES AND HOURS OF LABOR IN METALLIFEROUS MINING, 1924 AND 1931

The results of studies made by the Bureau of Labor Statistics of wages and hours of labor of wage earners in the metalliferous mining industry in the United States in 1924 and in 1931 are presented in this bulletin. The 1924 study covered 137 mines (117 underground and 20 open-pit) and 38,196 wage earners, and the 1931 study, 139 mines (117 underground and 22 open-pit) and 32,195 wage earners. The mines studied produced copper, gold, iron, lead, silver, zinc, and minor metals.

Some so-called open-pit mines are really open-cut mines—that is, hills or mountains are cut down instead of pits being dug below the surface. In either case the ore is taken from the pit or cut by steam shovels and dumped into cars and hauled to the crusher or mills. Production is generally cheaper and less dangerous in mines of this kind than in underground mines.

Underground mines are of different types, designated as shaft, slope, or drift. A shaft mine is one in which the entrance is a vertical shaft. Cross cuts are made at the various levels into the ore bodies and the ore is brought to the surface through the shaft by means of a skip or cage. A slope mine is entered through a downward incline. A drift mine is one in which the ore vein is followed through a horizontal entrance.

The industry has been divided into the following five districts: Western mixed ores mines, Michigan copper mines, Northern iron mines, Alabama iron mines, and Tri-State lead and zinc mines.

The "Western mixed ores" mines are in Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, South Dakota, and Utah; the "Michigan copper mines" are in the upper peninsula of that State; the "Northern iron mines" are in the regions near Lake Superior in Michigan and Minnesota; the "Alabama iron mines" are in the northern part of that State; and the "Tri-State lead and zinc mines" are in the southeast corner and the southwest corner of Missouri, the southeast corner of Kansas, and the northeast corner of Oklahoma. The "Western mixed ores" mines were so named because a majority of the mines in the Western States produce ores containing from two to five different metals, with many variations in the combinations. Only 20 of the 61 mines covered in the Western States produced one metal only.

The basic wage data used in compiling this report were, except for a few mines, for a representative pay period in August, September, or October, 1924, and June, July, August, September, or October, 1931.

Trend of Hours and Earnings, by District and State

Table 1 shows average full-time hours per week, earnings per hour, and average full-time earnings per week for the wage earners covered in 1924 and in 1931, by districts.

The average full-time hours per week of wage earners in this industry were 53.0 in 1924 and 51.6 in 1931. The average hourly earnings—55.9 cents—shown in 1924, remained unchanged in 1931. Average full-time weekly earnings, however, dropped from \$29.63 in 1924 to \$28.84 in 1931, due to the smaller average full-time hours per week in the latter year. These averages are for males only and for the industry as a whole. Females were not employed in any of the mines.

Examination of the data for the various kinds of mines shows that, with the exception of the Northern iron mines, the full-time hours in all groups decreased somewhat between 1924 and 1931, and in all but one group, the Western mixed-ores mines, average earnings per hour also declined. Because of an increase in average full-time hours, the Northern iron mines showed an increase in average full-time weekly earnings, although average hourly earnings decreased. The other four groups of mines showed decreases in such weekly earnings, in varying amounts.

Western mixed-ores mines.—From 1924 to 1931 average full-time hours per week dropped from 53.8 to 50.7; average earnings per hour, however, increased from 59.9 cents to 60.8 cents, while full-time earnings per week decreased from \$32.23 to \$30.83.

Michigan copper mines.—There was a decrease from 1924 to 1931 in average full-time hours per week from 49.6 to 49.4, in earnings per hour from 49.8 cents to 44.3 cents, and in full-time earnings per week from \$24.70 to \$21.88.

Northern iron mines.—From 1924 to 1931 average full-time hours per week rose from 52.8 to 54.3; earnings per hour, however, dropped from 56.8 cents to 56.0 cents, but full-time earnings per week increased from \$29.99 to \$30.41.

Alabama iron mines.—From 1924 to 1931 there was a decrease in average full-time hours per week from 60.6 to 58.4, in average earnings per hour from 39.3 cents to 37.2 cents, and in full-time earnings per week from \$23.82 to \$21.72.

Tri-State lead and zinc mines.—There was a drop from 1924 to 1931 in average full-time hours per week from 48.6 to 48.2, in earnings per hour from 55.2 cents to 47.7 cents, and in full-time earnings per week from \$26.83 to \$22.99.

TABLE 1.—Average full-time hours, earnings per hour, and full-time earnings per week in metalliferous mines, 1924 and 1931, by district and State

District and State	Number of mines		Number of wage earners		Average full-time hours per week		Average earnings per hour		Average full-time earnings per week	
	1924	1931	1924	1931	1924	1931	1924	1931	1924	1931
Western mixed ores:										
Arizona.....	8	9	3,662	3,969	52.4	48.8	\$0.595	\$0.679	\$31.18	\$33.14
California.....	6	8	1,397	1,688	51.7	50.2	.504	.593	30.71	29.77
Colorado.....	9	10	1,210	983	52.8	51.7	.502	.597	31.26	30.86
Idaho.....	4	4	1,386	1,621	54.4	47.5	.693	.581	37.70	27.60
Montana.....	5	5	3,084	2,495	52.7	48.2	.666	.681	35.10	32.82
Nevada.....	8	9	1,616	1,146	56.5	55.6	.636	.625	35.93	34.75
New Mexico.....	6	6	1,603	1,442	54.2	53.9	.459	.459	24.88	24.74
South Dakota.....		1		(1)		(1)		(1)		(1)
Utah.....	4	9	2,853	2,214	56.0	52.5	.560	.515	31.36	27.04
Total.....	50	61	16,811	16,494	53.8	50.7	.599	.608	32.23	30.83
Michigan copper.....	6	6	4,689	3,734	49.6	49.4	.498	.443	24.70	21.88
Northern iron:										
Michigan.....	24	10	6,102	2,244	50.3	50.8	.566	.602	28.47	30.58
Minnesota.....	23	29	4,983	4,577	55.5	56.0	.570	.545	31.64	30.52
Total.....	47	39	11,085	6,821	52.8	54.3	.568	.560	29.99	30.41
Alabama iron.....	8	8	2,678	2,132	60.6	58.4	.393	.372	23.82	21.72
Tri-State lead and zinc.....	26	25	2,933	3,014	48.6	48.2	.552	.477	26.83	22.99
All districts.....	137	139	38,196	32,195	53.0	51.6	.559	.559	29.63	28.84

¹ Data included in total.

Average Hours and Earnings, 1924 and 1931, by Kind of Work and Occupation

Table 2 shows average full-time hours per week, earnings per hour, and full-time earnings per week, by occupation, for wage earners in underground and in open-pit mines. There are three different groups of occupations of wage earners in underground mines—underground work, surface work, and underground and surface work.

For the underground mines data are shown for 22 important occupations in underground work; 11 occupations in surface work; and 12 other occupations in which the workers worked underground in some mines, on the surface in other mines, and in still others spent part of their working time underground and part on the surface. For the open-pit mines data are shown for each of 28 occupations. The group of "Other employees," shown for both the underground and open-pit mines, includes those occupations in which there was not a sufficient number of wage earners to warrant separate tabulation.

Underground occupations.—These form the most important group in point of number of wage earners employed. Average full-time hours per week ranged, by occupation, in 1924 from 48.6 for contract drilling-machine operators to 56.5 for pump men, and in 1931 from 48.2 for roof trimmers to 56.5 for trackmen's helpers. Weekly hours were longer in 4 and shorter in 18 occupations in 1931 than in 1924.

Average earnings per hour ranged in 1924 from 42.0 cents for trackmen's helpers to 72.9 cents for contract drilling-machine operators, and in 1931 from 40.3 cents for drilling-machine operators' helpers to 69.4 cents for contract drilling-machine operators. Comparing 1931

with 1924, it is seen that the average hourly earnings had increased in 7 occupations, and decreased in the other 15 occupations.

In 1924 the range in average full-time earnings per week was from \$23.23 for trackmen's helpers to \$35.43 for contract drilling-machine operators, and in 1931 from \$20.63 for drilling-machine operators' helpers to \$34.08 for contract drilling-machine operators. Six occupations showed greater average full-time weekly earnings in 1931 than in 1924, while in the other 16 occupations such weekly earnings were less than in 1924.

TABLE 2.—Average hours and earnings in metalliferous mines, 1924 and 1931, by occupation

Occupation	Number of mines		Number of wage earners		Average full-time hours per week		Average earnings per hour		Average full-time earnings per week	
	1924	1931	1924	1931	1924	1931	1924	1931	1924	1931
UNDERGROUND MINES										
Underground work:										
Cagers.....	35	42	118	157	51.6	50.1	\$0.627	\$0.570	\$32.35	\$28.56
Chute loaders.....	37	31	596	195	49.1	50.5	.638	.563	26.42	28.43
Drilling-machine operators, company.....	106	95	5,327	3,684	51.4	49.5	.594	.646	30.53	31.98
Drilling-machine operators, contract.....	61	53	5,916	3,945	48.6	49.1	.729	.694	35.43	34.08
Drilling-machine operators' helpers.....	33	32	559	497	52.1	51.2	.447	.403	23.29	20.63
Drivers, mule.....	38	31	349	247	51.5	48.4	.474	.500	24.41	24.20
Hoistmen.....	47	49	185	197	53.7	51.0	.593	.538	31.84	27.44
Loading-machine operators.....	14	18	175	227	51.4	50.6	.588	.616	30.22	31.17
Motormen.....	78	75	749	833	50.9	49.6	.575	.574	29.27	28.47
Muckers.....	82	104	4,110	4,656	52.7	50.2	.554	.505	29.20	25.35
Nippers.....	48	38	288	188	51.9	48.8	.496	.537	25.74	26.21
Powdermen.....	47	56	115	111	52.1	50.1	.573	.510	29.85	25.55
Pumpmen.....	73	81	335	371	56.5	52.8	.526	.530	29.72	27.98
Roof trimmers.....	26	26	176	75	52.3	48.2	.553	.470	28.92	22.65
Skippers.....	54	63	229	242	50.8	49.8	.572	.563	29.06	28.04
Stationmen.....	18	12	153	135	51.1	52.5	.569	.566	29.08	29.72
Timbermen.....	92	86	2,055	2,926	51.5	48.7	.604	.602	31.11	29.32
Timbermen's helpers.....	44	38	715	607	52.8	50.6	.551	.512	29.09	25.91
Trackmen.....	86	78	667	355	49.4	49.1	.542	.529	26.77	25.97
Trackmen's helpers.....	27	27	248	196	55.3	56.5	.420	.410	23.23	23.17
Trammers.....	97	61	2,028	635	50.9	48.9	.550	.524	28.00	25.62
Trip riders.....	55	45	395	417	50.8	49.9	.517	.537	26.26	26.80
Surface work:										
Drivers.....	42	11	104	48	57.3	57.2	.406	.369	23.26	21.11
Dry-house men.....	67	51	179	134	58.9	55.2	.410	.404	24.15	22.30
Dumpers.....	14	32	58	119	55.5	55.3	.508	.458	28.19	25.33
Engineers, stationary.....	27	16	79	61	57.5	53.2	.515	.579	29.61	30.80
Firemen, stationary.....	50	25	277	206	60.5	50.6	.455	.441	27.53	22.31
Hoistmen.....	103	100	483	490	56.4	53.4	.560	.586	31.80	31.29
Timber framers.....	54	42	138	119	55.6	54.4	.536	.532	29.88	28.94
Tool dressers.....	50	46	110	158	53.8	51.8	.584	.553	31.42	28.65
Topmen.....	113	81	1,742	815	55.3	54.9	.428	.400	25.67	21.96
Truck operators.....	40	59	73	115	55.1	54.5	.514	.484	28.32	26.38
Watchmen.....	74	68	190	245	65.8	58.2	.452	.464	29.29	27.00
Underground and surface work:										
Blacksmiths.....	110	107	292	239	54.4	53.8	.593	.563	32.26	30.29
Blacksmiths' helpers.....	90	74	295	170	54.5	53.3	.462	.463	25.18	24.68
Carpenters.....	88	78	362	231	54.9	54.2	.571	.557	31.35	30.19
Carpenters' helpers.....	46	26	153	123	56.4	56.6	.426	.430	24.03	24.34
Compressormen.....	59	52	154	136	59.9	52.9	.556	.527	33.30	27.88
Electricians.....	78	82	194	308	54.7	53.1	.622	.629	34.02	33.40
Electricians' helpers.....	41	31	95	104	53.5	53.8	.521	.512	27.87	27.55
Machinists.....	89	82	375	361	54.2	52.4	.600	.604	32.52	31.65
Machinists' helpers.....	63	38	231	130	54.1	53.5	.479	.493	25.91	26.38
Oilers.....	41	33	148	123	54.7	52.6	.445	.443	24.34	23.30
Ore sorters.....	24	12	141	70	52.7	49.2	.528	.482	27.83	23.71
Pipemen.....	89	67	328	264	52.0	51.7	.562	.559	29.22	28.90
Other employees.....	117	111	2,139	2,102	53.1	51.5	.590	.587	31.33	30.23

TABLE 2.—Average hours and earnings in metalliferous mines, 1924 and 1931, by occupation—Continued

Occupation	Number of mines		Number of wage earners		Average full-time hours per week		Average earnings per hour		Average full-time earnings per week	
	1924	1931	1924	1931	1924	1931	1924	1931	1924	1931
OPEN-PIT MINES										
Blacksmiths.....	17	22	140	56	57.7	58.5	\$0.619	\$0.603	\$35.72	\$35.28
Blacksmiths' helpers.....	12	13	124	43	57.4	57.1	.498	.475	28.59	27.12
Carpenters.....	14	20	79	57	58.7	58.5	.570	.587	33.46	34.34
Carpenters' helpers.....	12	8	63	42	57.8	56.4	.470	.547	27.17	30.85
Drillers, hand.....		7		26		60.0		.464		27.84
Drilling-machine operators.....	17	18	229	181	58.5	58.3	.544	.526	31.82	30.67
Drilling-machine operator's helpers.....	12	15	146	101	58.0	57.3	.508	.507	29.46	29.05
Dumpers.....	12	16	192	68	58.2	59.8	.385	.400	22.41	23.92
Electricians.....		17		78		58.2		.641		37.31
Laborers.....	17	17	372	423	58.1	57.4	.352	.379	20.45	21.75
Locomotive engineers.....	20	22	319	234	58.3	58.7	.675	.671	39.35	39.39
Locomotive firemen.....	18	19	406	230	58.7	57.8	.615	.488	30.23	28.21
Machinists.....	17	20	192	125	57.7	58.1	.604	.623	34.85	36.49
Machinists' helpers.....	9	10	231	49	57.7	57.1	.499	.511	28.79	29.18
Oilers.....		13		47		60.3		.478		28.82
Pipemen.....		10		24		57.7		.539		31.10
Pitmen.....	20	22	573	171	58.4	58.7	.426	.425	24.88	24.95
Pumpmen.....		15		37		59.2		.536		31.73
Repairmen.....		17		168		57.7		.507		29.25
Shot firers.....	12	15	54	42	59.7	57.8	.475	.507	28.36	29.30
Shovel crapemen.....	20	15	150	62	58.0	58.1	.666	.680	38.63	39.51
Shovel engineers.....	20	20	157	79	58.2	59.0	.917	.945	53.37	55.76
Shovel firemen.....	20	16	231	67	60.2	62.2	.604	.464	30.34	28.86
Switchmen.....	15	12	216	142	57.6	56.7	.446	.452	25.69	25.63
Trackmen.....	20	21	1,686	874	57.9	58.4	.393	.397	22.75	23.18
Trip riders.....	15	18	332	190	58.2	58.5	.510	.509	29.68	29.78
Truck operators.....		15		33		57.7		.479		27.64
Watchmen.....	17	18	148	65	63.7	64.3	.451	.444	28.73	28.55
Other employees.....	20	21	776	714	58.9	58.5	.514	.550	30.27	32.18
All employees.....	137	139	38,196	32,195	53.0	51.6	.559	.559	29.63	28.84

Number of Mines, by Kind of Metals Produced, 1931

Table 3 shows the kind of metal or metals produced by each of the 139 mines covered in the 1931 study of the industry. One metal only was produced in each of 75 mines; 2 metals in 29 mines; 3 in 18 mines; 4 in 11 mines; and 5 metals were produced in each of 6 mines.

The arrangement in Table 3 is alphabetical and in the case of the mines producing two or more metals is in the order of the importance of the metals in such mines.

Copper, gold, and silver were produced in 12 mines. In 11 of these (line 2) the metals in order of importance were copper, gold, and silver, and in 1, (line 7) were gold, silver, and copper. Lead and zinc were produced in 20 mines. Lead was the more important metal in 3, (line 16) and zinc was the more important in 17 mines, (line 29.)

Of the 22 open-pit or open-cut mines, 1 is a copper mine and 2 are copper, gold, and silver mines in the Western mixed-ores district; 16 are iron mines in Minnesota in the Northern iron district; and 3 are iron mines in the Alabama iron district.

TABLE 3.—Number of mines producing specified kinds of metal

Kind of metal produced	Number of mines	Kind of metal produced	Number of mines
Copper.....	10	Lead, zinc, and silver.....	2
Copper, gold, and silver.....	11	Lead, silver, copper, and gold.....	1
Copper, lead, zinc, and silver.....	1	Lead, silver, zinc, and gold.....	3
Copper, silver, zinc, and gold.....	1	Lead, silver, zinc, copper, and gold.....	3
Gold.....	11	Lead, zinc, copper, silver, and gold.....	1
Gold and silver.....	4	Manganese.....	1
Gold, silver, and copper.....	1	Molybdenum.....	1
Gold, silver, and lead.....	1	Silver, lead, and copper.....	1
Gold, silver, lead, and copper.....	2	Tungsten.....	1
Gold, silver, zinc, and copper.....	1	Vanadium.....	1
Gold, silver, copper, lead, and zinc.....	1	Zinc.....	1
Iron.....	43	Zinc and lead.....	17
Iron and manganese.....	4	Zinc, lead, silver, and gold.....	1
Lead.....	6	Zinc, silver, manganese, and gold.....	1
Lead and silver.....	1	Zinc, lead, gold, silver, and copper.....	1
Lead and zinc.....	3		
Lead, gold, and silver.....	2	Total.....	139

Table 4 gives the distribution of the 103 shaft mines covered in the 1931 study of the industry by classified groups showing the depth in feet from top to bottom of shaft, and the average distance in feet from bottom of shaft to working place in mine.

The depth of the shaft of the mines ranged from 100 and under 200 feet to 5,700 feet. The distance from the bottom of the shaft to place of work in the mines ranged from under 100 feet to 8,000 and under 9,000 feet.

In each of 3 mines the depth of the shaft was 100 and under 200 feet, and the distance from the bottom of the shaft to place of work in 1 of these mines was 100 and under 200 feet and of the other 2 mines 300 and under 400 feet. The depth of the shaft of each of 20 mines was 200 and under 300 feet, while the distance from the bottom of the shaft to the working point in 1 of these mines was 200 and under 300 feet and in the 2 with the longest distance was 2,000 and under 2,500 feet.

TABLE 4.—Classification of shaft mines by depth from top to bottom of shaft and by average distance from bottom of shaft to working point in mine

Average distance, bottom of shaft to working point in mine (in feet)	Total number of mines	Number of shaft mines with depth in feet—												
		100 and under 200	200 and under 300	300 and under 400	400 and under 500	500 and under 750	750 and under 1,000	1,000 and under 1,500	1,500 and under 2,000	2,000 and under 2,500	2,500 and under 3,000	3,000 and under 4,000	4,000 and under 5,000	5,000 and under 5,700
Under 100.....	1								1					
100 and under 200.....	1	1												
200 and under 300.....	3		1										1	1
300 and under 400.....	8	2	4			1		1						
400 and under 500.....	3		1			1	1							
500 and under 750.....	19		7	7	1			2			1	1		
750 and under 1,000.....	6		2				1	1	2					
1,000 and under 1,500.....	21		2	1		3	1	2	2	1	2	5	2	
1,500 and under 2,000.....	13		1	1	1			2	3	2			3	
2,000 and under 2,500.....	8		2		1			2			1	1	1	
2,500 and under 3,000.....	3			1	2									
3,000 and under 3,500.....	2			1						1				
3,500 and under 4,000.....	3						1	2						
4,000 and under 5,000.....	2				1			1						
5,000 and under 6,000.....	5			1				3				1		
7,000 and under 8,000.....	2								2					
8,000 and under 9,000.....	1				1									
Not reported.....	2				1								1	
Total.....	103	3	20	12	8	5	4	16	5	4	4	8	8	1

Average and Classified Earnings per Hour, 1924 and 1931, by Occupation

Average earnings per hour and the per cent of wage earners at each classified group of such earnings are shown in Table 5 for six of the representative occupations in the industry for the years 1924 and 1931. The number of wage earners in these occupations is 55 per cent of the total covered in 1924 and 52 per cent of those covered in 1931. The percentage distribution of these wage earners illustrates the variations in the trend and spread of average earnings per hour of the wage earners in all occupations in the industry in the two years. The distribution by number of the wage earners covered in these occupations in 1931 is shown by States, in Table B (p. 39).

Company drilling-machine operators earned an average of 59.4 cents per hour in 1924; approximately 4 per cent of them earned less than 45 cents per hour, and about 2 per cent earned 80 cents or more per hour. In 1931 the wage earners in this occupation earned an average of 64.6 cents per hour; 9 per cent of them earned less than 45 cents, and 12 per cent earned 80 cents or more per hour.

Table 6 shows for the laborers covered in the study of the industry in 1931, and also for the wage earners in all occupations, the number and the per cent in each classified group of average earnings per hour.

The largest number of laborers in any one group is 107, or 25 per cent, within the group of 40 and under 42½ cents per hour. The largest number of wage earners in all occupations is 5,067, or 16 per cent at 50 and under 55 cents per hour.

TABLE 5.—Average and classified earnings per hour of wage earners in six specified occupations in metalliferous mines, 1924 and 1931

Occupation	Year	Number of mines	Number of wage earners	Average earnings per hour	Per cent of wage earners whose earnings per hour were—																				
					Under 30 cts.	30 and under 35 cts.	35 and under 40 cts.	40 and under 45 cts.	45 and under 50 cts.	50 and under 55 cts.	55 and under 60 cts.	60 and under 65 cts.	65 and under 70 cts.	70 and under 75 cts.	75 and under 80 cts.	80 and under 85 cts.	85 and under 90 cts.	90 and under 95 cts.	95 cts. and under \$1.00	\$1 and under \$1.10	\$1.10 and under \$1.20	\$1.20 and under \$1.30	\$1.30 and under \$1.40	\$1.40 and under \$1.50	\$1.50 and over
Drilling-machine operators, company (underground).....	1924	106	5,327	\$0.594	(¹)	(¹)	1	3	5	12	43	15	14	2	4	1	(¹)	(¹)							
	1931	95	3,684	.646		1	1	7	4	11	23	15	18	4	4	1	4	1	1	1	1	1	(¹)		1
Drilling-machine operators, contract (underground).....	1924	61	5,916	.729			(¹)	(¹)	2	12	18	24	9	12	9	4	3	2	3	1	(¹)	(¹)			(¹)
	1931	53	3,945	.694		(¹)	(¹)	1	5	14	12	9	9	18	7	12	3	3	2	4	1	(¹)	(¹)	(¹)	(¹)
Muckers (underground).....	1924	82	4,110	.554	1	1	10	8	11	13	24	20	8	2	1	1	1	1	(¹)	(¹)	(¹)	(¹)	(¹)		(¹)
	1931	104	4,656	.505	4	6	12	14	14	24	12	5	4	2	2	1	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)		(¹)
Timbermen (underground).....	1924	92	2,055	.604			(¹)	4	21	4	26	15	12	5	9	3	1	(¹)	(¹)	(¹)	(¹)	(¹)	(¹)		(¹)
	1931	86	2,926	.602		(¹)	2	21	4	11	14	11	17	6	6	2	1	1	1	(¹)	(¹)	(¹)	(¹)		(¹)
Topmen (surface).....	1924	113	1,742	.428	8	8	23	32	6	10	6	4	2	(¹)	(¹)	(¹)									
	1931	81	815	.400	20	14	26	14	5	12	6	1	(¹)	(¹)		1									
Trammers (underground).....	1924	97	2,028	.550			6	10	7	25	34	6	7	1	2	(¹)	(¹)	(¹)	(¹)						
	1931	61	635	.524	2	4	5	14	9	14	45	6		(¹)											

¹ Less than 1 per cent.

TABLE 6.—Number and per cent of wage earners in metalliferous mines earning each classified amount per hour, 1931

Classified earnings	Number		Per cent		Classified earnings	Number		Per cent	
	Laborers	Wage earners in all occupations	Laborers	Wage earners in all occupations		Laborers	Wage earners in all occupations	Laborers	Wage earners in all occupations
13 and under 14 cents		1		(1)	60 and under 65 cents	2,709			8
15 and under 16 cents		1		(1)	65 and under 70 cents	3,059			10
16 and under 17 cents		1		(1)	70 and under 75 cents	1,721			5
17 and under 18 cents		1		(1)	75 and under 80 cents	970			3
18 and under 19 cents		5		(1)	80 and under 85 cents	762			2
19 and under 20 cents		3		(1)	85 and under 90 cents	491			2
20 and under 21 cents	34	72	8	(1)	90 and under 95 cents	247			1
21 and under 22 cents	3	24	1	(1)	95 cents and under \$1.	146		(1)	
22 and under 23 cents	13	54	3	(1)	\$1 and under \$1.10.	328			1
23 and under 24 cents		50		(1)	\$1.10 and under \$1.20.	90		(1)	
24 and under 25 cents		59		(1)	\$1.20 and under \$1.30.	80		(1)	
25 and under 27½ cents	6	127	1	(1)	\$1.30 and under \$1.40.	38		(1)	
27½ and under 30 cents		272		1	\$1.40 and under \$1.50.	8		(1)	
30 and under 32½ cents	63	580	15	2	\$1.50 and under \$1.60.	32		(1)	
32½ and under 35 cents	10	518	2	2	\$1.60 and under \$1.70.	11		(1)	
35 and under 37½ cents	15	901	4	3	\$1.70 and under \$1.80.	1		(1)	
37½ and under 40 cents	96	1,778	23	6	\$1.80 and under \$2.	1		(1)	
40 and under 42½ cents	107	2,871	25	9	\$2 and under \$2.50.	4		(1)	
42½ and under 45 cents	7	1,425	2	4	\$2.50 and under \$2.75.	8		(1)	
45 and under 47½ cents	24	1,952	6	6	\$2.75 and under \$3.	1		(1)	
47½ and under 50 cents	36	857	9	3	\$3 and under \$3.50.	1		(1)	
50 and under 55 cents	9	5,067	2	16					
55 and under 60 cents		4,868		15					
					Total	423	32,195		

¹ Less than 1 per cent.

Full-Time Hours per Week and per Day, 1924 and 1931

The full-time or basic hours per week of a wage earner are those established for him by a regular time of beginning and quitting work on each day of the week. Such hours do not include any overtime that may have been worked or any regular time off duty for meals. They do, however, include any of the regular hours that may have been lost for any cause in a week. Full-time hours per week of individual wage earners in a mine frequently vary as the hours for certain occupations in the mine are more or less than for other occupations.

Table 7 shows for the wage earners covered in 1924 and 1931 in each of six representative occupations, average full-time hours per week and the per cent at each specified number or classified group of full-time hours per week.

The full-time hours per week of the 5,327 company drilling machine operators included in the 1924 study, averaged 51.4 and the hours of 7 per cent of them were less than 48 per week; of 48 per cent were 48; of 8 per cent were over 48 and under 56; of 32 per cent were 56; and of 6 per cent of them were 60 per week. The average for the 3,684 covered in 1931 was 49.5 per week and the percentage distribution was 5 per cent at less than 45 per week; 16 per cent at 45; 42 per cent at 48; 15 per cent at over 48 and under 56; 20 per cent at 56; and 2 per cent at 60 hours per week. For a similar classification, by number, of the wage earners covered in each of the six occupations in each State in 1931, see Table C (p. 44).

TABLE 7.—Average and classified full-time hours per week in 6 specified occupations in metalliferous mines in 1924 and 1931

Occupation	Year	Number of—		Average full-time hours per week	Per cent of wage earners whose full-time hours per week were—									
		Mines	Wage earners		Under 45	45	Over 45 and under 48	48	Over 48 and under 56	56	60	Over 60 and under 72	72 and under 84	84
Drilling-machine operators, company (underground)	1924	106	5,327	51.4			2 7	48	8	32	6			
	1931	95	3,694	49.5	5	16		42	15	20	2			
Drilling-machine operators, contract (underground)	1924	61	5,970	48.6			2 22	66	1	12	(1)			
	1931	53	3,945	49.1		(1)		86	1	13	(1)			
Muckers (underground)	1924	82	4,110	52.7			(1)	44	10	28	18			
	1931	104	4,656	50.2	1	4		63	11	12	9			
Timbermen (underground)	1924	92	2,055	51.5			2 7	46	6	41	1			
	1931	86	2,926	48.7	1	3		79	10	6	(1)			
Topmen (surface)	1924	113	1,742	55.3				17	33	15	34	1	(1)	(1)
	1931	81	815	54.9	1	8		14	26	13	35	3		
Trammers (underground)	1924	97	2,028	50.9			2 4	55	6	34	(1)			
	1931	61	635	48.9	(1)	3		80	7	9				

¹ Less than 1 per cent.

² Tabulated in a former bulletin as "under 48."

³ Less than 1 per cent, tabulated in a former bulletin as "under 48."

The hours per week and on each day, Monday to Friday, Saturday, and Sunday, shown, by States, in Table 8 are the prevailing regular or customary full-time hours of operation of the wage earners at underground work, at surface work, and at underground and surface work in the 117 underground mines covered in 1931; and also of those in the 22 open-pit mines covered in that year. There is a variation of hours of wage earners in different occupations or groups in each of a considerable number of mines. The "prevailing" hours (those of the majority of the wage earners in each of such mines) were used in compiling this table.

Hours per week in the 117 underground mines for underground work ranged from 40 in 2 mines to 60 in 4 mines; for surface work from 40 in 2 mines to 70 in 2 mines; and for surface and underground work from 40 in 1 mine to 70 in 2 mines. Hours per week in open-pit mines were 56 in 3 mines and 60 in 19 mines.

Hours per day for wage earners in underground mines for underground work on each day of the week except Sunday ranged from 7½ to 10, and on Sunday were 7½ or 8 in the 29 mines which were on the 7-day-week basis.

Wage earners in underground work in 3 mines were on the 5-day-week basis with no work on Saturday and Sunday, and in 85 mines were on the 6-day-week basis with no work on Sunday.

TABLE 8.—Number of metalliferous mines in each State at each specified number of full time hours per week and per day, 1931

Full-time hours per week	Full-time hours per day—			Number of mines in—															Total mines
	Monday to Friday	Saturday	Sunday	Ala-bama	Ariz-ona	Calif-ornia	Colo-rado	Idaho	Kansas	Michi-gan	Minne-sota	Mis-souri	Mon-tana	Nevada	New Mexico	Okla-homa	South Dakota	Utah	
Underground work:																			
40.....	8	0	0					1		1									2
45.....	7½	7½	0		3										1				4
48.....	8	8	0		1	4	4	3	5	15	10	7	5		3	13		6	76
48¾ ¹	7½	7½	7½		2														2
50.....	10	0	0	1															1
52 ¹	8	8	8			3													3
52½.....	7½	7½	7½		3		1							3					7
54.....	9	9	0	1															1
56.....	8	8	8			1	5				2			5	1		1	2	17
60.....	10	10	0	3							1								4
Total.....				5	9	8	10	4	5	16	13	7	5	8	5	13	1	8	117
Surface work:																			
40.....	8	0	0					1		1									2
45.....	7½	7½	0		2														3
48.....	8	8	0		2	4	4	2	5			7	4		3	13		5	49
48 ¹	8	8	8		2	2													4
52 ¹	8	8	8		2		1												4
52½.....	7½	7½	7½		2									1					4
54.....	9	9	0	1							3								12
56.....	8	8	8		1	1		1		8									4
60.....	10	10	0	4		1	5	1					1	7	1		1	3	21
63.....	9	9	9			1				7	8								19
70.....	10	10	10								2								1
Total.....				5	9	8	10	4	5	16	13	7	5	8	5	13	1	8	117

FULL-TIME HOURS, 1924 AND 1931

¹ Average resulting from having one day off every two weeks.

TABLE 8.—Number of metalliferous mines in each State at each specified number of full-time hours per week and per day, 1931—Continued

Full-time hours per week	Full-time hours per day—			Number of mines in—														Total mines	
	Monday to Friday	Saturday	Sunday	Ala-bama	Arizona	Calif-ornia	Colo-rado	Idaho	Kansas	Michi-gan	Minne-sota	Mis-souri	Mon-tana	Nevada	New Mexico	Okla-homa	South Dakota		Utah
Surface and under-ground work:																			
40	8	0	0							1									1
45	7½	7½	0																3
48	8	8	0		2	3	4	3	5			7	4		1	13		6	50
50	10	0	0	1															1
52 ¹	8	8	8		2	2													4
52½	7½	7½	7½		2		1												4
54	9	9	0	1						8	3			1					12
56	8	8	8		1	2	5	1					1	7	1		1	2	21
60	10	10	0	3						7	8								18
63	9	9	9			1													1
70	10	10	10								2								2
Total				5	9	8	10	4	5	16	13	7	5	8	5	13	1	8	117
Open-pit mines:																			
56	8	8	8											1	1			1	3
60	10	10	0	2							16								18
	10%	5%	0	1															1
Total				3							16			1	1			1	22

¹ Average resulting from having one day off every two weeks.

Changes in Full-Time Hours per Week Since June 1, 1929

Between June 1, 1929, and the period of the 1931 study (June to October), changes were made in the regular full-time hours of wage earners in six mines. No change was made in the hours of 133 of the 139 mines covered in 1931.

The full-time hours in 3 mines were changed from a 7-day week of 8 hours a day or 56 hours per week to a 6-day week of 8 hours a day, or 48 hours per week, and in the other 3 mines from a 7-day week of 8 hours a day, with two Sundays off duty each month, to the 6-day week of 8 hours a day, or 48 hours per week.

Changes in Wage Rates Since June 1, 1929

Between June 1, 1929, and the period of the 1931 study of the industry, the wage rates of all or a specified part of the wage earners in 85 mines were reduced one or more times. No change was made in the wage rates of any of the wage earners in 54 mines.

Table 9 shows the number of mines in which wage rates were reduced, the wage earners affected, and the per cent or the amount of reduction and the year in which made.

TABLE 9.—Changes in wage rates in 85 metalliferous mines between June 1, 1929, and the period of the 1931 study

Number of mines	Wage earners whose rates were decreased	Per cent or amount of decrease and year made
1	All.....	30 per cent, year not reported.
7	All.....	20 per cent, 6 mines in 1931 and 1 mine year not reported.
1	All.....	15 per cent in 1931.
1	All.....	12½ per cent in 1931.
9	All.....	10 per cent, 3 mines in 1930 and 6 in 1931
3	Time workers.....	50 cents per day in 1930.
3	All.....	50 cents per day, 1 mine in 1930 and 2 in 1931.
2	All.....	25 cents per day, 1 mine in 1930 and 1 in 1931.
1	Repairmen and trammers.....	25 cents per day in 1931.
1	Time workers.....	10 per cent in 1930 and 15 per cent in 1931.
4	All.....	10 per cent in 1930 and 10 per cent in 1931.
1	All.....	10 and 8 per cent in 1931.
1	All.....	5 and 10 per cent in 1930.
1	All.....	5 per cent in 1930 and 10 per cent in 1931.
1	All.....	5 per cent in 1930 and 5 per cent in 1931.
1	All.....	4.35 per cent and 9.09 per cent in 1930.
1	All.....	50 cents per day in 1930 and 10 per cent in 1931.
2	All.....	75 and 25 cents per day in 1930.
2	All.....	25 cents per day between June 1, 1929, and Jan. 1, 1931, and 75 cents in 1931.
3	All.....	50 and 25 cents per day in 1930.
2	All.....	50 cents per day in 1930 and 25 cents in 1931.
2	{All.....	10 per cent in 1930.
	{Those of more than \$3.25 per day.....	10 per cent in 1931.
2	{Time workers.....	\$1.50 per day in 1931.
2	{Shovelers.....	3 cents per can in 1931.
2	All.....	5 and 10 per cent in 1930 and 10 per cent in 1931.
6	All.....	5 per cent in 1929 and 5 and 10 per cent in 1930.
1	All.....	4½ per cent in 1929 and 9 and 9 per cent in 1930.
1	All.....	50 cents per day twice in 1930 and once in 1931.
3	{Time workers.....	25 and 25 cents per day in 1930 and 50 cents in 1931.
	{Shovelers.....	½ and ¼ cent per can in 1930 and 1 cent in 1931.

TABLE 9.—Changes in wage rates in 85 metalliferous mines between June 1, 1929, and the period of 1931 study—Continued

Number of mines	Wage earners whose rates were decreased	Per cent or amount of decrease and year made
2	Time workers.....	50 cents per day in 1930 and 25 and 25 cents in 1931.
	Shovelers.....	1½ cents per can in 1930 and 1 cent and ½ cent in 1931.
1	Time workers.....	50 cents per day and 10 per cent in 1930 and 33 per cent in 1931.
	Shovelers.....	½ cent and 1 cent per can in 1930 and 3 cents in 1931.
4	Time workers.....	10 per cent in 1930 and 10 per cent and 50 cents per day in 1931.
	Shovelers.....	1 cent per can in 1930 and 1 cent and 1 cent in 1931.
1	Time workers.....	50 cents per day in 1930 and 75 and 25 cents in 1931.
	Shovelers.....	½ cent per can in 1930 and 1½ cents and 1 cent in 1931.
1	All.....	25 to 50 and 20 to 40 cents per day in 1930, 10 and 10 per cent in 1930 and 7 and 17½ per cent in 1931.
1	All.....	10 and 10 per cent in 1930 and 7 and 17 per cent in 1931.
1	Muckers.....	50 cents per day in 1929, 50 cents in 1930, and 25 cents in 1931.
	Miners.....	25 cents per day in 1929, 50 cents in 1930, and 25 cents in 1931.
1	All.....	25 cents per day in 1929, 50 and 25 cents in 1930, and 25 cents in 1931.
1	Underground workers.....	75 and 25 cents per day in 1930 and 25 cents in 1931.
	Surface workers.....	50 and 25 cents per day in 1930 and 25 cent in 1931.
1	Time workers.....	5 per cent in 1930 and 33 per cent in 1931.
1	Shovelers.....	1 cent per can in 1930 and 1 cent in 1931.
	Time workers.....	10 per cent in 1930 and 10 per cent in 1931.
1	Shovelers.....	1 cent per can in 1930 and 1 cent in 1931.
	Time workers.....	25 and 25 cents per day in 1931.
2	Shovelers.....	½ and ½ cent per can in 1931.
	Time workers.....	25 cents per day in 1930 and 75 cents in 1931.
1	Shovelers.....	½ cent per can in 1930 and 3 cents in 1931.
	Those at \$5 per day and over before any cut.....	25 cents per day in 1929 and 25 and 50 cents in 1930.
1	Those at less than \$5 per day before any cut.....	20 cents per day in 1929 and 20 and 40 cents in 1930.

Overtime and Sunday and Holiday Work, 1931

Overtime is any time worked before or after the regular time of beginning and quitting work on each day of the week (including Sundays and holidays for those whose working schedules provide for work on those days), and any time worked during the regular time established for meals, regardless of the rate of pay or amount of time credited for such extra work. Work on Sundays and holidays is overtime only when performed by wage earners whose regular hours do not provide for work on those days.

Of the 139 mines covered in the 1931 study of the industry 99 reported certain of their wage earners as having worked some overtime, and 43 reported extra work on Sundays and holidays by certain wage earners. There was, therefore, no overtime in 40 mines, and no extra work on Sundays and holidays in 96 mines.

The rate paid for overtime was the same as for regular working time in 92 mines and one and one-half times the regular rate in 7 mines. The rate of one and one-half times the regular rate was paid to the maintenance crew of 5 mines, to cagers, hoist men, pump men,

and maintenance men in 1 mine, and to electricians, pipemen, and timbermen and helpers in 1 mine.

The rate for extra work on Sundays and holidays was the same as for regular working time in 41 of the 43 mines in which there was such work; in 1 mine the rate was one and one-half times the regular rate, which was paid to electricians, pipemen, timbermen, and timbermen helpers; and in 1 mine to cagers, hoist men, pump men, and maintenance men.

Bonus Systems

A bonus is compensation in addition to earnings at time or piece rates. Bonus systems were found in operation in 51 of the 139 mines studied in 1931.

Table 10 shows the number of mines in which bonus systems were in operation at the time of the study, the wage earners eligible to earn the bonus, the amount of the bonus, and the performance necessary on the part of wage earners to earn it. The basis of the bonus was production in 21 mines, service in 19, time saved in 9, and production and time saved in 2 mines.

TABLE 10.—*Bonus systems of 51 metalliferous mines, 1931*

Number of mines	Basis or kind of bonus	Wage earners eligible	Amount of bonus	Bonus earned—
1	Production..	Miners, muckers, and timbermen.	Varies with condition and type of work.	When production exceeds set standard.
1	.....do.....	Miners and muckers.....	Each unit above set standard at basic rate.	Do.
1	.....do.....	Miners, muckers, timbermen, brakemen, motor-men, pipemen, and trackmen.	3½ cents for each ton over 50 per man per day, prorated according to time worked.	When production exceeds 50 tons per man per day.
1	.....do.....	Mucking-machine operators.	5 cents for each car loaded over 30 per day.	When cars loaded exceed 30 per day.
1	.....do.....	Raise and shaft miners.....	\$1 per man for each lineal foot mined in excess of 100 per month.	When group of 4 men mine more than 100 lineal feet per month.
1	.....do.....	Miners, muckers, and trammers.	20 cents for each ton in excess of 14 per day, divided equally among men working.	When production is more than 14 tons of ore per day.
1	.....do.....	Miners and muckers on development work.	Varies with rates per foot for work under different conditions, divided equally among men working.	When production is more than a set standard.
1	.....do.....	.....do.....	\$5.40 per foot of advance in drift work on \$3.80 per foot in raises for each foot in excess of 3 feet per shift, prorated according to time worked.	When development advances more than 3 feet per shift.
1	.....do.....	Miners, muckers, timbermen and helpers, trammers and shifters on development work.	50 cents per man per shift..	When development advances more than 4 feet per shift.
2	.....do.....	Hoist men.....	Three-fourths of 1 cent for each can hoisted over 600 per day.	When more than 600 cans per day are hoisted.
6	.....do.....	Hoist men and can hookers.	.....do.....	Do.
1	.....do.....	Hoist men.....	1 cent for each can hoisted over 600 per day.	Do.
1	.....do.....	Hoist men and can hookers.	.....do.....	Do.

TABLE 10.—*Bonus systems of 51 metalliferous mines, 1931—Continued*

Number of mines	Basis or kind of bonus	Wage earners eligible	Amount of bonus	Bonus earned—
1	Production	{ Contract shovelers..... Mechanical loaders.....	4 cents for each ton over 22 loaded per day. 6 cents for each ton loaded in excess of set standard for each shaft.	When more than 22 tons per day are loaded. When tons loaded are more than 100 at shaft A, 82 at shaft B, or 87 at shaft C.
1	do.	Maintenance men except watchmen and a few common laborers.	One-half of excess at regular rates.	When production is more than set standard.
2	Service	{ Shovel engineers..... Locomotive engineers.....	10 cents per hour..... 5 cents per hour.....	When service is 1 or more years. Do. Do. Do.
1	do.	{ Shovel engineers..... Locomotive engineers, locomotive cranimen, and dragline operators.	10 cents per hour..... 5 cents per hour.....	Do. Do.
1	do.	{ Shovel engineers..... Locomotive engineers and locomotive cranimen.	10 cents per hour..... 5 cents per hour.....	Do. Do.
7	do.	{ Shovel engineers..... Shovel cranimen..... Locomotive engineers.....	10 cents per hour..... 8½ cents per hour..... 5 cents per hour.....	Do. Do. Do.
4	do.	{ Shovel engineers..... Shovel cranimen.....	10 cents per hour..... 8½ cents per hour.....	Do. Do.
1	do.	{ Locomotive engineers and locomotive cranimen. Shovel engineers.....	5 cents per hour..... 10 cents per hour.....	Do. Do.
1	do.	{ Shovel engineers and track bosses. Shovel cranimen.....	8½ cents per hour..... 5 cents per hour.....	Do. Do.
2	do.	{ Walking bosses..... Shovel engineers.....	10 to 20 cents per hour..... 10 cents per hour.....	Do. Do.
2	Time saved	{ Cranes..... Miners, muckers, timbermen and helpers, and jigger bosses.	8½ cents per hour..... All time saved at basic rates, prorated according to time worked.	Do. When task is completed in less than the time allotted.
3	do.	Miners on development work.	do.	Do.
1	do.	Miners, muckers, and timbermen.	do.	Do.
2	do.	Miners and muckers on development work.	do.	Do.
1	{ Time saved..... Production.....	{ Miners, timbermen, shaft men, shaft jigger bosses, Leyner men and helpers, and muckers. Trammers.....	do. 15 cents for each car over set number which varies with conditions.	Do. When cars trammed (pushed) exceeds set number.
1	Time saved	{ Miners, muckers, and timbermen. Muckers, miners, mucking-machine operators, and contractor.	All of time saved at basic rates, prorated according to time worked. All of time saved at basic rates divided as follows: 18.2 per cent to mucker, 27.3 per cent to miner and mucking-machine operator, and 54.5 per cent to contractor.	When task is completed in less than set time. Do.
1	{ Time saved..... Production.....	{ Miners, muckers, and timbermen and helpers. Trammers.....	All of time saved at basic rates, prorated according to earnings. Varies with rates per car under different conditions.	Do. When more than a set number of cars are trammed.

Index Numbers of Employment and of Pay Rolls, 1929 to 1931

Index numbers of employment and of pay rolls in the metalliferous mining industry are presented in Table 11 for each of the months and for each of the years in the period, January, 1929, to December,

1931. These numbers were computed from the number of persons employed and the amount of the pay rolls for each month and the average for each year, with the 1929 average as the base or 100 per cent, and are as published by the Bureau of Labor Statistics in its monthly reports entitled "Trend of employment."

During the period covered by the table the indexes for both employment and pay rolls were highest at 103.8 and 105.6, respectively, in June, 1929, and lowest at 51.2 and 34.3, respectively, in December, 1931. By years, index numbers of employment were 100.0 in 1929, 83.2 in 1930, and 59.1 in 1931; and of pay rolls 100.0 in 1929, 78 in 1930, and 44.8 in 1931.

TABLE 11.—Index numbers of employment and of pay rolls, January, 1929, to December, 1931, by month and year

[Average for 1929=100]

Month	Index numbers of—					
	Employment			Pay-roll totals		
	1929	1930	1931	1929	1930	1931
January.....	93.1	95.7	68.3	88.0	92.7	55.0
February.....	94.6	92.3	65.3	91.8	92.5	54.6
March.....	97.0	90.9	63.5	99.1	90.8	52.8
April.....	100.6	89.3	63.9	104.6	88.3	51.4
May.....	100.8	87.5	62.4	104.6	85.6	49.3
June.....	103.8	84.6	60.0	105.6	81.6	46.1
July.....	101.5	80.5	56.2	99.0	71.9	41.3
August.....	103.2	79.0	55.8	100.1	71.0	40.2
September.....	101.2	78.1	55.5	102.0	69.9	40.0
October.....	101.9	77.2	53.8	103.1	68.6	37.4
November.....	103.0	72.8	52.8	102.2	63.4	35.1
December.....	98.5	70.1	51.2	99.7	59.9	34.3
Average.....	100.0	83.2	59.1	100.0	78.0	44.8

Scope and Method

Wage figures covering days, hours, and earnings of each of the wage earners found in each occupation in the industry in 1931 were collected by agents of the bureau from the pay rolls and other records of 139 representative metalliferous mines in 15 States. The number of wage earners employed in these States, based on the 1928 report of the United States Bureau of Mines, is approximately 90 per cent of the total number of wage earners in the industry in all States. The number of wage earners (32,195) for which wage figures are given in this bulletin is approximately one-third of the total in the United States. In 1924 similar data were collected from the records of 137 representative mines in 14 of the 15 States covered in 1931.

Table 12 shows the total number of mines and of wage earners in the industry in each of 15 States, in the group designated as "other States," and in all States, according to the United States Bureau of Mines. It also shows the number of mines and wage earners covered in the 1931 study in each of the 15 States.

TABLE 12.—Number of wage earners in metalliferous mines in 1928 and number of mines and wage earners for which 1931 wage data are shown, by States

State	Number of wage earners reported by U. S. Bureau of Mines, 1928	Mines and wage earners for which data are shown for 1931		State	Number of wage earners reported by U. S. Bureau of Mines, 1928	Mines and wage earners for which data are shown for 1931	
		Number of mines	Number of wage earners			Number of mines	Number of wage earners
Alabama.....	5,893	8	2,132	Montana.....	9,336	5	2,495
Arizona.....	11,535	9	3,969	Nevada.....	3,334	9	1,146
California.....	5,669	8	1,688	New Mexico.....	2,623	6	1,442
Colorado.....	3,404	10	983	Oklahoma.....	4,294	13	1,018
Idaho.....	4,330	4	1,621	South Dakota.....	1,397	1	986
Kansas.....	2,074	5	325	Utah.....	6,898	9	2,214
Michigan.....	15,020	16	5,978	Other States.....	10,167	-----	-----
Minnesota.....	10,121	29	4,577	Total.....	98,683	139	32,195
Missouri.....	2,588	7	1,671				

Data for each of the mines with a pay period of more than one week were reduced to a 1-week basis.

Average earnings per hour of employees in each occupation as presented in the various tables in this report were computed by dividing the combined earnings of all employees in the occupation in one week by the combined hours worked by all employees in the occupation in the week.

Average full-time hours per week of all employees in each occupation were computed by dividing the combined full-time hours per week of all employees in the occupation by the number of employees in the occupation in one week. Full-time hours per week of each employee were used in arriving at this average, even though some employees worked more or less than full time on account of overtime, sickness, disability, or other cause.

Average full-time earnings per week of employees in each occupation were computed by multiplying the average earnings per hour of all employees in the occupation by the average full-time hours per week. This is on the assumption that the earnings for full time would have been at the same average rate per hour as for the time that was actually worked in one week.

Occupations

The occupations for which days, hours, and earnings are shown in this bulletin are as listed in Tables 2 and A. Each occupation is defined in the glossary, which also gives the mine terms and the bureau's classification of the occupations. (See Appendix, pp. 54 to 64.)

General Tables

In addition to the preceding text tables, five general tables are presented 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, 1931, by occupation, district, and State.

The presentation in parallel columns of "average full-time hours per week" and "average hours actually worked in one week" is for the purpose of easy comparison of the hours that would have been worked in the week had all employees in the occupation worked no more nor less than full time, with the average hours that were actually worked in the week. One shows the full-time hours under normal conditions, while the other shows the hours actually worked in the week by all wage earners covered in each State and in all States combined in 1931.

The table shows (p. 38) that 32,195 wage earners in the 139 mines worked on an average of five days in one week; that their average full-time hours in one week were 51.6; that they actually worked an average of 41.6 hours in one week or 80.6 per cent of full time; that they earned an average of 55.9 cents per hour and \$23.25 in the week; and that, had they worked full time at the same average per hour as was earned in the 41.6 hours, they would have earned an average of \$28.84 per week.

TABLE B.—Average and classified earnings per hour in six specified occupations, 1931, by district and State.

TABLE C.—Average and classified full-time hours per week in six specified occupations, 1931, by district and State.

TABLE D.—Average and classified hours actually worked in one week in six specified occupations, 1931, by district and State.

TABLE E.—Average and classified actual earnings in one week in six specified occupations, 1931, by district and State.

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, 1931, by occupation, district, and State

UNDERGROUND MINES

Occupation, district, and State	Number of mines	Number of wage earners	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
Blacksmiths (surface and underground):									
Western mixed ores—									
Arizona.....	9	17	5.4	48.7	41.6	85.4	\$0.731	\$35.60	\$30.39
California.....	7	10	6.6	51.5	53.5	103.9	.703	36.20	37.63
Colorado.....	10	12	6.3	51.7	51.4	99.4	.677	35.00	34.81
Idaho.....	4	10	5.4	49.6	43.2	87.1	.723	35.86	31.23
Montana.....	4	6	5.2	49.3	41.3	83.8	.671	33.08	27.72
Nevada.....	8	10	6.1	53.7	48.7	90.7	.700	37.59	34.11
New Mexico.....	4	4	6.3	49.3	50.3	102.0	.604	29.78	30.38
South Dakota.....	1	4	6.3	56.0	50.0	89.3	.696	38.98	34.81
Utah.....	7	14	6.6	52.0	53.6	103.1	.583	30.32	31.23
Total.....	54	87	6.0	51.1	48.0	93.9	.677	34.59	32.51
Michigan copper.....	5	55	4.3	54.0	38.4	71.1	.399	21.55	15.30
Northern iron—									
Michigan.....	10	35	4.0	58.7	37.1	63.2	.494	29.00	18.32
Minnesota.....	11	21	4.2	60.1	40.4	67.2	.569	34.20	22.99
Total.....	21	56	4.1	59.3	38.3	64.6	.524	31.07	20.07
Alabama iron.....	5	14	4.2	58.9	38.7	65.7	.577	33.99	22.35
Tri-State lead and zinc.....	22	27	6.0	48.0	49.3	102.7	.520	24.96	25.62
All districts.....	107	229	5.0	53.8	43.1	80.1	.563	30.29	24.26

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Blacksmiths' helpers (surface and underground):									
Western mixed ores—									
Arizona.....	7	21	5.4	47.5	42.1	88.6	\$0.542	\$25.75	\$22.80
California.....	8	8	6.6	52.9	54.9	103.8	.534	28.25	29.33
Colorado.....	6	9	6.4	52.9	53.2	100.6	.582	30.79	30.98
Idaho.....	3	6	5.3	48.0	42.7	89.0	.563	27.02	24.00
Montana.....	3	5	6.0	48.0	48.0	100.0	.594	28.50	28.50
Nevada.....	5	7	5.9	55.5	46.4	83.6	.594	32.97	27.55
New Mexico.....	2	4	6.8	52.0	54.5	104.8	.396	20.59	21.60
South Dakota.....	1	4	5.5	56.0	44.3	79.1	.438	24.53	19.36
Utah.....	6	10	6.3	50.4	50.4	100.0	.467	23.55	23.55
Total.....	41	74	5.9	50.7	47.6	93.9	.531	26.92	25.28
Michigan copper.....	4	36	4.0	54.0	36.3	67.2	.355	19.17	12.89
Northern iron—									
Michigan.....	8	17	3.0	58.5	29.2	49.9	.433	25.33	12.63
Minnesota.....	7	17	3.7	59.3	36.7	61.9	.437	25.91	16.00
Total.....	15	34	3.4	58.9	32.9	55.9	.435	25.62	14.32
Alabama iron.....	4	12	4.5	58.2	42.7	73.4	.358	20.84	15.30
Tri-State lead and zinc.....	10	14	5.6	48.0	44.6	92.9	.443	21.26	19.76
All districts.....	74	170	4.9	53.3	41.7	78.2	.463	24.68	19.30
Cagers (underground):									
Western mixed ores—									
Arizona.....	8	39	6.1	49.7	45.6	91.8	.640	31.81	29.21
California.....	1	1	6.0	48.0	48.0	100.0	.563	27.00	27.00
Colorado.....	3	7	5.9	48.0	46.6	97.1	.618	29.66	28.77
Idaho.....	3	16	5.8	50.0	48.7	97.4	.636	31.80	30.96
Nevada.....	2	3	6.7	56.0	53.3	95.2	.669	37.46	35.66
New Mexico.....	4	10	6.3	50.6	50.6	100.0	.487	24.63	24.63
South Dakota.....	1	17	6.6	56.0	53.6	95.7	.557	31.19	29.83
Utah.....	6	30	6.2	49.1	49.7	101.2	.536	26.32	26.62
Total.....	28	123	6.2	50.6	48.8	96.4	.587	29.70	28.63
Michigan copper.....	3	11	3.9	48.0	31.3	65.2	.440	21.12	13.76
Northern iron—									
Michigan.....	5	9	3.8	47.1	32.1	68.2	.562	26.47	18.05
Minnesota.....	3	4	3.8	48.0	30.0	62.5	.503	24.14	15.10
Total.....	8	13	3.8	47.4	31.5	66.5	.545	25.83	17.14
Alabama iron.....	1	2	3.0	60.0	24.0	40.0	.425	25.50	10.20
Tri-State lead and zinc.....	2	8	6.0	48.0	47.0	97.9	.463	22.22	21.76
All districts.....	42	157	5.8	50.1	45.7	91.2	.570	28.56	26.05
Carpenters (surface and underground):									
Western mixed ores—									
Arizona.....	7	13	5.6	50.5	43.9	86.9	.694	35.05	30.48
California.....	6	11	5.8	49.5	47.6	96.2	.651	32.22	31.03
Colorado.....	6	14	6.9	51.8	57.6	111.2	.778	40.30	44.83
Idaho.....	2	4	4.8	48.0	40.3	84.0	.800	38.40	32.19
Montana.....	3	4	6.0	48.0	48.0	100.0	.688	33.00	33.00
Nevada.....	5	7	5.6	56.0	46.0	82.1	.739	41.38	33.99
New Mexico.....	3	4	6.3	48.5	49.0	101.0	.586	28.42	28.69
South Dakota.....	1	5	6.0	56.0	48.0	85.7	.672	37.63	32.25
Utah.....	5	9	6.3	50.7	50.7	100.0	.624	31.64	31.64
Total.....	38	71	6.0	51.1	43.9	95.7	.699	35.72	34.15
Michigan copper.....	6	60	4.5	54.0	41.0	75.9	.397	21.44	16.27

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Carpenters (surface and underground)—Continued.									
Northern iron—									
Michigan.....	10	38	3.5	57.6	33.9	58.9	\$.513	\$29.55	\$17.43
Minnesota.....	10	18	4.1	58.6	40.5	69.1	.553	32.41	22.38
Total.....	20	56	3.7	57.9	36.0	62.2	.528	30.57	19.02
Alabama iron.....	5	27	4.1	59.0	39.2	66.4	.517	30.50	20.25
Tri-State lead and zinc.....	9	17	4.5	48.0	36.4	75.8	.557	26.74	20.28
All districts.....	78	231	4.7	54.2	41.7	76.9	.557	30.19	23.19
Carpenters' helpers (surface and underground):									
Western mixed ores—									
Arizona.....	2	4	4.5	45.0	33.8	75.1	.471	21.20	15.89
California.....	3	3	6.7	50.7	54.3	107.1	.458	23.22	24.87
Colorado.....	2	3	7.0	56.0	59.0	105.4	.542	30.35	31.98
Idaho.....	1	5	6.0	48.0	48.8	101.7	.563	27.02	27.45
Montana.....	3	5	6.0	48.0	48.0	100.0	.613	29.40	29.40
South Dakota.....	1	2	7.0	56.0	54.0	96.4	.519	26.06	28.00
Utah.....	1	1	6.0	48.0	48.0	100.0	.500	24.00	24.00
Total.....	13	23	6.0	49.6	48.5	97.8	.537	26.64	26.01
Michigan copper.....	2	19	4.6	54.0	42.8	79.3	.362	19.55	15.50
Northern iron—									
Michigan.....	5	8	3.3	59.3	31.4	53.0	.421	24.97	13.21
Minnesota.....	2	7	3.7	58.3	37.1	63.6	.453	26.41	16.80
Total.....	7	15	3.5	58.8	34.1	58.0	.437	25.70	14.89
Alabama iron.....	2	62	2.4	60.0	20.3	33.8	.373	22.38	7.58
Tri-State lead and zinc.....	2	4	4.0	48.0	34.0	70.8	.476	22.85	16.18
All districts.....	26	123	3.6	56.6	31.2	55.1	.430	24.34	13.42
Chute loaders (underground):									
Western mixed ores—									
Arizona.....	2	42	4.7	47.7	35.2	73.8	.590	28.14	20.77
California.....	2	8	6.1	48.0	49.0	102.1	.531	25.49	26.02
Colorado.....	3	47	6.1	56.0	49.1	87.7	.572	32.03	28.09
Idaho.....	1	2	6.0	48.0	48.0	100.0	.594	28.50	28.50
Nevada.....	2	10	6.4	56.0	51.2	91.4	.625	35.00	32.00
South Dakota.....	1	11	5.4	56.0	44.0	78.6	.594	33.26	26.13
Total.....	11	120	5.6	52.4	43.9	83.8	.582	30.50	25.54
Northern iron—									
Michigan.....	8	41	3.0	47.0	24.5	52.1	.614	28.86	15.05
Minnesota.....	5	20	3.6	48.0	28.4	59.2	.504	24.19	14.31
Total.....	13	61	3.2	47.3	25.8	54.5	.574	27.15	14.81
Tri-State lead and zinc.....	7	14	6.0	48.0	48.1	100.2	.389	18.67	18.73
All districts.....	31	195	4.9	50.5	38.5	76.2	.563	28.43	21.69

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Compressor men (surface and underground):									
Western mixed ores—									
Arizona.....	4	12	6.1	49.4	47.0	95.1	\$0.688	\$33.99	\$32.37
California.....	5	16	6.3	49.3	50.6	102.6	.545	26.87	27.57
Colorado.....	5	9	6.6	52.4	52.9	101.0	.643	33.69	33.99
Idaho.....	2	11	4.3	48.0	34.4	71.7	.643	30.86	22.10
Montana.....	1	2	7.0	56.0	56.0	100.0	.513	28.71	28.71
Nevada.....	2	2	7.0	56.0	56.0	100.0	.742	41.53	41.53
New Mexico.....	2	2	6.5	52.0	52.0	100.0	.388	20.18	20.18
South Dakota.....	1	5	7.0	56.0	56.0	100.0	.594	33.25	33.25
Utah.....	6	14	6.1	52.0	46.1	88.7	.563	29.28	25.93
Total.....	23	73	6.0	50.9	47.7	93.7	.600	30.54	28.61
Michigan copper.....	6	26	4.3	51.5	37.3	72.4	.393	20.24	14.66
Northern iron—									
Michigan.....	4	10	3.8	69.0	43.3	62.8	.363	25.05	15.73
Minnesota.....	2	3	4.0	64.4	40.1	62.3	.504	32.46	20.22
Total.....	6	13	3.8	67.9	42.6	62.7	.394	26.75	16.77
Alabama iron.....	4	13	4.1	53.5	35.4	66.2	.452	24.18	16.03
Tri-State lead and zinc.....	8	11	5.7	51.3	53.3	103.9	.502	25.75	26.72
All districts.....	52	136	5.3	52.9	44.5	84.1	.527	27.88	23.46
Drilling-machine operators, company (underground):									
Western mixed ores—									
Arizona.....	9	1,138	5.6	47.3	45.0	95.1	.774	36.61	34.84
California.....	8	471	5.9	50.3	47.5	94.4	.600	30.18	28.49
Colorado.....	10	142	5.9	51.4	46.2	89.9	.613	31.51	28.31
Idaho.....	4	299	5.6	46.5	44.6	95.9	.601	27.95	26.81
Montana.....	5	201	5.7	48.7	46.0	94.5	.608	29.61	27.95
Nevada.....	8	251	6.2	55.5	49.5	89.2	.692	38.41	34.30
New Mexico.....	5	142	6.1	52.0	48.9	94.0	.445	23.14	21.80
South Dakota.....	1	184	5.7	56.0	45.0	80.4	.622	34.83	27.95
Utah.....	8	315	5.7	50.5	45.8	90.7	.534	26.97	24.44
Total.....	53	3,143	5.8	49.6	46.1	92.9	.652	32.64	30.31
Michigan copper.....	3	69	3.8	48.0	30.7	64.0	.433	20.78	13.30
Northern iron—									
Michigan.....	3	145	4.8	41.9	38.1	90.9	.806	33.77	30.68
Minnesota.....	7	53	4.5	49.5	36.2	73.1	.646	31.98	23.36
Total.....	10	198	4.7	44.0	37.6	85.5	.765	33.66	28.72
Alabama iron.....	5	95	2.3	59.7	20.3	34.0	.486	29.01	9.86
Tri-State lead and zinc.....	19	179	5.4	48.0	43.6	90.8	.403	19.34	17.56
All districts.....	95	3,684	5.6	49.5	44.5	89.9	.646	31.98	28.76
Drilling-machine operators, contract (underground):									
Western mixed ores—									
Arizona.....	1	8	4.5	52.5	32.9	62.7	.792	41.58	26.03
California.....	1	60	5.7	48.0	45.7	95.2	.894	42.91	40.90
Colorado.....	5	55	6.5	54.0	51.8	95.9	.826	44.60	42.79
Montana.....	5	483	5.7	48.1	45.6	94.8	.760	36.56	34.66
New Mexico.....	2	60	5.4	53.8	42.4	78.8	.520	27.98	22.05
South Dakota.....	1	311	5.6	56.0	44.1	78.8	.867	48.55	38.19
Utah.....	2	27	5.1	48.0	40.4	84.2	.738	35.42	29.85
Total.....	17	1,004	5.7	51.2	45.1	88.1	.791	40.50	35.62
Michigan copper.....	5	618	4.0	48.0	31.8	66.3	.571	27.41	18.14

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Drilling-machine operators, contract (underground)—Con.									
Northern iron—									
Michigan.....	9	848	3.1	48.0	24.1	50.2	\$0.714	\$34.27	\$17.23
Minnesota.....	13	948	3.6	48.8	28.7	58.8	.709	34.60	20.36
Total.....	22	1,796	3.3	48.4	26.6	55.0	.711	34.41	18.88
Alabama iron.....	3	88	3.4	54.2	32.6	60.1	.512	27.75	16.70
Tri-State lead and zinc.....	6	480	5.5	48.0	43.3	90.2	.575	27.60	24.90
All districts.....	53	3,945	4.3	49.1	34.2	69.7	.694	34.08	23.75
Drilling-machine operators' helpers (underground):									
Western mixed ores—									
California.....	2	36	5.9	52.0	48.9	94.0	.518	26.94	25.35
Colorado.....	3	9	6.4	54.2	51.6	95.2	.610	33.06	31.46
Idaho.....	1	3	5.7	40.0	45.3	113.3	.656	26.24	29.75
Montana.....	1	1	6.0	48.0	48.0	100.0	.481	23.10	23.10
Total.....	7	49	6.0	51.6	49.1	95.2	.543	28.02	26.69
Michigan copper.....	1	141	3.9	48.0	31.2	65.0	.428	20.54	13.34
Northern iron: Michigan.....	1	10	3.1	48.0	25.3	52.7	.572	27.46	14.46
Alabama iron.....	4	120	2.4	59.6	21.3	35.7	.373	22.23	7.93
Tri-State lead and zinc.....	19	177	5.3	48.0	42.3	88.1	.349	16.75	14.75
All districts.....	32	497	4.2	51.2	34.4	67.2	.403	20.63	13.87
Drivers (surface):									
Western mixed ores: Colo- rado.....	1	1	7.0	56.0	56.0	100.0	.625	35.00	35.00
Michigan copper.....	6	21	4.7	54.0	42.8	79.3	.354	19.12	15.18
Northern iron: Michigan.....	3	10	3.1	59.4	29.0	48.8	.399	23.79	11.57
Alabama iron.....	1	16	4.8	60.0	40.7	67.8	.353	21.18	14.34
All districts.....	11	48	4.4	57.2	39.5	69.1	.369	21.11	14.56
Drivers, mule (underground):									
Western mixed ores—									
Arizona.....	1	3	5.0	45.0	37.5	83.3	.671	30.20	25.17
California.....	2	28	6.0	48.3	47.9	99.2	.578	27.92	27.65
Idaho.....	1	4	6.8	56.0	56.0	100.0	.586	32.82	32.82
Nevada.....	1	1	7.0	52.5	52.5	100.0	.702	36.83	36.83
New Mexico.....	1	3	6.0	48.0	48.0	100.0	.431	20.71	20.71
Utah.....	2	15	5.9	48.0	46.9	97.7	.477	22.90	22.40
Total.....	8	54	6.0	48.7	47.7	97.9	.549	26.74	26.22
Alabama iron.....	2	9	4.2	54.7	38.7	70.7	.255	13.95	9.87
Tri-State lead and zinc.....	21	184	5.4	48.0	42.8	89.2	.495	23.76	21.20
All districts.....	31	247	5.5	48.4	43.7	90.3	.500	24.20	21.89
Dry-house men (surface):									
Western mixed ores—									
Arizona.....	8	31	5.9	51.6	47.1	91.3	.443	22.86	20.84
California.....	2	2	6.5	52.0	52.0	100.0	.471	24.50	24.50
Idaho.....	2	4	5.3	50.0	42.0	84.0	.542	27.10	22.76
Montana.....	3	11	4.9	48.0	39.3	81.9	.500	24.00	19.64
Nevada.....	2	5	6.8	56.0	54.4	97.1	.524	29.34	28.50
New Mexico.....	3	5	6.8	54.4	57.6	105.9	.369	20.07	21.27
South Dakota.....	1	2	7.0	56.0	56.0	100.0	.469	26.25	26.25
Total.....	21	60	5.9	51.6	47.3	91.7	.460	23.74	21.72
Michigan copper.....	6	23	4.3	52.2	37.7	72.2	.336	17.54	12.66

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Dry-house men (surface)—Con.									
Northern iron—									
Michigan.....	8	20	3.9	64.5	42.4	65.7	\$0.344	\$22.19	\$14.58
Minnesota.....	11	20	4.0	62.3	41.9	67.3	.400	24.92	16.75
Total.....	19	40	4.0	63.4	42.1	66.4	.372	23.58	15.66
Alabama iron.....	3	7	6.1	54.0	53.9	99.8	.297	16.04	16.00
Tri-State lead and zinc.....	2	4	4.5	48.0	36.0	75.0	.388	18.62	13.95
All districts.....	51	134	5.0	55.2	44.1	79.9	.404	22.30	17.83
Dumpers (surface):									
Western mixed ores—									
Arizona.....	1	2	5.0	45.0	37.5	83.3	.587	26.42	22.00
California.....	3	4	6.5	52.6	53.8	102.3	.472	24.83	25.38
Colorado.....	2	2	7.0	54.3	54.3	100.0	.551	31.50	31.50
Nevada.....	1	1	6.0	52.5	48.0	91.4	.501	26.30	24.04
New Mexico.....	4	6	6.3	49.7	52.0	104.6	.431	21.42	22.40
Utah.....	1	2	6.0	48.0	48.0	100.0	.469	22.50	22.50
Total.....	12	17	6.2	50.3	50.3	100.0	.482	24.23	24.23
Michigan copper.....	1	10	5.6	48.0	44.2	92.1	.455	21.84	20.13
Northern iron—									
Michigan.....	7	36	3.3	58.4	32.5	55.7	.471	27.51	15.33
Minnesota.....	7	21	3.0	56.9	27.7	48.7	.446	25.38	12.36
Total.....	14	57	3.2	57.9	30.7	53.0	.463	26.81	14.23
Alabama iron.....	2	22	2.4	60.0	20.3	33.8	.367	22.02	7.44
Tri-State lead and zinc.....	3	13	5.8	48.0	44.3	92.3	.476	22.85	21.11
All districts.....	32	119	4.0	55.3	34.2	61.8	.458	25.33	15.65
Electricians (surface and underground):									
Western mixed ores—									
Arizona.....	8	60	5.8	49.5	46.5	93.9	.687	34.01	31.91
California.....	8	9	6.6	52.3	55.4	105.9	.721	37.71	39.96
Colorado.....	7	9	5.4	52.9	48.4	91.5	.651	34.44	31.48
Idaho.....	4	38	5.9	52.6	49.4	93.9	.665	34.98	32.86
Montana.....	2	6	4.2	49.3	34.3	69.6	.699	34.46	23.99
Nevada.....	4	9	6.4	56.0	51.8	92.5	.773	43.29	40.04
New Mexico.....	3	4	6.3	49.3	49.3	100.0	.711	35.04	35.04
South Dakota.....	1	11	6.3	56.0	52.8	94.3	.664	37.18	35.05
Utah.....	8	41	5.5	54.2	44.7	82.5	.669	36.26	29.89
Total.....	45	187	5.8	52.2	47.5	91.0	.682	35.60	32.41
Michigan copper.....	5	19	4.2	54.0	38.7	71.7	.407	21.98	15.77
Northern iron—									
Michigan.....	10	39	4.1	60.0	36.5	60.8	.542	32.52	19.80
Minnesota.....	8	16	4.7	55.4	42.7	77.1	.573	31.74	24.43
Total.....	18	55	4.3	55.8	38.3	68.6	.552	30.80	21.15
Alabama iron.....	5	22	5.2	59.0	48.4	82.0	.566	33.39	27.38
Tri-State lead and zinc.....	9	25	5.4	48.0	45.2	94.2	.561	26.93	25.35
All districts.....	82	308	5.3	53.1	45.2	85.1	.629	33.40	28.44

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Electricians' helpers (surface and underground):									
Western mixed ores—									
Arizona.....	4	8	6.3	49.4	49.0	99.2	\$0.538	\$26.58	\$26.38
California.....	1	1	7.0	48.0	58.0	120.8	.601	28.85	34.86
Idaho.....	2	14	5.4	52.6	45.1	85.7	.569	29.93	25.64
Montana.....	1	2	6.0	48.0	50.0	104.2	.594	28.51	28.68
Nevada.....	1	2	6.5	56.0	52.0	92.9	.563	31.53	29.25
New Mexico.....	2	2	6.5	50.5	51.0	101.0	.488	24.64	24.90
South Dakota.....	1	6	5.7	56.0	45.0	80.4	.469	26.26	21.10
Utah.....	5	24	6.3	54.3	51.5	94.8	.572	31.06	29.47
Total.....	17	59	6.0	53.0	49.0	92.5	.555	29.42	27.22
Michigan copper.....	1	14	2.7	54.0	26.2	48.5	.367	19.82	9.61
Northern iron—									
Michigan.....	3	13	2.7	58.5	25.8	44.1	.464	27.14	11.95
Minnesota.....	4	8	5.6	57.8	54.8	94.8	.444	25.66	24.34
Total.....	7	21	3.8	58.2	36.8	63.2	.452	26.31	16.67
Alabama iron.....	1	1	6.0	60.0	51.0	85.0	.378	22.68	19.28
Tri-State lead and zinc.....	5	9	5.8	48.0	47.2	98.3	.463	22.22	21.84
All districts.....	31	104	5.1	53.8	43.4	80.7	.512	27.55	22.18
Engineers, stationary (surface):									
Western mixed ores—									
Arizona.....	1	4	5.3	52.5	39.4	75.0	.794	41.69	31.28
New Mexico.....	1	3	7.0	56.0	56.0	100.0	.646	36.19	36.19
South Dakota.....	1	10	6.8	56.0	55.1	98.4	.661	38.14	37.53
Utah.....	1	3	7.0	56.0	56.0	100.0	.656	36.75	36.75
Total.....	4	20	6.6	55.3	52.2	94.4	.689	38.10	35.96
Michigan copper.....	1	12	5.1	48.0	40.7	84.8	.420	20.16	17.09
Northern iron—									
Michigan.....	3	11	4.7	55.3	38.7	70.0	.569	31.47	22.03
Minnesota.....	1	4	4.0	60.0	35.2	58.7	.499	29.94	17.58
Total.....	4	15	4.5	56.5	37.8	66.9	.552	31.19	20.85
Alabama iron.....	1	2	5.5	60.0	53.1	88.5	.340	20.40	18.05
Tri-State lead and zinc.....	6	12	4.8	49.8	37.7	75.7	.588	29.28	22.18
All districts.....	16	61	5.4	53.2	43.6	82.0	.579	30.80	25.23
Firemen, stationary (surface):									
Western mixed ores—									
Arizona.....	3	13	6.4	49.6	47.9	96.6	.611	30.31	29.23
Colorado.....	1	3	6.7	56.0	58.7	104.8	.537	30.07	31.50
Montana.....	1	3	7.0	56.0	56.0	100.0	.625	35.00	35.00
Nevada.....	1	1	7.0	52.5	52.5	100.0	.533	28.00	28.00
New Mexico.....	1	3	7.0	56.9	56.0	100.0	.536	30.03	30.03
South Dakota.....	1	3	7.0	56.0	56.0	100.0	.563	31.50	31.50
Utah.....	2	4	6.5	52.0	52.0	100.0	.495	25.75	25.75
Total.....	10	30	6.6	52.6	52.1	99.0	.573	30.14	29.84
Michigan copper.....	6	141	4.4	48.8	35.1	71.9	.397	19.37	13.93
Northern iron—									
Michigan.....	4	24	3.9	54.5	33.4	61.3	.492	26.81	16.43
Minnesota.....	2	4	6.3	56.5	53.0	93.8	.519	29.32	27.53
Total.....	6	28	4.2	54.8	36.2	66.1	.497	27.24	18.02
Alabama iron.....	1	3	5.0	72.0	58.0	80.6	.292	21.02	16.92
Tri-State lead and zinc.....	2	4	4.3	53.5	36.0	67.3	.347	18.56	12.48
All districts.....	25	206	4.7	50.6	38.1	75.3	.441	22.31	16.82

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Hoist men (surface):									
Western mixed ores—									
Arizona	9	64	6.4	53.4	49.6	92.9	\$0.735	\$39.25	\$36.48
California	6	29	6.8	55.6	54.6	98.2	.689	38.31	37.62
Colorado	3	8	6.9	56.0	58.4	104.3	.635	35.56	37.07
Idaho	4	25	6.0	52.8	49.3	93.4	.695	36.70	34.27
Montana	4	32	5.8	52.3	46.6	89.1	.750	39.23	34.97
Nevada	7	24	6.5	55.6	52.5	94.4	.697	38.75	36.62
New Mexico	4	14	6.5	53.3	51.9	97.4	.621	33.10	32.26
South Dakota	1	12	6.7	56.0	53.3	95.2	.580	32.48	30.94
Utah	5	18	6.7	53.8	54.8	101.9	.624	33.57	34.18
Total	43	226	6.4	53.9	51.2	95.0	.693	37.35	35.47
Michigan copper	6	75	4.7	51.9	41.2	79.4	.406	21.07	16.70
Northern iron—									
Michigan	9	53	4.6	52.3	41.3	79.0	.557	29.13	23.04
Minnesota	12	37	5.0	66.9	55.5	83.0	.452	30.24	25.10
Total	21	90	4.8	58.3	47.2	81.0	.507	29.56	23.88
Alabama iron	5	18	5.1	52.0	43.8	84.2	.566	29.43	24.79
Tri-State lead and zinc	25	81	6.0	48.0	48.9	101.9	.503	24.14	24.59
All districts	100	490	5.7	53.4	48.3	90.4	.586	31.29	28.28
Hoist men (underground):									
Western mixed ores—									
Arizona	4	18	6.4	51.4	49.9	97.1	.760	39.06	37.95
California	6	39	6.1	50.8	49.1	96.7	.601	30.53	29.49
Colorado	3	8	6.1	48.0	48.3	100.6	.672	32.26	32.44
Idaho	2	9	4.3	48.9	34.9	71.4	.568	27.78	19.82
Montana	3	5	3.2	49.6	49.8	100.4	.649	32.19	32.30
Nevada	3	8	6.6	55.1	52.6	95.5	.645	35.84	33.92
New Mexico	1	1	6.0	48.0	48.0	100.0	.500	24.00	24.00
Utah	6	24	5.6	49.0	45.1	92.0	.545	26.71	24.58
Total	28	112	5.9	50.4	47.4	94.0	.625	31.50	29.62
Michigan copper	2	16	4.6	48.0	37.0	77.1	.418	20.06	15.48
Northern iron—									
Michigan	1	2	2.0	48.0	15.7	32.7	.525	25.20	8.24
Minnesota	1	2	2.0	48.0	15.7	32.7	.587	28.18	9.22
Total	2	4	2.0	48.0	15.7	32.7	.556	26.69	8.73
Alabama iron	5	32	3.8	58.3	36.8	63.1	.392	22.85	14.42
Tri-State lead and zinc	12	33	5.3	48.0	41.9	87.3	.380	18.24	15.95
All districts	49	197	5.3	51.0	43.3	84.9	.538	27.44	23.29
Loading-machine operators (underground):									
Western mixed ores—									
Arizona	2	11	5.9	48.8	43.6	89.3	.796	38.84	34.74
Colorado	3	6	6.8	54.3	54.1	99.6	.613	33.29	33.15
Idaho	1	4	6.0	48.0	48.0	100.0	.717	34.43	34.43
Nevada	1	6	6.5	56.0	52.0	92.9	.625	35.00	32.50
Total	7	27	6.2	51.5	48.5	94.2	.698	35.95	33.84
Michigan copper	1	11	4.0	48.0	32.0	66.7	.421	20.21	13.48
Alabama iron	3	46	3.0	59.0	26.7	45.3	.441	26.02	11.77
Tri-State lead and zinc	7	143	5.5	48.0	43.9	91.5	.643	30.86	28.26
All districts	18	227	5.0	50.6	40.4	79.8	.616	31.17	24.87

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Machinists (surface and underground):									
Western mixed ores—									
Arizona.....	9	81	5.9	49.5	46.0	92.9	\$0.697	\$34.50	\$32.07
California.....	8	21	6.0	50.6	48.5	95.8	.625	31.63	30.32
Colorado.....	5	11	6.1	50.2	50.0	99.6	.635	31.88	31.73
Idaho.....	4	23	6.1	52.2	48.8	93.5	.690	36.02	33.67
Montana.....	3	6	5.2	48.0	42.3	88.1	.687	32.98	29.10
Nevada.....	8	18	6.3	55.8	50.6	90.7	.721	40.23	36.51
New Mexico.....	3	9	6.8	49.4	57.8	117.0	.591	29.20	34.14
South Dakota.....	1	5	6.4	56.0	52.0	92.9	.702	39.31	36.50
Utah.....	7	18	6.3	51.6	51.3	99.4	.591	30.50	30.31
Total.....	48	192	6.0	50.9	48.4	95.1	.670	34.10	32.42
Michigan copper.....	6	62	4.4	54.0	39.6	73.3	.423	22.84	16.74
Northern iron—									
Michigan.....	7	29	3.6	56.8	34.0	59.9	.543	30.84	18.48
Minnesota.....	8	11	5.0	59.8	49.6	82.9	.626	37.43	31.06
Total.....	15	40	4.0	57.7	38.3	66.4	.573	38.06	21.94
Alabama iron.....	5	26	4.9	58.5	47.4	81.0	.578	33.81	27.38
Tri-State lead and zinc.....	8	41	5.8	48.0	46.0	95.8	.555	26.64	25.48
All districts.....	82	361	5.4	52.4	45.4	86.6	.604	31.65	27.42
Machinists' helpers (surface and underground):									
Western mixed ores—									
Arizona.....	8	17	5.4	49.4	41.2	83.4	.594	29.34	24.49
California.....	3	6	6.2	48.7	52.3	107.4	.486	23.67	25.44
Idaho.....	3	20	6.0	51.6	47.1	91.3	.606	31.27	28.52
Montana.....	1	1	6.0	48.0	48.0	100.0	.594	28.50	28.50
Nevada.....	3	10	6.5	56.0	53.4	95.4	.595	33.32	31.78
New Mexico.....	2	6	6.0	49.3	50.8	103.0	.398	19.62	20.25
South Dakota.....	1	5	6.4	56.0	50.2	89.6	.531	29.74	26.67
Utah.....	1	1	6.0	48.0	48.0	100.0	.563	27.00	27.00
Total.....	22	66	6.0	51.4	47.6	92.6	.563	28.94	26.78
Michigan copper.....	5	27	4.3	54.0	38.8	71.9	.354	19.12	13.72
Northern iron—Minnesota.....	5	15	4.1	59.2	40.0	67.6	.446	26.40	17.86
Alabama iron.....	3	14	4.9	59.1	43.8	74.1	.428	25.29	18.77
Tri-State lead and zinc.....	3	8	5.9	48.0	46.3	96.5	.487	23.38	22.52
All districts.....	38	130	5.3	53.5	44.4	83.0	.493	26.38	21.91
Motormen (underground):									
Western mixed ores—									
Arizona.....	8	184	5.4	48.2	40.3	83.6	.665	32.05	26.81
California.....	4	13	5.2	48.3	41.9	86.7	.551	26.61	23.12
Colorado.....	6	34	6.6	53.3	52.9	99.2	.583	31.07	30.94
Idaho.....	3	46	5.6	48.0	45.5	94.8	.600	28.80	27.34
Montana.....	4	94	6.0	48.0	48.0	100.0	.594	28.50	28.50
Nevada.....	5	17	6.4	55.6	51.1	91.9	.625	34.75	31.94
New Mexico.....	1	8	6.9	56.0	57.8	103.2	.430	24.08	24.84
South Dakota.....	1	48	5.9	56.0	50.7	90.5	.625	35.00	31.67
Utah.....	5	32	6.0	50.5	47.8	94.7	.513	25.91	24.55
Total.....	37	476	5.8	49.9	45.5	91.2	.613	30.54	27.87
Michigan copper.....	1	39	4.0	48.0	31.8	66.3	.422	20.26	13.41

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Motormen (underground)—Continued.									
Northern iron—									
Michigan.....	10	69	2.9	47.5	24.0	50.5	\$0.505	\$26.84	\$13.53
Minnesota.....	13	101	3.0	48.3	24.6	50.9	.534	25.79	13.12
Total.....	23	170	3.0	48.0	24.3	50.6	.547	26.26	13.29
Alabama iron	5	37	4.2	59.1	39.3	66.5	.430	25.41	16.90
Tri-State lead and zinc.....	9	111	5.7	48.0	44.9	93.5	.508	24.38	22.84
All districts.....	75	833	5.0	49.6	40.2	81.0	.574	28.47	23.06
Muckers (underground):									
Western mixed ores—									
Arizona.....	9	329	5.8	47.7	43.2	90.6	.611	29.14	26.41
California.....	8	357	5.7	48.7	45.9	94.3	.532	25.91	24.42
Colorado.....	10	212	5.9	50.7	47.2	93.1	.552	27.99	26.01
Idaho.....	4	318	5.4	46.3	43.6	94.2	.536	24.82	23.39
Montana.....	5	491	5.6	48.0	45.4	94.6	.609	33.55	31.72
Nevada.....	8	125	6.2	54.6	48.6	89.0	.589	32.16	28.62
New Mexico.....	5	282	5.7	53.8	45.4	84.4	.374	20.12	16.99
South Dakota.....	1	98	5.6	56.0	43.4	77.5	.530	29.68	23.04
Utah.....	8	307	5.8	49.8	46.0	92.4	.472	23.51	21.72
Total.....	53	2,579	5.7	49.6	45.3	91.3	.553	27.43	25.02
Michigan copper.....	5	508	3.8	48.0	30.7	64.0	.466	21.89	14.00
Northern iron—									
Michigan.....	7	19	3.7	48.0	29.5	61.5	.530	25.44	15.64
Minnesota.....	4	32	3.7	48.0	29.2	60.8	.566	27.17	16.51
Total.....	11	51	3.7	48.0	29.3	61.0	.552	26.50	16.19
Alabama iron	5	687	3.3	57.1	30.6	53.6	.365	20.84	11.18
Tri-State lead and zinc.....	25	831	5.4	48.0	41.4	86.3	.447	21.46	18.50
All districts.....	104	4,656	5.1	50.2	40.6	80.9	.505	25.35	20.51
Nippers (underground):									
Western mixed ores—									
Arizona.....	6	42	5.5	47.1	41.3	87.7	.588	27.69	24.26
California.....	5	28	5.4	48.3	43.4	89.9	.489	23.62	21.22
Colorado.....	4	6	6.5	52.0	52.0	100.0	.572	29.75	29.75
Idaho.....	3	21	5.2	48.0	41.7	86.9	.580	27.84	24.20
Montana.....	5	36	6.0	48.4	47.8	98.8	.589	28.51	28.15
Nevada.....	3	4	6.5	56.0	52.0	92.9	.560	31.36	29.13
New Mexico.....	1	4	5.8	48.0	46.0	95.8	.399	19.15	18.35
South Dakota.....	1	7	6.0	56.0	49.0	87.5	.540	30.24	26.46
Utah.....	5	16	6.4	51.5	49.5	96.1	.483	24.87	23.92
Total.....	33	164	5.7	49.0	45.0	91.8	.551	27.00	24.82
Michigan copper.....	2	20	3.5	48.0	28.0	58.3	.368	17.66	10.31
Northern iron: Michigan	2	3	4.3	48.0	33.3	69.4	.516	24.77	17.21
Tri-State lead and zinc.....	1	1	6.0	48.0	54.0	112.5	.389	18.67	21.00
All districts.....	38	188	5.5	48.8	43.1	88.3	.537	26.21	23.14
Oilers (surface and underground):									
Western mixed ores—									
Arizona.....	7	12	6.2	48.6	47.4	97.5	.566	27.51	26.52
California.....	3	7	6.4	53.6	52.4	97.8	.533	28.57	27.96
Idaho.....	1	3	4.3	48.0	34.7	72.3	.600	28.80	20.79
Montana.....	3	17	4.7	48.0	38.1	79.4	.590	28.32	22.48
South Dakota.....	1	10	6.7	56.0	55.1	98.4	.548	30.69	30.18
Utah.....	1	5	6.0	56.0	48.0	85.7	.436	24.42	20.91
Total.....	16	54	5.7	51.1	45.9	89.8	.552	28.21	25.34
Michigan copper.....	5	51	4.3	53.1	36.9	69.5	.321	17.05	11.85

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Oilers (surface and underground)—Continued.									
Northern iron—									
Michigan.....	3	8	2.5	60.0	21.7	36.2	\$0.424	\$25.44	\$9.21
Minnesota.....	1	1	4.0	60.0	44.3	73.8	.575	34.60	25.48
Total.....	4	9	2.7	60.0	24.2	40.3	.455	27.30	11.02
Alabama iron.....									
Tri-State lead and zinc.....	3	4	5.0	57.0	46.5	81.6	.271	15.45	12.59
.....	5	5	6.2	48.0	50.0	104.2	.392	18.82	19.60
All districts.....	33	123	4.9	52.6	40.8	77.6	.443	23.30	18.05
Ore sorters (surface and underground):									
Western mixed ores—									
Colorado.....	6	40	5.2	49.6	43.2	87.1	.500	24.80	21.60
Idaho.....	1	14	4.0	48.0	34.9	72.7	.500	24.00	17.43
Nevada.....	1	4	7.0	56.0	58.0	103.6	.563	31.53	32.63
New Mexico.....	4	12	6.1	46.9	47.3	100.9	.378	17.78	17.90
Total.....	12	70	5.2	49.2	43.1	87.6	.482	23.71	20.76
Pipemen (surface and underground):									
Western mixed ores—									
Arizona.....	8	45	5.7	48.6	47.5	97.7	.637	30.96	30.25
California.....	5	8	6.5	51.5	51.8	100.6	.554	28.53	28.67
Colorado.....	2	3	3.3	48.0	26.7	55.6	.650	31.20	17.33
Idaho.....	3	5	5.6	48.0	46.0	95.8	.618	29.66	28.45
Montana.....	4	40	6.1	48.0	49.5	103.1	.648	31.10	32.09
Nevada.....	4	6	6.5	56.0	52.0	92.9	.636	35.62	33.08
New Mexico.....	3	4	6.3	50.0	50.0	100.0	.436	21.82	21.82
South Dakota.....	1	2	7.0	56.0	56.5	100.9	.625	35.00	35.32
Utah.....	6	48	6.4	52.3	51.4	98.3	.526	27.51	27.05
Total.....	36	161	6.1	50.1	49.3	98.4	.595	29.81	29.34
Michigan copper.....	4	14	4.3	45.4	34.9	72.1	.410	19.84	14.34
Northern iron—									
Michigan.....	10	54	3.5	56.1	32.2	57.4	.514	28.84	16.55
Minnesota.....	9	14	3.1	52.3	26.5	50.7	.528	27.61	14.01
Total.....	19	68	3.4	55.3	31.0	56.1	.517	28.59	16.03
Alabama iron.....	5	16	3.8	56.8	35.2	62.0	.379	21.53	13.34
Tri-State lead and zinc.....	3	5	6.2	48.0	45.6	95.0	.467	22.42	21.30
All districts.....	67	264	5.2	51.7	42.9	83.0	.559	28.90	23.99
Powder men (underground):									
Western mixed ores—									
Arizona.....	7	22	5.7	47.4	43.3	91.4	.540	25.60	23.39
California.....	2	4	5.5	48.0	44.0	91.7	.537	25.78	23.63
Colorado.....	4	4	6.3	52.0	50.0	96.2	.555	28.86	27.75
Idaho.....	1	1	6.0	48.0	48.0	100.0	.563	27.00	27.00
Nevada.....	3	5	7.0	56.0	56.0	100.0	.625	35.00	35.00
New Mexico.....	4	8	6.4	51.3	50.5	98.4	.423	21.70	21.34
South Dakota.....	1	6	7.0	56.0	56.7	101.3	.619	34.66	35.08
Utah.....	5	8	6.1	49.0	49.0	100.0	.503	24.66	24.66
Total.....	27	58	6.1	50.1	48.1	96.0	.537	26.90	25.87
Michigan copper.....	1	11	3.7	48.0	29.8	62.1	.465	22.32	13.87

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Powder men (underground)—Continued.									
Northern iron—									
Michigan.....	8	13	4.1	43.3	30.8	63.8	\$0.532	\$25.70	\$16.38
Minnesota.....	5	6	3.3	43.0	26.5	56.2	.536	25.73	14.18
Total.....	13	19	3.8	43.2	29.4	61.0	.533	25.69	15.63
Alabama iron.....	4	9	4.3	59.3	39.2	66.1	.423	25.38	16.81
Tri-State lead and zinc.....	11	14	6.1	43.0	48.4	100.8	.444	21.31	21.50
All districts.....	56	111	5.3	50.1	42.4	84.6	.510	25.55	21.65
Pump men (underground):									
Western mixed ores—									
Arizona.....	9	37	6.8	52.2	51.4	98.5	.675	35.24	34.73
California.....	6	39	6.6	55.7	54.4	97.7	.584	32.53	31.77
Colorado.....	1	7	6.4	43.0	51.4	107.1	.625	30.00	32.14
Idaho.....	3	16	5.9	53.5	47.8	89.3	.625	33.44	29.84
Montana.....	4	15	6.6	49.6	56.8	114.5	.687	34.08	39.05
Nevada.....	4	13	6.5	55.2	51.5	93.3	.665	36.71	34.29
New Mexico.....	4	13	6.7	55.7	54.5	97.8	.489	27.24	26.68
South Dakota.....	1	5	6.6	56.0	42.6	76.1	.597	33.43	25.43
Utah.....	5	21	6.5	50.7	51.2	101.0	.498	25.25	25.52
Total.....	37	166	6.6	53.2	52.2	98.1	.608	32.35	31.73
Michigan copper.....	6	82	4.4	49.2	36.5	74.2	.397	19.53	14.49
Northern iron—									
Michigan.....	9	49	4.6	53.7	39.7	73.9	.530	23.46	21.05
Minnesota.....	13	42	5.4	54.8	48.6	88.7	.499	27.35	24.25
Total.....	22	91	5.0	54.2	43.8	80.8	.514	27.86	22.53
Alabama iron.....	5	14	5.1	60.0	50.8	84.7	.395	23.70	20.09
Tri-State lead and zinc.....	11	18	6.3	52.7	54.7	103.8	.415	21.87	22.70
All districts.....	81	371	5.6	52.8	46.8	88.6	.530	27.98	24.79
Roof trimmers (underground):									
Michigan copper.....	2	5	3.8	43.0	30.4	63.3	.387	18.58	11.77
Northern iron: Michigan.....	1	10	1.6	43.0	13.3	27.7	.700	33.60	9.31
Alabama iron.....	2	2	5.5	57.0	50.3	88.2	.382	21.77	19.20
Tri-State lead and zinc.....	21	58	5.3	43.0	42.3	88.1	.466	22.37	19.71
All districts.....	26	75	4.7	43.2	37.8	78.4	.470	22.65	17.78
Skippers (underground):									
Western mixed ores—									
Arizona.....	8	24	5.5	43.9	41.3	84.5	.641	31.34	26.47
California.....	8	37	6.5	51.9	52.6	101.3	.576	29.89	30.30
Colorado.....	2	6	5.3	49.3	41.8	84.8	.668	32.93	27.94
Idaho.....	1	5	6.0	43.0	48.0	100.0	.594	28.50	28.50
Montana.....	3	40	5.8	43.4	47.2	97.5	.640	30.98	30.15
Nevada.....	6	11	6.6	54.4	52.1	95.8	.643	34.98	33.51
South Dakota.....	1	6	5.0	56.0	39.7	70.9	.594	33.26	23.56
Utah.....	2	6	6.6	43.0	44.0	91.7	.483	23.18	21.25
Total.....	31	135	5.9	50.3	47.3	94.0	.612	30.78	28.96
Michigan copper.....	2	29	4.0	43.0	31.7	66.0	.398	19.10	12.62
Northern iron—									
Michigan.....	8	28	2.7	43.0	22.3	46.5	.535	25.68	11.95
Minnesota.....	13	24	4.1	49.3	32.9	66.7	.551	27.16	18.13
Total.....	21	52	3.4	43.6	27.2	56.0	.544	26.44	14.80
Alabama iron.....	4	9	4.4	58.2	43.3	74.4	.334	19.44	14.45
Tri-State lead and zinc.....	5	17	6.2	43.0	49.5	103.1	.506	24.29	25.05
All districts.....	63	242	5.1	49.8	41.1	82.5	.563	28.04	23.15

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Station men (underground):									
Western mixed ores—									
Idaho.....	2	9	6.0	48.0	48.0	100.0	\$.583	\$28.00	\$28.00
Montana.....	4	62	6.0	48.0	48.0	100.0	.596	28.60	28.60
New Mexico.....	1	6	7.0	56.0	57.5	102.7	.405	22.68	23.29
Total.....	7	77	6.1	48.6	48.7	100.2	.577	28.04	28.11
Northern iron—									
Michigan.....	1	4	2.0	48.0	15.7	32.7	.525	25.20	8.24
Minnesota.....	3	7	3.0	48.0	26.7	55.6	.484	23.23	12.91
Total.....	4	11	2.6	48.0	22.7	47.6	.494	23.71	11.21
Alabama iron.....									
All districts.....	12	135	4.6	52.5	37.5	71.4	.566	29.72	21.25
Timber framers (surface):									
Western mixed ores—									
Arizona.....	6	12	5.5	50.0	43.2	86.4	.609	30.45	26.33
California.....	6	8	6.5	52.4	54.4	103.8	.569	29.82	30.96
Colorado.....	2	2	6.0	50.3	44.8	89.1	.879	34.15	30.38
Idaho.....	4	21	5.7	48.0	46.1	96.0	.536	25.73	24.70
Nevada.....	3	6	5.8	56.0	46.7	83.4	.636	35.62	29.67
New Mexico.....	3	7	6.4	50.6	51.1	101.0	.580	29.35	29.64
South Dakota.....	1	7	5.9	56.0	46.4	82.9	.645	36.12	29.92
Utah.....	3	5	6.2	49.6	49.6	100.0	.474	23.50	23.50
Total.....	28	68	5.9	50.8	47.4	93.3	.576	29.26	27.29
Northern iron—									
Michigan.....	7	33	2.7	58.8	26.1	44.4	.444	26.11	11.60
Minnesota.....	7	18	4.1	60.0	39.4	65.7	.443	26.58	17.45
Total.....	14	51	3.2	59.2	30.8	52.0	.443	26.23	13.66
All districts.....									
	42	119	4.7	54.4	40.3	74.1	.532	28.94	21.45
Timbermen (underground):									
Western mixed ores—									
Arizona.....	9	376	5.5	49.5	41.0	82.8	.736	36.43	30.22
California.....	7	117	6.1	49.1	49.0	99.8	.617	30.29	30.22
Colorado.....	10	89	5.8	50.7	46.2	91.1	.622	31.54	28.73
Idaho.....	4	262	5.3	47.2	42.9	90.9	.554	28.15	23.78
Montana.....	5	556	5.6	48.0	45.3	94.4	.721	34.61	32.68
Nevada.....	7	42	6.2	55.1	48.6	88.2	.652	35.93	31.66
New Mexico.....	4	71	6.3	51.5	50.0	97.1	.517	26.63	25.84
South Dakota.....	1	29	6.8	56.0	56.7	101.3	.624	34.94	35.38
Utah.....	6	123	5.9	51.3	47.4	92.4	.504	25.86	23.90
Total.....	53	1,665	5.7	49.1	44.9	91.4	.655	32.16	29.42
Michigan copper.....									
	6	834	3.8	48.0	30.7	64.0	.446	21.41	13.71
Northern iron—									
Michigan.....	10	138	3.0	47.8	24.0	50.2	.591	28.25	14.19
Minnesota.....	11	270	2.6	48.1	21.2	44.1	.629	30.25	13.35
Total.....	21	408	2.7	48.0	22.2	46.3	.615	29.52	13.63
Alabama iron.....									
Tri-State lead and zinc.....	5	17	6.5	57.3	36.6	63.9	.415	23.78	15.16
	1	2	2.0	48.0	16.0	33.3	.375	18.00	6.00
All districts.....	86	2,926	4.7	48.7	37.6	77.2	.602	29.32	22.64

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Timbermen's helpers (underground):									
Western mixed ores—									
Arizona.....	6	120	5.7	50.4	42.5	84.3	\$0.547	\$27.57	\$23.25
California.....	3	24	6.2	50.5	49.7	98.4	.563	28.43	27.93
Colorado.....	6	35	6.0	49.9	48.3	96.8	.534	26.65	25.75
Idaho.....	4	193	5.3	46.8	42.3	90.4	.561	26.25	23.75
Nevada.....	3	9	6.1	56.0	48.9	87.3	.591	33.10	28.88
New Mexico.....	1	7	5.6	45.0	41.8	92.9	.538	24.21	22.46
South Dakota.....	1	8	6.9	56.0	56.6	101.1	.531	29.74	30.08
Utah.....	4	60	5.6	51.3	45.0	87.7	.451	23.14	20.30
Total.....	28	456	5.6	49.1	43.9	89.4	.540	26.51	23.74
Michigan copper.....	1	10	5.9	48.0	47.2	98.3	.394	18.91	18.61
Northern iron—									
Michigan.....	3	41	2.0	48.0	16.0	33.3	.524	25.15	8.37
Minnesota.....	1	2	3.0	48.0	30.0	62.5	.420	20.16	12.60
Total.....	4	43	2.0	48.0	16.6	34.6	.515	24.72	8.57
Alabama iron.....	5	98	3.2	59.2	29.8	50.3	.332	19.65	9.99
All districts.....	38	607	5.0	50.6	39.8	78.7	.512	25.91	20.34
Tool dressers (surface):									
Western mixed ores—									
Arizona.....	7	29	5.1	47.9	40.0	83.5	.722	34.58	28.90
California.....	7	20	5.5	49.4	44.9	90.9	.614	30.33	27.55
Colorado.....	5	9	6.3	52.4	51.4	98.1	.593	31.34	30.78
Idaho.....	3	8	5.3	46.0	42.0	91.3	.632	29.07	26.55
Montana.....	1	1	7.0	56.0	56.0	100.0	.594	33.25	33.25
Nevada.....	3	4	7.0	56.0	56.0	100.0	.697	39.03	39.03
New Mexico.....	3	4	5.0	50.0	40.0	80.0	.547	27.35	21.89
South Dakota.....	1	12	5.5	56.0	45.3	80.9	.594	33.26	26.92
Utah.....	4	10	5.4	52.0	43.2	83.1	.571	29.69	24.65
Total.....	34	97	5.5	50.4	44.1	87.5	.638	32.16	28.09
Michigan copper.....	5	51	4.0	54.0	36.4	67.4	.360	19.44	13.09
Northern iron: Michigan.....	3	6	5.2	56.7	50.0	88.2	.522	29.60	26.08
Alabama iron.....	1	1	4.0	60.0	40.0	66.7	.600	36.00	24.00
Tri-State lead and zinc.....	3	3	5.3	48.0	41.3	86.0	.594	28.51	24.55
All districts.....	46	158	5.0	51.8	41.7	80.5	.553	28.65	23.08
Topmen (surface):									
Western mixed ores—									
Arizona.....	9	117	5.5	49.8	44.8	90.0	.355	17.68	15.93
California.....	8	44	6.2	51.6	50.7	98.3	.510	26.32	25.85
Colorado.....	7	62	6.1	54.3	50.9	93.7	.547	29.70	27.81
Idaho.....	3	22	5.0	47.6	40.1	84.2	.503	23.94	20.19
Montana.....	4	27	5.9	48.3	47.6	98.6	.529	25.55	25.16
Nevada.....	6	20	5.1	55.1	42.0	76.2	.525	28.93	22.02
New Mexico.....	4	29	6.3	53.5	52.8	98.7	.337	18.03	17.81
South Dakota.....	1	6	7.0	56.0	55.0	98.2	.479	26.82	26.37
Utah.....	3	11	6.4	51.6	50.7	98.3	.436	22.50	22.11
Total.....	45	338	5.8	51.4	47.5	92.4	.449	23.08	21.32
Michigan copper.....	6	128	4.4	54.0	39.7	73.5	.359	19.39	14.27
Northern iron—									
Michigan.....	10	101	3.1	58.3	30.0	51.5	.414	24.14	12.44
Minnesota.....	12	90	4.3	60.0	41.5	69.2	.411	24.66	17.06
Total.....	22	191	3.7	59.1	35.4	59.9	.412	24.35	14.61
Alabama iron.....	5	148	3.4	58.7	30.6	52.1	.264	15.50	8.07
Tri-State lead and zinc.....	3	10	4.2	49.2	33.6	68.3	.277	13.63	9.32
All districts.....	81	815	4.6	54.9	40.2	73.2	.400	21.96	16.09

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued									
Occupation, district, and State	Number of mines	Number of wage earners	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
Trackmen (underground):									
Western mixed ores—									
Arizona.....	8	40	5.8	47.9	43.0	89.8	\$0.630	\$30.18	\$27.07
California.....	3	4	5.8	49.0	46.3	94.5	.586	28.71	27.12
Colorado.....	6	9	6.1	54.2	48.9	90.2	.594	32.19	29.03
Idaho.....	4	6	5.5	46.7	44.0	94.2	.615	28.72	27.04
Montana.....	3	26	6.1	48.0	48.9	101.9	.663	31.82	32.46
Nevada.....	3	3	6.3	54.8	49.7	90.7	.722	39.57	35.84
New Mexico.....	1	4	6.3	56.0	52.0	92.9	.456	25.54	23.73
South Dakota.....	1	9	6.3	56.0	51.4	91.8	.610	34.16	31.36
Utah.....	6	18	6.2	49.3	50.8	103.0	.516	25.44	26.22
Total.....	35	119	6.0	49.7	47.2	95.0	.608	30.22	28.70
Michigan copper.....	4	26	4.1	48.0	33.5	69.8	.404	19.39	13.53
Northern iron—									
Michigan.....	8	14	2.6	47.4	20.4	43.0	.636	30.15	13.00
Minnesota.....	5	28	2.5	48.0	20.7	43.1	.543	26.06	11.24
Total.....	13	42	2.5	47.8	20.6	43.1	.574	27.44	11.83
Alabama iron.....	5	20	4.0	58.7	36.4	62.0	.454	26.65	16.51
Tri-State lead and zinc.....	21	148	5.3	48.0	42.5	88.5	.479	22.99	20.33
All districts.....	78	355	5.1	49.1	40.5	82.5	.529	25.97	21.42
Trackmen's helpers (underground):									
Western mixed ores—									
Arizona.....	5	19	5.6	48.4	41.7	86.2	.532	25.75	22.18
California.....	2	2	6.0	50.0	48.5	97.0	.516	25.80	25.05
Colorado.....	1	1	7.0	56.0	56.0	100.0	.563	31.50	31.50
Idaho.....	3	5	5.2	48.0	42.4	88.3	.555	26.04	23.55
Nevada.....	2	3	6.0	56.0	48.0	85.7	.563	31.53	27.00
New Mexico.....	1	2	7.0	56.0	64.0	114.3	.369	20.66	23.61
South Dakota.....	1	6	6.5	56.0	52.3	93.4	.531	29.74	27.80
Utah.....	2	9	5.4	52.4	44.9	85.7	.455	23.84	20.40
Total.....	17	47	5.8	51.1	45.7	89.4	.512	26.16	23.39
Michigan copper.....	1	1	6.0	48.0	48.0	100.0	.375	18.00	18.00
Northern iron: Michigan.....	1	11	2.2	48.0	17.2	35.8	.475	22.80	8.16
Alabama iron.....	5	132	2.9	59.6	26.1	43.8	.347	20.68	9.07
Tri-State lead and zinc.....	3	5	5.8	48.0	46.4	96.7	.357	17.14	16.55
All districts.....	27	196	3.6	56.5	30.9	54.7	.410	23.17	12.69
Trammers (underground):									
Western mixed ores—									
Arizona.....	3	29	6.1	49.4	46.0	93.1	.555	27.42	25.57
California.....	6	72	6.0	50.2	49.5	98.6	.546	27.41	27.02
Colorado.....	6	53	5.7	50.7	45.4	89.5	.572	29.00	25.97
Idaho.....	3	23	5.8	47.3	46.6	98.5	.531	25.12	24.76
Montana.....	5	213	6.0	48.1	48.0	99.8	.595	28.62	28.57
Nevada.....	3	21	6.7	55.2	53.0	96.0	.590	32.57	31.25
New Mexico.....	5	49	5.7	49.0	44.8	91.4	.392	19.21	17.58
Utah.....	4	23	6.0	48.0	47.7	99.4	.471	22.61	22.46
Total.....	35	483	6.0	49.1	47.6	96.9	.554	27.20	26.40
Michigan copper.....	2	65	5.3	48.0	42.8	89.2	.407	19.54	17.43
Northern iron—									
Michigan.....	3	21	3.8	48.0	30.1	62.7	.517	24.82	15.55
Minnesota.....	8	27	3.6	48.9	30.0	61.3	.499	24.40	14.98
Total.....	11	48	3.7	48.5	30.1	62.1	.507	24.59	15.23
Tri-State lead and zinc.....	13	39	5.7	48.0	45.8	95.4	.332	15.94	15.23
All districts.....	61	635	5.7	48.9	45.7	93.5	.524	25.62	23.96

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Trip riders (underground):									
Western mixed ores—									
Arizona.....	8	171	5.4	48.5	40.4	83.3	\$0.600	\$29.10	\$24.22
California.....	3	7	6.0	48.0	48.3	100.6	.532	25.54	25.68
Colorado.....	1	8	6.5	48.0	52.0	108.3	.500	24.00	26.00
Idaho.....	3	47	5.7	48.0	46.1	96.0	.545	26.16	25.17
Nevada.....	4	11	6.5	55.4	52.2	94.2	.586	32.46	30.62
New Mexico.....	1	8	6.9	56.0	55.5	99.1	.407	22.79	22.57
South Dakota.....	1	5	6.0	56.0	46.2	82.5	.500	28.00	23.10
Utah.....	3	21	4.0	54.1	32.8	60.6	.452	24.45	14.81
Total.....	24	278	5.5	49.4	42.3	85.6	.566	27.96	23.94
Northern iron—									
Michigan.....	2	42	2.5	48.0	21.4	44.6	.525	25.20	11.25
Minnesota.....	7	21	5.1	52.5	45.4	86.5	.504	26.46	22.86
Total.....	9	63	3.4	49.5	29.4	59.4	.514	25.44	15.12
Alabama iron.....									
Tri-State lead and zinc.....	4	27	3.8	59.3	36.1	60.9	.346	20.52	12.49
Tri-State lead and zinc.....	8	49	5.2	48.0	39.7	82.7	.482	23.14	19.15
All districts.....	45	417	5.0	49.9	39.7	79.6	.537	26.80	21.30
Truck operators (surface):									
Western mixed ores—									
Arizona.....	7	13	5.7	48.0	43.1	89.8	.572	27.46	24.67
California.....	5	5	6.2	53.4	54.0	101.1	.525	28.04	28.33
Colorado.....	2	4	6.8	52.0	57.8	111.2	.525	27.30	30.31
Idaho.....	1	1	7.0	56.0	108.0	192.9	.542	30.35	58.51
Montana.....	2	2	7.0	56.0	56.0	100.0	.547	30.63	30.63
Nevada.....	3	7	6.9	56.0	55.9	99.8	.638	35.73	35.65
New Mexico.....	2	2	6.5	52.0	54.0	103.8	.449	23.35	24.24
South Dakota.....	1	3	7.0	56.0	56.3	100.5	.511	28.62	28.76
Utah.....	4	8	6.3	51.0	49.8	97.6	.583	29.73	29.00
Total.....	27	45	6.3	52.0	52.2	100.4	.562	29.22	29.33
Michigan copper.....									
Michigan.....	5	12	4.9	54.0	48.3	89.4	.360	19.44	17.39
Northern iron—									
Michigan.....	8	25	4.1	59.0	37.5	63.6	.456	26.90	17.11
Minnesota.....	8	12	4.8	59.8	45.4	75.9	.451	26.97	20.48
Total.....	16	37	4.3	59.2	40.1	67.7	.464	26.88	18.20
Alabama iron.....									
Tri-State lead and zinc.....	3	7	5.0	59.1	47.3	80.0	.358	21.16	16.93
Tri-State lead and zinc.....	8	14	5.2	48.0	40.0	83.3	.437	20.98	17.46
All districts.....	59	115	5.3	54.5	46.1	84.6	.484	26.38	22.30
Watchmen (surface):									
Western mixed ores—									
Arizona.....	8	72	6.2	52.8	48.0	90.9	.542	28.62	26.03
California.....	6	12	6.9	58.3	57.5	98.6	.506	29.50	29.08
Idaho.....	3	8	6.0	49.0	48.0	98.0	.571	27.98	27.40
Montana.....	4	21	5.7	53.0	45.3	85.5	.500	26.50	22.67
Nevada.....	2	4	7.0	56.0	56.0	100.0	.578	32.38	32.38
New Mexico.....	2	3	6.3	56.0	50.7	90.5	.409	22.90	20.70
South Dakota.....	1	24	6.8	56.0	56.8	101.4	.512	28.67	29.11
Utah.....	5	14	6.9	55.4	55.4	100.0	.496	27.50	27.50
Total.....	31	158	6.3	53.9	50.6	93.9	.524	28.24	26.54
Michigan copper.....									
Michigan.....	6	29	4.9	64.9	42.4	65.3	.377	24.47	15.98
Northern iron—									
Michigan.....	6	11	5.3	57.4	49.4	86.1	.556	31.91	27.49
Minnesota.....	5	12	4.3	63.5	41.2	60.1	.402	27.54	16.53
Total.....	11	23	4.7	63.2	45.1	71.4	.483	30.53	21.77
Alabama iron.....									
Tri-State lead and zinc.....	5	11	5.8	67.1	61.0	90.9	.291	19.53	17.77
Tri-State lead and zinc.....	15	24	6.0	69.1	63.0	91.2	.284	19.62	17.90
All districts.....	68	245	6.0	58.2	50.8	87.3	.464	27.00	23.60

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, 1931, by occupation, district, and State—Continued

UNDERGROUND MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Other employees (surface and underground):									
Western mixed ores—									
Arizona.....	9	670	5.8	49.9	44.2	88.6	\$0.678	\$33.83	\$29.94
California.....	8	117	6.5	52.2	52.4	100.4	.695	36.28	36.39
Colorado.....	8	44	6.1	51.4	49.9	97.1	.550	28.27	27.47
Idaho.....	3	90	5.3	48.1	43.0	89.4	.687	33.04	29.55
Montana.....	5	81	5.4	48.1	43.1	89.6	.656	31.55	28.28
Nevada.....	8	100	6.5	55.9	52.3	93.6	.690	38.57	36.09
New Mexico.....	5	49	6.4	52.2	52.5	100.6	.589	29.70	29.83
South Dakota.....	1	48	6.1	56.0	48.9	87.3	.561	31.42	27.41
Utah.....	8	65	6.0	49.7	48.9	98.4	.617	30.66	30.17
Total.....	55	1,264	5.9	50.7	46.4	91.5	.662	33.56	30.72
Michigan copper.....	6	353	4.2	50.6	35.8	70.8	.434	21.96	15.54
Northern iron—									
Michigan.....	8	146	3.3	57.1	31.7	55.5	.502	28.66	15.88
Minnesota.....	12	92	3.4	56.8	30.7	54.0	.564	32.04	17.32
Total.....	20	238	3.3	57.0	31.3	54.9	.525	29.93	16.43
Alabama iron.....	5	84	4.8	58.6	46.1	78.7	.371	21.74	17.13
Tri-State lead and zinc.....	25	163	5.7	48.0	45.9	95.6	.424	20.35	19.46
All districts.....	111	2,102	5.3	51.5	42.8	83.1	.587	30.23	25.14
All employees (underground mines):									
Western mixed ores—									
Arizona.....	9	3,969	5.7	48.8	43.8	89.8	.679	33.14	29.76
California.....	8	1,088	6.0	50.2	48.4	96.4	.593	29.77	28.74
Colorado.....	10	923	6.0	51.7	48.4	93.6	.597	30.86	28.86
Idaho.....	4	1,621	5.5	47.5	44.0	92.6	.631	27.60	25.59
Montana.....	5	2,495	5.7	48.2	46.0	95.4	.681	32.82	31.33
Nevada.....	8	790	6.3	55.4	50.2	90.6	.655	36.29	32.85
New Mexico.....	5	854	6.0	52.5	48.1	91.6	.443	26.28	21.32
South Dakota.....	1	936	5.9	56.0	46.9	83.8	.674	37.74	31.60
Utah.....	8	1,440	5.9	50.7	46.9	92.5	.521	26.41	24.43
Total.....	58	14,776	5.8	50.1	46.1	92.0	.622	31.16	28.66
Michigan copper.....	6	3,734	4.1	49.4	33.7	68.2	.443	21.88	14.94
Northern iron—									
Michigan.....	10	2,244	3.3	50.8	28.3	55.7	.602	30.58	17.04
Minnesota.....	13	2,028	3.6	51.1	30.6	59.9	.606	30.97	18.52
Total.....	23	4,272	3.5	50.9	29.4	57.8	.604	30.74	17.74
Alabama iron.....	5	1,971	3.4	58.3	31.4	53.9	.385	22.45	12.08
Tri-State lead and zinc.....	25	3,014	5.5	48.2	43.3	89.9	.477	22.99	20.66
All districts.....	117	27,767	5.0	50.5	40.5	80.2	.570	28.79	23.09

OPEN-PIT MINES

Blacksmiths:									
Western mixed ores.....	3	12	6.0	56.0	53.0	94.6	\$0.657	\$36.79	\$34.84
Northern iron.....	16	41	4.4	59.1	43.1	72.9	.611	36.11	26.34
Alabama iron.....	3	3	5.7	60.0	56.3	93.8	.316	18.96	17.81
All districts.....	22	56	4.8	58.5	45.9	78.5	.603	35.28	27.70

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, 1931, by occupation, district, and State—Continued

OPEN-PIT MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	Average days on which employees worked in week	Average full-time hours worked 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
Blacksmiths' helpers:									
Western mixed ores.....	3	16	6.4	56.0	52.1	93.0	\$0.519	\$29.06	\$27.02
Northern iron.....	10	27	5.0	57.8	48.3	83.6	.446	25.78	21.53
All districts.....	13	43	5.6	57.1	49.7	87.0	.475	27.12	23.57
Carpenters:									
Western mixed ores.....	3	18	7.0	56.0	56.2	100.4	.684	38.30	38.42
Northern iron.....	14	33	4.7	59.6	46.2	77.5	.579	34.51	26.78
Alabama iron.....	3	6	5.2	60.0	50.5	84.2	.300	18.00	15.18
All districts.....	20	57	5.5	58.5	49.8	85.1	.587	34.34	29.23
Carpenters' helpers:									
Western mixed ores.....	3	29	6.7	56.0	53.6	95.7	.587	32.87	31.47
Northern iron.....	4	8	5.5	55.5	52.0	93.7	.518	28.75	26.91
Alabama iron.....	1	5	3.6	60.0	33.4	55.7	.254	15.24	8.47
All districts.....	8	42	6.1	56.4	50.9	90.2	.547	30.85	27.87
Drillers, hand: Northern iron...	7	26	5.4	60.0	54.4	90.7	.464	27.84	25.26
Drilling-machine operators:									
Western mixed ores.....	3	75	6.5	56.0	56.3	100.5	.583	32.65	32.83
Northern iron.....	14	105	5.0	60.0	49.4	82.3	.481	28.86	23.74
Alabama iron.....	1	1	3.0	60.0	30.0	50.0	.560	33.00	16.50
All districts.....	18	181	5.6	58.3	52.2	89.5	.526	30.67	27.47
Drilling-machine operators' helpers:									
Western mixed ores.....	3	68	6.0	56.0	53.0	94.6	.525	29.40	27.84
Northern iron.....	12	33	3.7	60.0	37.3	62.2	.452	27.12	16.38
All districts.....	15	101	5.2	57.3	47.9	83.6	.507	29.05	24.26
Dumpers:									
Western mixed ores.....	1	4	6.8	56.0	54.0	96.4	.313	17.53	16.88
Northern iron.....	13	58	4.7	60.0	46.8	78.0	.427	25.62	19.96
Alabama iron.....	2	6	4.5	60.0	44.8	74.7	.201	12.06	9.03
All districts.....	16	68	4.8	59.8	47.0	78.6	.400	23.92	18.81
Electricians:									
Western mixed ores.....	3	23	6.7	56.0	52.5	93.8	.861	48.22	45.25
Northern iron.....	14	55	5.0	59.1	48.9	82.7	.543	32.09	26.55
All districts.....	17	78	5.5	58.2	50.0	85.9	.641	37.31	32.06
Laborers:									
Western mixed ores.....	2	238	6.1	56.0	49.2	87.9	.377	21.11	18.55
Northern iron.....	12	134	4.7	58.9	45.6	77.4	.429	25.27	19.57
Alabama iron.....	3	51	3.3	60.0	31.9	53.2	.208	12.48	6.62
All districts.....	17	423	5.3	57.4	46.0	80.1	.379	21.75	17.43
Locomotive engineers:									
Western mixed ores.....	3	75	6.6	56.0	54.7	97.7	.679	38.02	37.14
Northern iron.....	16	146	5.0	60.0	51.9	86.5	.694	41.64	35.97
Alabama iron.....	3	13	4.6	60.0	42.3	70.5	.296	17.76	12.52
All districts.....	22	234	5.5	58.7	52.2	88.9	.671	39.39	35.04
Locomotive firemen:									
Western mixed ores.....	3	57	6.3	56.0	52.6	93.9	.525	29.40	27.60
Northern iron.....	13	162	4.5	58.3	46.5	79.8	.490	28.57	22.82
Alabama iron.....	3	11	4.5	60.0	42.2	70.3	.211	12.66	8.90
All districts.....	19	230	5.0	57.8	47.8	82.7	.488	28.21	23.34

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, 1931, by occupation, district, and State—Continued

OPEN-PIT MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Machinists:									
Western mixed ores.....	3	46	6.4	56.0	51.6	92.1	\$0.676	\$37.86	\$34.85
Northern iron.....	15	77	4.3	59.4	41.7	70.2	.598	35.52	24.92
Alabama iron.....	2	2	6.5	60.0	65.0	108.3	.520	31.20	33.83
All districts.....	20	125	5.1	58.1	45.7	78.7	.628	36.49	28.71
Machinists' helpers:									
Western mixed ores.....	2	30	6.7	56.0	54.1	96.6	.625	29.40	28.43
Northern iron.....	7	18	4.3	58.7	41.0	69.8	.490	28.76	20.08
Alabama iron.....	1	1	4.0	60.0	34.0	56.7	.560	15.60	8.83
All districts.....	10	49	5.8	57.1	48.9	85.6	.511	29.18	24.96
Oilers:									
Western mixed ores.....	1	8	6.8	56.0	40.0	71.4	.524	29.34	20.97
Northern iron.....	12	39	4.6	61.2	49.6	81.0	.470	28.76	23.32
All districts.....	13	47	5.0	60.3	48.0	79.6	.478	28.82	22.92
Pipemen:									
Western mixed ores.....	2	5	6.8	56.0	55.8	99.6	.712	39.87	39.74
Northern iron.....	8	19	5.4	58.1	52.9	91.0	.491	28.53	25.96
All districts.....	10	24	5.7	57.7	53.5	92.7	.539	31.10	28.83
Pitmen:									
Western mixed ores.....	3	55	6.4	56.0	51.9	92.7	.410	22.96	21.26
Northern iron.....	16	102	4.3	60.0	42.8	71.3	.472	28.32	20.21
Alabama iron.....	3	14	5.2	60.0	52.0	86.7	.203	12.18	10.56
All districts.....	22	171	5.0	58.7	46.5	79.2	.425	24.95	19.76
Pumpmen:									
Western mixed ores.....	2	3	7.0	56.0	57.0	101.8	.541	30.30	30.83
Northern iron.....	12	33	5.3	59.5	51.9	87.2	.542	32.25	28.13
Alabama iron.....	1	1	6.0	60.0	60.0	100.0	.560	21.00	21.00
All districts.....	15	37	5.4	59.2	52.5	88.7	.536	31.73	28.16
Repairmen:									
Western mixed ores.....	3	67	6.3	56.0	51.3	91.6	.506	28.24	25.98
Northern iron.....	14	101	4.3	58.8	38.6	65.6	.507	29.81	19.61
All districts.....	17	168	5.1	57.7	43.7	75.7	.507	29.25	22.15
Shot firers:									
Western mixed ores.....	2	23	6.7	56.0	56.2	100.4	.460	25.76	25.88
Northern iron.....	13	19	5.0	60.0	50.2	83.7	.569	34.14	28.59
All districts.....	15	42	5.9	57.8	53.5	92.6	.507	29.30	27.11
Shovel cranemen:									
Western mixed ores.....	3	30	6.8	56.0	54.7	97.7	.674	37.74	36.86
Northern iron.....	11	27	4.6	60.0	44.9	74.8	.732	43.92	32.88
Alabama iron.....	1	5	4.8	60.0	47.0	78.3	.450	27.00	21.15
All districts.....	15	62	5.7	58.1	49.8	85.7	.680	39.51	33.86
Shovel engineers:									
Western mixed ores.....	3	19	6.9	56.0	55.2	98.6	.887	49.67	48.94
Northern iron.....	15	56	5.1	60.0	50.6	84.3	1.000	60.00	50.61
Alabama iron.....	2	4	4.3	60.0	40.5	67.5	.358	21.48	14.49
All districts.....	20	79	5.5	59.0	51.2	86.8	.945	55.76	48.38
Shovel firemen:									
Western mixed ores.....	2	16	5.9	56.0	47.0	83.9	.540	30.24	25.37
Northern iron.....	11	41	4.4	65.1	47.8	73.4	.482	31.38	23.08
Alabama iron.....	3	10	4.3	60.0	41.1	68.5	.266	14.16	9.71
All districts.....	16	67	4.8	62.2	46.6	74.9	.464	28.86	21.63

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, 1931, by occupation, district, and State—Continued

OPEN-PIT MINES—Continued

Occupation, district, and State	Number of mines	Number of wage earners	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
Switchmen:									
Western mixed ores.....	3	117	5.7	56.0	46.0	82.1	\$0.460	\$25.76	\$21.12
Northern iron.....	8	24	5.4	60.0	54.1	90.2	.434	26.04	23.49
Alabama iron.....	1	1	6.0	60.0	60.0	100.0	.200	12.00	12.00
All districts.....	12	142	5.6	56.7	47.4	83.6	.462	25.63	21.46
Trackmen:									
Western mixed ores.....	2	348	5.6	56.0	47.3	84.5	.370	20.72	17.54
Northern iron.....	16	509	4.5	60.0	44.8	74.7	.420	25.20	18.82
Alabama iron.....	3	17	2.7	60.0	24.5	40.8	.233	13.98	5.69
All districts.....	21	874	4.9	58.4	45.4	77.7	.397	23.18	18.05
Trip riders:									
Western mixed ores.....	2	69	6.5	56.0	53.2	95.0	.543	30.41	28.92
Northern iron.....	16	121	4.5	60.0	45.6	76.0	.487	29.22	22.19
All districts.....	18	190	5.2	58.5	48.4	82.7	.509	29.78	24.64
Truck operators:									
Western mixed ores.....	2	7	7.0	56.0	56.3	100.5	.570	31.92	32.06
Northern iron.....	12	25	4.8	58.1	46.0	79.2	.462	26.84	21.27
Alabama iron.....	1	1	6.0	60.0	60.0	100.0	.200	12.00	12.00
All districts.....	15	33	5.3	57.7	48.6	84.2	.479	27.64	23.28
Watchmen:									
Western mixed ores.....	3	27	5.9	56.0	56.7	101.3	.470	26.32	26.64
Northern iron.....	12	35	4.4	69.8	48.3	69.2	.453	31.62	21.85
Alabama iron.....	3	3	7.0	74.7	76.7	102.7	.211	15.76	16.20
All districts.....	18	65	5.1	64.3	53.1	82.6	.444	28.55	23.58
Other employees:									
Western mixed ores.....	3	233	6.5	56.1	54.1	96.4	.591	33.16	31.99
Northern iron.....	16	475	4.9	59.6	49.6	83.2	.531	31.65	26.34
Alabama iron.....	2	6	5.0	60.0	49.2	82.0	.261	15.66	12.81
All districts.....	21	714	5.4	58.5	51.1	87.4	.550	32.18	28.07
All employees (open-pit mines):									
Western mixed ores.....	3	1,718	6.2	56.0	51.2	91.4	.506	28.34	25.91
Northern iron.....	16	2,549	4.7	59.8	46.8	78.3	.513	30.68	23.99
Alabama iron.....	3	161	4.1	60.3	39.7	65.8	.251	15.14	9.99
All districts.....	22	4,428	5.2	58.4	48.3	82.7	.502	29.32	24.23
All employees:									
Western mixed ores—									
Arizona.....	9	3,969	5.7	48.8	43.8	89.8	.679	33.14	29.76
California.....	8	1,698	6.0	50.2	48.4	96.4	.593	29.77	28.74
Colorado.....	10	983	6.0	51.7	48.4	93.6	.597	30.86	28.86
Idaho.....	4	1,621	5.5	47.5	44.0	92.6	.581	27.60	25.59
Montana.....	5	2,495	5.7	48.2	46.0	95.4	.681	32.82	31.33
Nevada.....	9	1,146	6.2	55.6	49.9	89.7	.625	34.75	31.18
New Mexico.....	6	1,442	6.3	53.9	50.8	94.2	.459	24.74	23.35
South Dakota.....	1	936	5.9	56.0	46.9	83.8	.674	37.74	31.60
Utah.....	9	2,214	5.8	52.5	47.8	91.0	.515	27.04	24.60
Total.....	61	16,494	5.8	50.7	46.6	91.9	.608	30.83	28.38
Michigan copper.....	6	3,734	4.1	49.4	33.7	68.2	.443	21.88	14.94
Northern iron—									
Michigan.....	10	2,244	3.3	50.8	28.3	55.7	.602	30.58	17.04
Minnesota.....	29	4,577	4.2	56.0	39.6	70.7	.545	30.52	21.57
Total.....	39	6,821	3.9	54.3	35.9	66.1	.560	30.41	20.08
Alabama iron.....	8	2,132	3.5	58.4	32.0	54.8	.372	21.72	11.92
Tri-State lead and zinc.....	25	3,014	5.5	48.2	43.3	89.9	.477	22.99	20.25
All districts.....	139	32,195	5.0	51.6	41.6	80.6	.559	28.84	23.25

TABLE B.—Average and classified earnings per hour in six specified occupations, 1931, by district and State

Occupation, district, and State	Number of mines	Number of wage earners	Average earnings per hour	Number of wage earners whose earnings per hour were—																					
				Under 30 cts.	30 and under 35 cts.	35 and under 40 cts.	40 and under 45 cts.	45 and under 50 cts.	50 and under 55 cts.	55 and under 60 cts.	60 and under 65 cts.	65 and under 70 cts.	70 and under 75 cts.	75 and under 80 cts.	80 and under 85 cts.	85 and under 90 cts.	90 and under 95 cts.	95 cts. and under \$1.00	\$1.00 and under \$1.10	\$1.10 and under \$1.20	\$1.20 and under \$1.30	\$1.30 and under \$1.40	\$1.40 and under \$1.50	\$1.50 and over	
				Drilling-machine operators, company (underground):																					
Western mixed ores—																									
Arizona.....	9	1,138	\$0.774				10	7	25	27	78	539	100	71	40	46	33	25	31	39	12	19	4	32	
California.....	8	471	.600			24	31	11	261	69	34	16		23	2						9				
Colorado.....	10	142	.613					8	45	71	7				2										
Idaho.....	4	299	.601						278	7				12											
Montana.....	5	201	.608					7	150	16	19			5	4				2						
Nevada.....	8	251	.692				1	8	1	125	56			23		2		3	5	8	5				
New Mexico.....	5	142	.445		4	52	70	16																	
South Dakota.....	1	184	.622						13	171															
Utah.....	8	315	.534				39	218	37	16	2			2					1						
Total.....	58	3,143	.658		4	86	148	293	812	553	666	147	110	48	48	36	30	42	44	21	19	4	32		
Michigan copper.....	3	69	.433		1	1	67																		
Northern iron—																									
Michigan.....	3	145	.806					8	27							110									
Minnesota.....	7	53	.646				1	7	23	3				19											
Total.....	10	198	.765				1	15	50	3				19		110									
Alabama iron.....	5	95	.486			1	4	10	77		1			1		1									
Tri-State lead and zinc.....	19	179	.403		28	30	110	3	8																
All districts.....	95	3,684	.646		29	36	267	162	393	862	557	666	147	130	48	159	36	30	42	44	21	19	4	32	

TABLE B.—Average and classified earnings per hour in six specified occupations, 1931, by district and State—Continued

Occupation, district, and State	Number of mines	Number of wage earners	Average earnings per hour	Number of wage earners whose earnings per hour were—																							
				Under 30 cts.	30 and under 35 cts.	35 and under 40 cts.	40 and under 45 cts.	45 and under 50 cts.	50 and under 55 cts.	55 and under 60 cts.	60 and under 65 cts.	65 and under 70 cts.	70 and under 75 cts.	75 and under 80 cts.	80 and under 85 cts.	85 and under 90 cts.	90 and under 95 cts.	95 cts. and under \$1.00	\$1.00 and under \$1.10	\$1.10 and under \$1.20	\$1.20 and under \$1.30	\$1.30 and under \$1.40	\$1.40 and under \$1.50	\$1.50 and over			
Drilling-machine operators, contract (underground):																											
Western mixed ores—																											
Arizona.....	1	8	\$0.792											7	1												
California.....	1	60	.894								2	5	2	1	22	3	8										
Colorado.....	5	55	.826									23	4	5	2	4	3	1									
Montana.....	5	483	.760				1			51	62	91	61	71	43	36	13	17	9	23	6			1		1	
New Mexico.....	2	60	.520					42	3	4	7	3			1												
South Dakota.....	1	311	.867					1	8	1	17	35	36	41	26	31	30	10	38	7	17	5				8	
Utah.....	2	27	.738							7	1	2			9	1			2								
Total.....	17	1,004	.791				1	43	12	63	89	159	104	128	104	75	54	29	81	23	23	7				9	
Michigan copper.....	5	618	.571				37	131	128	121	82	52	24	11	18	9	2				2	1					
Northern iron—																											
Minnesota.....	9	848	.714						25	117	78	39	405	46	52	4	6	9	53	3	10						1
Minnesota.....	13	948	.709		2		6	4	41	129	85	74	156	47	282	37	34	26	15	2	6				2		
Total.....	22	1,796	.711		2		6	4	66	246	163	113	561	93	334	41	40	35	68	5	16				2	1	
Alabama iron.....	3	38	.512			4		4	2	6	4	3	5	1	3		2	1	2		1						
Tri-State lead and zinc.....	6	489	.575					3	333	29	20	22	13	33	9	12	2		10		1	2					
All districts.....	53	3,945	.694		2	4	44	185	541	465	358	349	707	266	468	137	100	65	161	31	43	7	2		10		
Muckers (underground):																											
Western mixed ores—																											
Arizona.....	9	329	.611			1	12	4	53	106	64	48	15	12	7	3	2	2									
California.....	8	357	.532		1		21	6	266	48	6	5	3		1												
Colorado.....	10	212	.552					8	125	38	29		4	1		1			1	2	1	1				1	
Idaho.....	4	318	.536						304	3	1	9						1									
Montana.....	5	491	.699						154	75	76	45	62	26	14	13	11	12			3						
Nevada.....	8	125	.589				24	2		45	43	6						2	1								
New Mexico.....	5	282	.374	b	2	235	20	6	2	5	1	6															

TABLE C.—Average and classified full-time hours per week in six specified occupations, 1931, by district and State

Occupation, district, and State	Number of mines	Number of wage earners	Average full-time hours per week	Number of wage earners whose full-time hours per week were—					
				Under 45	45	48	Over 48, under 56	56	Over 60, under 72
Drilling-machine operators, company (underground):									
Western mixed ores—									
Arizona.....	9	1,138	47.3		592	118	428		
California.....	8	471	50.3			298	76	97	
Colorado.....	10	142	51.4			76	11	55	
Idaho.....	4	299	46.5	57		242			
Montana.....	5	201	48.7			184		17	
Nevada.....	8	251	55.5				37	214	
New Mexico.....	5	142	52.0		2	69		71	
South Dakota.....	1	184	56.0					184	
Utah.....	8	315	50.5			218		97	
Total.....	58	3,143	49.6	57	594	1,205	552	735	
Northern iron—									
Michigan.....	3	145	41.9	110		35			
Minnesota.....	7	53	49.5			43		10	
Total.....	10	198	44.0	110		78		10	
Alabama iron.....	5	95	59.7				4		91
Tri-State lead and zinc.....	19	179	48.0			179			
All districts.....	95	3,684	49.5	167	594	1,531	556	745	91
Drilling-machine operators, contract (underground):									
Western mixed ores—									
Arizona.....	1	8	52.5				8		
California.....	1	60	48.0			60			
Colorado.....	5	55	54.0			14		41	
Montana.....	5	483	48.1			479		4	
New Mexico.....	2	60	53.8		12			48	
South Dakota.....	1	311	56.0					311	
Utah.....	2	27	48.0				27		
Total.....	17	1,004	51.2		12	580	8	404	
Michigan copper.....	5	618	48.0			618			
Northern iron—									
Michigan.....	9	848	48.0			848			
Minnesota.....	13	948	48.8			858		90	
Total.....	22	1,796	48.4			1,706		90	
Alabama iron.....	3	38	54.2				22		16
Tri-State lead and zinc.....	6	489	48.0			489			
All districts.....	53	3,945	49.1		12	3,393	30	494	16
Muckers (underground):									
Western mixed ores—									
Arizona.....	9	329	47.7		147	6	176		
California.....	8	357	48.7			310	34	13	
Colorado.....	10	212	50.7			134	14	64	
Idaho.....	4	318	46.3	66		252			
Montana.....	5	491	48.0			491			
Nevada.....	8	125	54.6				51	74	
New Mexico.....	5	282	53.8		19	53		210	
South Dakota.....	1	98	56.0					98	
Utah.....	8	367	49.8			283		84	
Total.....	58	2,579	49.6	66	166	1,529	275	543	
Michigan copper.....	5	508	48.0			508			
Northern iron—									
Michigan.....	7	19	48.0			19			
Minnesota.....	4	32	48.0			32			
Total.....	11	51	48.0			51			
Alabama iron.....	5	687	57.1				257		430
Tri-State lead and zinc.....	25	831	48.0			831			
All districts.....	104	4,656	50.2	66	166	2,919	532	543	430

TABLE C.—Average and classified full-time hours per week in six specified occupations, 1931, by district and State—Continued

Occupation, district, and State	Number of mines	Number of wage earners	Average full-time hours per week	Number of wage earners whose full-time hours per week were—					
				Under 45	45	48	Over 48, under 56	56	60	Over 60, under 72
Timbermen (underground):									
Western mixed ores—									
Arizona.....	9	376	49.5		83	48	245		
California.....	7	117	49.1			88	26	3	
Colorado.....	10	89	50.7			59	1	29	
Idaho.....	4	262	47.2	27		235			
Montana.....	5	556	48.0			554		2	
Nevada.....	7	42	55.1				11	31	
New Mexico.....	4	71	51.5	14		21		36	
South Dakota.....	1	29	56.0					29	
Utah.....	6	123	51.3			72		51	
Total.....	53	1,665	49.1	27	97	1,077	283	181	
Michigan copper.....	6	834	48.0			834			
Northern iron—									
Michigan.....	10	138	47.8	3		135			
Minnesota.....	11	270	48.1			267		3	
Total.....	21	408	48.0	3		402		3	
Alabama iron.....	5	17	57.3				5		12
Tri-State lead and zinc.....	1	2	48.0				2		
All districts.....	86	2,926	48.7	30	97	2,315	288	184	12
Topmen (surface):									
Western mixed ores—									
Arizona.....	9	117	49.8		69	12	16	6	14
California.....	8	44	51.6			24	9	6	5
Colorado.....	7	62	54.3			9	9	44	
Idaho.....	3	22	47.6	1		21			
Montana.....	4	27	48.3			26		1	
Nevada.....	6	20	55.1				5	15	
New Mexico.....	4	29	53.5			9		20	
South Dakota.....	1	6	56.0					6	
Utah.....	3	11	51.6			6		5	
Total.....	45	338	51.4	1	69	107	39	103	19
Michigan copper.....	6	128	54.0				128		
Northern iron—									
Michigan.....	10	101	58.3	6			8		87
Minnesota.....	12	90	60.0				8		77
Total.....	22	191	59.1	6			16		164
Alabama iron.....	5	148	58.7				27		121
Tri-State lead and zinc.....	3	10	49.2			9			1
All districts.....	81	815	54.9	7	69	116	210	103	286
Trammers (underground):									
Western mixed ores—									
Arizona.....	3	29	49.4		12		17		
California.....	6	72	50.2			40	25	7	
Colorado.....	6	53	50.7			35		18	
Idaho.....	3	23	47.3	2		21			
Montana.....	5	213	48.1			210		3	
Nevada.....	3	21	55.2				5	16	
New Mexico.....	5	49	49.0		8	32		9	
Utah.....	4	23	48.0			23			
Total.....	35	483	49.1	2	20	361	47	53	
Michigan copper.....	2	65	48.0			65			
Northern iron—									
Michigan.....	3	21	48.0			21			
Minnesota.....	8	27	48.9			24		3	
Total.....	11	48	48.5			45		3	
Tri-State lead and zinc.....	13	39	48.0			39			
All districts.....	61	636	48.9	2	20	510	47	56	

TABLE E.—Average and classified actual earnings in one week in six specified occupations, 1931, by district and State

Occupation, district, and State	Number of mines	Number of wage earners	Average actual earnings in one week	Number of wage earners whose actual earnings in one week were—																										
				Under \$4	\$4 under \$6	\$6 under \$8	\$8 under \$10	\$10 under \$12	\$12 under \$14	\$14 under \$16	\$16 under \$18	\$18 under \$20	\$20 under \$22	\$22 under \$24	\$24 under \$26	\$26 under \$28	\$28 under \$30	\$30 under \$32	\$32 under \$34	\$34 under \$36	\$36 under \$38	\$38 under \$40	\$40 under \$45	\$45 under \$50	\$50 under \$60	\$60 under \$75	\$75 under \$100	\$100 and over		
				Drilling-machine operators, company (underground):																										
Western mixed ores—																														
Arizona.....	9	1,138	\$34.84	---	8	3	5	3	5	18	11	56	22	32	167	86	247	61	60	109	23	32	59	25	52	24	26	14		
California.....	8	471	28.49	---	6	1	8	5	---	9	1	9	27	44	14	46	107	111	25	18	7	6	19	---	1	7	---	---		
Colorado.....	10	142	28.31	---	4	---	1	3	---	1	---	2	3	4	12	7	26	49	15	12	3	---	---	---	---	---	---	---		
Idaho.....	4	299	26.81	---	1	---	2	---	1	3	1	36	1	42	5	2	168	---	33	---	---	4	---	---	---	---	---	---		
Montana.....	5	201	27.95	---	1	---	3	---	4	1	8	4	18	3	3	109	12	27	3	1	1	3	---	---	---	---	---	---		
Nevada.....	8	251	34.30	---	2	---	---	3	1	8	1	6	9	7	3	1	60	7	49	29	28	16	2	11	8	---	---			
New Mexico.....	5	142	21.80	---	1	3	---	1	1	4	10	41	10	4	60	2	4	1	---	79	7	9	1	---	---	---	---	---		
South Dakota.....	1	184	27.95	10	1	2	8	4	5	8	2	---	3	1	11	3	---	29	1	79	7	9	1	---	---	---	---	---		
Utah.....	8	315	24.44	2	7	1	7	3	6	3	7	5	14	8	166	31	19	21	6	8	1	---	---	---	---	---	---	---		
Total.....	58	3,143	30.31	12	31	10	34	22	19	58	34	157	90	162	445	183	681	344	174	278	71	76	102	27	64	39	26	14		
Michigan copper.....																														
3	69	13.30	---	---	1	---	19	1	43	1	3	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Northern iron—																														
Michigan.....	3	145	30.68	---	5	---	1	---	3	1	---	2	3	16	8	---	3	---	---	103	---	---	---	---	---	---	---	---	---	
Minnesota.....	7	53	23.36	3	1	1	4	---	7	---	1	3	---	---	---	11	5	5	1	---	11	---	---	---	---	---	---	---	---	
Total.....	10	198	28.72	3	6	1	5	---	10	1	1	5	3	16	8	11	8	5	1	103	11	---	---	---	---	---	---	---	---	
Alabama iron.....																														
5	95	9.86	2	4	6	58	17	1	3	---	1	1	1	1	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	
Tri-State lead and zinc.....																														
19	179	17.56	9	---	1	7	2	6	4	37	61	42	2	7	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
All districts.....	95	3,684	28.76	26	41	19	104	60	37	109	73	227	137	181	460	196	689	349	175	381	82	76	102	27	64	39	26	14		
Drilling-machine operators, contract (underground):																														
Western mixed ores—																														
Arizona.....	1	8	26.03	1	2	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	4	---	---	---	---	---	---	---	
California.....	1	60	40.90	---	1	1	---	---	---	---	---	---	---	---	---	---	2	4	7	---	1	11	18	5	10	---	---	---		
Colorado.....	5	55	42.79	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	3	4	6	16	6	4	11	1	1		
Montana.....	5	483	34.66	---	2	1	---	7	---	2	1	6	8	12	10	17	63	46	62	52	49	38	54	24	25	4	---	---		
New Mexico.....	2	60	22.05	3	1	2	---	2	1	9	1	3	1	3	4	21	6	---	---	---	---	---	---	---	---	---	---	---	---	

South Dakota.....	1	311	38.19	2	9	7	4	7	4	5	7	7	3	5	6	5	12	9	6	20	8	22	50	36	45	21	2	-----	
Utah.....	2	27	29.85	-----	-----	-----	-----	1	1	-----	-----	-----	3	1	-----	4	3	3	-----	-----	-----	5	2	-----	-----	-----	-----		
Total.....	17	1,004	35.62	6	15	11	4	17	6	16	9	16	15	21	21	49	87	62	83	85	66	92	134	69	91	26	3	-----	
Michigan copper.....	5	618	18.14	3	6	6	6	15	23	125	137	100	97	47	19	20	8	4	-----	-----	2	-----	-----	-----	-----	-----	-----	-----	
Northern iron—																													
Michigan.....	9	848	17.23	-----	5	1	12	359	107	4	29	102	21	40	27	28	31	6	13	4	49	8	2	-----	-----	-----	-----	-----	
Minnesota.....	13	948	20.36	-----	19	6	12	139	158	32	36	36	45	184	54	72	32	53	7	22	18	6	13	4	-----	-----	-----	-----	
Total.....	22	1,796	18.88	-----	24	7	24	498	265	36	65	138	66	224	81	100	63	59	20	26	67	14	15	4	-----	-----	-----	-----	
Alabama iron.....	3	38	16.70	1	-----	1	2	5	6	6	3	3	3	1	1	4	-----	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Tri-State lead and zinc.....	6	489	24.90	-----	1	-----	2	3	42	7	8	10	16	13	271	17	22	12	17	4	14	13	8	7	2	-----	-----		
All districts.....	53	3,045	23.75	10	46	25	38	538	342	190	222	267	197	306	393	190	180	139	120	115	149	119	157	80	93	26	3	-----	
Muckers (underground):																													
Western mixed ores—																													
Arizona.....	9	329	26.41	-----	3	-----	1	2	5	2	20	5	18	50	48	26	71	29	15	7	9	7	10	1	-----	-----	-----	-----	
California.....	8	357	24.42	2	7	6	3	2	2	1	10	7	30	7	198	17	30	2	30	2	-----	-----	-----	-----	-----	-----	-----	-----	
Colorado.....	10	212	26.01	-----	7	1	2	1	4	2	2	1	8	9	76	6	35	30	4	17	1	-----	4	1	-----	-----	-----	-----	
Idaho.....	4	318	23.39	1	1	-----	3	-----	7	-----	34	2	71	4	162	9	19	3	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Montana.....	5	491	31.72	5	5	2	4	-----	4	1	8	5	18	11	9	147	68	41	33	51	21	25	28	2	3	-----	-----		
Nevada.....	8	125	28.62	1	3	4	2	-----	-----	1	3	15	3	3	1	8	4	20	28	19	-----	5	1	1	3	-----	-----		
New Mexico.....	5	282	16.99	18	11	4	6	17	4	9	54	110	25	12	4	-----	3	2	-----	3	-----	-----	-----	-----	-----	-----	-----		
South Dakota.....	1	98	23.04	3	4	3	6	2	6	2	1	2	5	-----	13	6	26	13	6	-----	-----	-----	-----	-----	-----	-----	-----		
Utah.....	8	367	21.72	7	2	5	3	4	10	7	6	29	13	214	19	24	15	2	2	4	-----	-----	-----	-----	-----	-----	-----	-----	
Total.....	58	2,579	25.02	37	43	25	30	28	38	28	131	179	178	317	532	105	350	169	126	85	62	34	41	31	6	4	-----	-----	
Michigan copper.....	5	508	14.00	11	3	17	41	21	192	82	70	47	16	4	3	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Northern iron—																													
Michigan.....	7	19	15.64	-----	1	1	3	1	2	1	1	1	7	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Minnesota.....	4	32	16.51	6	-----	-----	-----	-----	2	1	10	-----	2	9	1	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	
Total.....	11	51	16.19	6	1	1	3	1	4	2	11	1	9	9	1	-----	1	-----	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	
Alabama iron.....	5	687	11.18	36	28	98	166	110	70	30	34	22	6	9	3	1	3	-----											
Tri-State lead and zinc.....	25	831	18.50	36	13	98	16	21	21	63	93	116	86	106	91	85	47	20	2	3	3	7	-----	1	1	-----	-----		
All districts.....	104	4,656	20.51	126	88	157	261	181	367	276	358	347	331	427	630	155	373	174	129	89	69	34	42	32	6	4	-----	-----	

*1 earned \$105, one \$134, one \$139, and one \$146.

Appendix

Mine Terms of Occupations, with Definitions, and Classification by Bureau of Labor Statistics

Key to places of employment in and about mine: Surface designated as (S); Underground (U); Surface and Underground (S and U); and Open Pit (O P)

Underground mines

Mine term	Definition	Classified by bureau under—
Air-drill operator, company (U)	(See Drilling-machine operator, company, U)-----	Drilling-machine operators, company (U).
Air-drill operator, contract (U).	(See Drilling-machine operator, contract, U)-----	Drilling-machine operators, contract (U).
Air hammerman (U)---	(See Jack hammerman, U)-----	Other employees, (S and U). Do.
Air pumper (S and U) ..	Operates pumps which force air into mines for ventilation purposes.	Do.
Ash wheeler (S)-----	Wheels ashes from fires to dump; is an unskilled surface laborer.	Topmen (S).
Assistant foreman (S and U).	(See Working foreman, S and U)-----	Other employees (S and U).
Bar loosener (U)-----	(See Roof trimmer, U)-----	Roof trimmers (U).
Bar man (U)-----	do	Do.
Barn man (S and U)---	Feeds, waters, cleans, and harnesses mules or horses used in and about mines; cleans stable and removes refuse, and performs other similar duties about the stable.	Other employees (S and U).
Battery charger (S and U).	Recharges storage batteries used in underground mine locomotives; inspects, renews, and repairs defective parts; and renews chemicals when necessary.	Do.
Batteryman (S and U) ..	(See Battery charger, S and U)-----	Do.
Blacksmith (S)-----	Makes new metal parts and does repair work on mine cars, wagons, etc.; resets and fits horseshoes; sharpens, hardens, and tempers drilling tools, picks, etc.; and does other general blacksmith work.	Blacksmiths (S and U).
Blacksmith's helper (S) ..	Uses sledge at direction of blacksmith, looks after forge fire, cuts and arranges metal stock, and does any work assigned to him by the blacksmith.	Blacksmiths' helpers (S and U).
Blaster (U)-----	Uses an electric battery to set off charges in rock or ore after holes have been drilled and charged with explosives. This work is sometimes done by hand, each fuse being lighted separately.	Other employees (S and U).
Boiler cleaner (S)-----	Removes plugs from boiler and runs off dirty water, floods boiler with clean water to wash it out; may use a metal cleaning rod to remove some accumulated scale; refills boilers with clean water in readiness for use.	Do.
Boiler maker (S)-----	Makes repairs to boilers or engines in machine shops; also does other miscellaneous ironwork.	Do.
Boiler washer (S)-----	(See Boiler cleaner, S)-----	Do.
Brakeman (U)-----	(See Trip rider, U)-----	Trip riders (U).
Brattice man (U)-----	Has charge of proper ventilation of the mine; builds necessary brattices or walls, usually of wood, which insure the proper circulation of air in the mine.	Other employees (S and U).
Bruno man (U)-----	Works near the shoveler, using a pick and iron bar to keep the loosened ore pushed down to the shoveler's bottom.	Muckers (U).
Bumper (U)-----	Pushes large can-shaped containers filled with mined ore to center of shaft opening where the can hooker attaches a hoisting cable to each for the purpose of raising them to the surface.	Trammers (U).
Cable splicer (S and U) ..	(See Rope splicer, S and U)-----	Other employees (S and U).
Cager (U)-----	Has charge of cage (or elevator) used in raising or lowering men or materials between various levels of the mine or various levels and the surface; directs movements of cage by signals to hoist men.	Cagers (U).
Cager's helper (U)-----	Rides cage or elevator with supplies; may assist in loading and unloading same on cage or may do other general work under the direction of the cager.	Other employees (S and U).
Can hooker (U)-----	Works at bottom of shaft; passes hook of hoisting cable through the bale of large can-shaped container filled with ore to hoist it to the surface.	Do.

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Car cutter (U).....	Works with underground tippelman or dumper operator. His duties consist in uncoupling ore trains in groups of five cars, which are then pushed on the tippel and mechanically dumped at one time. Ore passes through a grizzly or screen and drops through a raise to the storage bins.	Other employees (S and U).
Car hooker (U).....	Hooks or couples loaded cars together in the mine to form a train which is later hauled to shaft for hoisting to surface or direct to tippel for dumping into railroad cars. (See also Car cutter, U.)	Do.
Car man (U).....	(See Trip rider, U).....	Trip riders (U).
Car repairman (S and U).	Makes repairs to mine cars either underground or on the surface, the underground repairs generally being minor ones.	Other employees (S and U).
Carpenter (S and U)....	Builds and repairs wooden structures and does other general carpentry work; may also do timber framing. All work is usually done on the surface but sometimes underground.	Carpenters (S and U).
Carpenter's helper (S and U).	Assists carpenter in repair of buildings and other general carpentry work under carpenter's supervision.	Carpenters' helpers (S and U).
Chainer (U).....	Attaches hoist chain or cable to or detaches it from ore cars. Chainers are found in mines where grades are too sharp for motors or mules; in such cases loads are pulled up these grades by means of a chain or cable attached to a drum or auxiliary hoist. (See also Rope rider, U.)	Trip riders (U).
Chainer's helper (U)....	Assists chainer in attaching and detaching hoist chain or cable used to pull ore cars up steep grades, and does any other work which the chainer may designate.	Other employees (S and U).
Change-house laborer (S).	Assists the dry-house man, around the change room, where workmen change wet and soiled clothing, doing such work as may be assigned to him.	Dry-house men (S).
Change-house man (S).....	(See Dry-house man, S).....	Do.
Charger, batteries (S and U).	(See Battery charger, S and U).....	Other employees (S and U).
Checker, chute (U).....	(See Chute checker, U).....	Do.
Checker, production (S and U).	Maintains record of ore-filled containers hoisted to the surface, their number, contents, etc.	Do.
Chute blaster (U).....	(See Pluggerman, U).....	Do.
Chute checker (U).....	Occupation is found in those mines using the "caving method" of mining. The checker keeps a record of the amount of ore drawn from each raise or chute. It is essential that the ore be drawn uniformly, so that the entire ore body will cave in properly. Irregular drawing of ore results in improper caving, considerable dilution, and loss of ore. The checker has authority to seal or close any chute.	Do.
Chute loader (U).....	Operates doors opening and closing chutes from which mine cars are loaded.	Chute loaders (U).
Chute tapper (U).....	Occupation is found only in those mines using the "caving method" of mining. The chute tapper, generally located in a square set above the grizzly level, draws the ore through the finger raises from the undercutting level. From the finger raises (generally 4 per set) the ore passes to the grizzly below and from this level, through raises, it passes to the haulage-level chutes.	Other employees (S and U).
Chute trammer (U).....	(See Chute loader, U).....	Chute loaders (U).
Cleaner, boilers (S).....	(See Boiler cleaner, S).....	Other employees (S and U).
Company driller (U)....	(See Drilling-machine operator, company, U).....	Drilling-machine operators, company (U).
Company miner (U).....	do.....	Do.
Compressor man (S and U).	Has charge of air compressors which furnish air for the operation of drills and for ventilation of the mines.	Compressor men (S and U).
Contract driller (U)....	(See Drilling-machine operator, contract, U).....	Drilling-machine operators, contract (U).
Contract miner (U).....	do.....	Do.
Conveyor man (S and U).	Operates conveyor used to transport ore from shaft, tippel, etc., to and through sorting plant, or other place in or about the mine; sees that nothing clogs the mechanism, that it operates smoothly; also keeps its bearings clean and well greased.	Other employees (S and U).
Crane operator (S).....	Operates yard crane, which is generally used to unload mine timbers and other heavy material.	Do.
Craneman (S).....	(See Crane operator, S).....	Do.
Crusher, ore (S).....	(See Ore crusher, S).....	Do.
Cutter, fuses (S and U).....	(See Fuse cutter, S and U).....	Do.

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Demonstrator (S and U)	Demonstrates safe, authorized methods of mining to beginners and others.	Other employees (S and U).
Ditchman (U).....	Removes dirt and rubbish with a shovel from underground drainage ditches; loads dirt and rubbish into cars which are hauled away by motors or mules.	Do.
Doorman (U).....	Opens and closes safety doors in airways of mine to permit trains, mules, etc., to pass.	Do.
Drag foreman (U).....	Is in charge of mechanical loading of ore. In some mines, also operates the "drag," which is a heavy conveyance used to load ore into mine cars.	Do.
Draw boss (U).....	Has charge of motormen and trainmen, and directs movement of ore and muck trains underground.	Do.
Drift driller (U).....	Uses heavy mounted air drill in driving entries or drifts, which are horizontal passageways on the mining or haulage levels of the mine. (See also Drilling-machine operator, company, U.)	Drilling-machine operators, company (U).
Drill runner, company (U)	(See Drilling-machine operator, company, U).....	Do.
Drill runner, contract (U)	(See Drilling-machine operator, contract, U).....	Drilling-machine operators, contract (U).
Drill runner's helper (U)	(See Drilling-machine operator's helper, U).....	Drilling-machine operators' helpers (U).
Drill sharpener (S).....	(See Tool dresser, S).....	Tool dressers (S).
Drill-sharpener's helper (S)	(See Tool-dresser's helper, S).....	Other employees (S and U).
Drilling-machine operator, company (U)	Runs any one of several types of drilling machines used in mines. Sets up his machine, drills holes in face of work place; inserts explosives and later sets off the charge, thus shattering the ore, rock, etc., so that it can easily be removed and loaded into mine cars. Drills are generally operated by compressed air, though some electric drills are also used. Driller must be familiar with drills and be able to make needed adjustments and minor repairs, and must also have a thorough knowledge of explosives so that he can place his holes properly and know how much explosives to use. A company driller differs from a contract driller only in the nature of the work he does and the method in which he is paid. He is engaged in development work, such as driving drifts and raises and sinking shafts, and is paid on a day basis; in addition he may receive a bonus, generally based on footage of advance in a specified time. He is also known as a "miner."	Drilling-machine operators, company (U).
Drilling-machine operator, contract (U)	Method of operation is the same as that of company drilling. The difference lies in the nature of the work done and the method of payment. The contract miner is engaged in production work, i. e., getting out ore, and is generally paid at a specified rate per ton, cubic yard, or car of ore produced. In some mines, however, contract miners are paid on a flat day basis.	Drilling-machine operators, contract (U).
Drilling-machine operator's helper (U)	Assists the machine operator in setting up and placing drills, etc., in position at working face, and works under supervision of the driller.	Drilling-machine operator's helpers (U).
Driver (S).....	Drives mules or horses about the yard hauling materials and may also transport ore from mine to crusher.	Drivers (S).
Driver, locomotive (U)	(See Motorman, U).....	Motormen (U).
Driver, mule (U).....	Drives mules in hauling ore or other materials in various parts of mine. In some mines mules alone are used; in others, mules are used to supplement motor or hand haulage.	Drivers, mule (U).
Dry-house man (S).....	Is in charge of change room, where workmen may change their wet or soiled clothing and have same dried; also has charge of bath and wash rooms.	Dry-house men (S).
Dumper (S).....	Takes cars of ore or refuse from cage; pushes them to crusher, bins, or other place of disposal; dumps ore or refuse and returns empty cars to cage.	Dumpers (S).
Dumper (U).....	Works inside mine at the grizzly, which is a large screen constructed of heavy iron beams placed a few inches apart, just over the raise or chute leading to ore bins or cars beneath; opens doors of mine cars, sometimes assisted by trip rider, and dumps ore onto the grizzly; uses a sledge hammer to break oversize lumps which do not pass readily between the bars of grizzly, and a shovel for clean-up purposes; may also select samples of ore from each car or train. In some mines the dumper is known as grizzly worker, monkey, or screen ape.	Other employees (S and U).
Electrician (S and U)...	Installs and repairs electrical machinery and light and power wiring.	Electricians (S and U).

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Electrician's helper (S and U).	Assists electrician in maintenance and repair of electrical machinery and light and power wiring, working under his direction.	Electricians' helpers (S and U).
Engineer, hoist (S).....	(See Hoist man, S).....	Hoist men (S).
Engineer, hoist (U).....	(See Hoist man, U).....	Hoist men (U).
Engineer, stationary (S)	Operates steam engine which furnishes power for operating hoists, pumps, or air compressors.	Engineers, stationary (S)
Fan man (S and U).....	Tends air-clearing system which provides ventilation for the mine.	Other employees (S and U).
Feeder, mules (S and U).	(See Barn man, S and U).....	Do.
Filer, saws (S).....	(See Saw filer, S).....	Do.
Fire patrolman (U).....	(See Mine patrolman, U).....	Do.
Fireman, fighter (S and U).	Is a trained fire fighter subject to immediate call at all times in case of fire in and about the mine. May work as a miner when not otherwise occupied.	Do.
Fireman stationary (S).	Fires boiler which furnishes steam for operating stationary engine.	Firemen, stationary (S).
Firewatch miner (U)....	Goes through mine with shift boss after each shift; looks for and guards against possible fire danger; is a regular miner during the shift but reports a half hour later than the regular men and works (as above) a half hour later.	Other employees (S and U).
First-aid station man (S).	Is trained in first-aid work and remains on duty at a specified place on the surface to render first aid to injured workmen.	Do.
Flume man (S and U)....	(See Pipeman, S and U).....	Pipemen (S and U).
Foreman, working (S and U).	(See Working foreman, S and U).....	Other employees (S and U).
Framer, timbers (S)....	(See Timber framer, S).....	Timber framers (S).
Fuse cutter (S and U)....	Cuts fuse to required length and attaches cap to it. This work is often done by the powderman or by the miner.	Other employees (S and U).
Gear man (S).....	(See Head-gear man, S).....	Do.
Grizzly worker (U).....	(See Dumper, U).....	Do.
Hammerman (S).....	Operates power hammer in forge or machine shops, to shape forgings with or without the aid of dies.	Do.
Hammerman, air (U)....	(See Jack hammerman, U).....	Do.
Handy man shops (S and U).	(See Utility man, S and U).....	Do.
Head-gear man (S).....	Operates coarse or primary crusher at the tippie; may also supervise loading of crushed ore into ore trains.	Do.
Hoist engineer (S).....	(See Hoist man, S).....	Hoist men (S).
Hoist engineer (U).....	(See Hoist man, U).....	Hoist men (U).
Hoist man (S).....	Operates hoisting machinery used to lower cages and ore skips into mine and to raise them to the surface from different levels. Men and supplies are handled in cages or elevators, while ore is generally hoisted up in ore skips or buckets. Some mines, however, hoist the mine cars to the surface instead of using ore skips. Hoist man must have complete knowledge of hoisting machinery, must be very dependable and able to act promptly. He is guided in the management of his hoist by electric or bell signals.	Hoist men (S).
Hoist man (U).....	Operates hoisting machinery used in handling ore, refuse, or supplies between different levels of the mine. (See also Hoist man S.)	Hoist men (U).
Hooker, cans (U).....	(See Can hooker, U).....	Other employees (S and U).
Hooker, cars (U).....	..... do.....	Do.
Hostler (S).....	(See Boiler cleaner, S).....	Do.
Incline-railway operator (S).	Operates power incline railway used to hoist supplies from mill level to shaft opening on side of a mountain.	Do.
Instructor (S and U)....	(See Demonstrator, S and U).....	Do.
Jack hammerman (U)....	Uses an air hammer, underground, to drill holes into large lumps of ore so they may be blasted. Also loads holes with explosives and sets off charge. Some lumps are broken into small pieces by use of the air hammer without aid of explosives.	Do.
Laborer (S).....	(See Topman, S).....	Topmen (S).
Laborer (U).....	Does unskilled labor of various kinds about the mine underground.	Muckers (U).
Laborer, change-house (S).	(See Change-house laborer, S).....	Dry-house men (S).
Laborer, dry-house (S)....	..... do.....	Do.
Lander (S).....	Works in shaft house on the surface. Dumps ore-loaded skips which are hoisted from lower levels in the mine, and signals hoist man by means of bells for operation of skip.	Dumpers (S).

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Lander (U).....	Works with shaft-sinking crew. Is stationed on the level immediately above working place in shaft. Handles muck as it is raised by the winze or temporary hoist used in sinking the shaft, and trams it away.	Muckers (U).
Leader (U).....	(See Shaft pusher, U).....	Other employees (S and U).
Leynerman (U).....	Operates heavy-type mounted air drill known as "Leyner" (the name of the inventor). This machine is used in driving drifts. (See also Drift driller, U; Drilling-machine operator, company, U.)	Drilling-machine operators, company (U).
Loader, chute (U).....	(See Chute loader, U).....	Chute loaders (U).
Loading-machine operator (U).	Operates machine for loading ore into mine cars. There are two general types of these machines—mechanical shovels and scrapers operated by hoists.	Loading-machine operators (U).
Loosener, roof (U).....	(See Roof trimmer, U).....	Roof trimmers (U).
Machine driller, company (U).	(See Drilling-machine operator, company, U).....	Drilling-machine operators, company (U).
Machine driller, contract (U).	(See Drilling-machine operator, contract, U).....	Drilling-machine operators, contract (U).
Machine loader (U).....	(See Loading-machine operator, U).....	Loading-machine operators (U).
Machine runner, company (U).	(See Drilling-machine operator, company, U).....	Drilling-machine operators, company (U).
Machine runner, contract (U).	(See Drilling-machine operator, contract, U).....	Drilling-machine operators, contract (U).
Machinist (S and U)....	Makes necessary repairs and adjustments on machines and operates lathes and other metal-working machines to make needed machine parts.	Machinists (S and U).
Machinist's helper (S and U).	Workman of some degree of skill who assists machinist in the repair and adjustment of machines, working under his direction.	Machinists' helpers (S and U).
Mason (S and U).....	Uses stone or brick and mortar or cement to build walls, foundations, etc., about the mine.	Other employees (S and U).
Mechanical-shovel operator (U).	(See Loading-machine operator, U).....	Loading-machine operators (U).
Mine patrolman (U)....	Goes through all parts of the mine at regular intervals inspecting for fire hazards, weak timbering, or any other dangers.	Other employees (S and U).
Miner, company (U)....	(See Drilling-machine operator, company, U).....	Drilling-machine operators, company (U).
Miner, contract (U)....	(See Drilling-machine operator, contract, U).....	Drilling-machine operators, contract (U).
Monkey (U).....	(See Dumper, U).....	Other employees (S and U).
Motorman (S).....	Operates electric or gasoline driven motors on surface tracks to transport timbers and other mine supplies from various places about yard to mine entrance.	Other employees (S and U).
Motorman (U).....	Operates electric or compressed air motor for hauling empty or loaded mine cars to and from designated places inside the mine.	Motormen (U).
Mucker (U).....	Uses hand shovel to load ore, rock, or refuse into mine cars; also works in stopes pushing ore down an inclined floor to raise or chute openings; may also do any unskilled work underground.	Muckers (U).
Mule (U).....	Pushes ore-loaded cans or cars away from shoveler to tracks where they may be hauled away by mule or motor.	Trammers (U).
Mule feeder (S and U) ..	(See Barn man, S and U).....	Other employees (S and U).
Nipper (U).....	Collects and carries tools from place to place where needed and in general looks after tools underground, and in addition may distribute powder.	Nippers (U).
Oil-house man (S).....	Has charge of oil stocks and gets out specified quantities as needed by drillers, oilers, or other workmen.	Other employees (S and U).
Oiler (S and U).....	Uses oil or grease to lubricate bearings of mine cars, machinery, pulleys, hoists, etc., both on the surface and underground.	Oilers (S and U).
Ore crusher (S).....	Operates ore-crushing machine which reduces ore to smaller sizes; makes adjustments of machinery, cleans and oils bearings, and looks after the distribution of crushed ore.	Other employees (S and U).
Ore sorter (S).....	Sorts ore by hand as it comes from the mine, removing rock and other refuse; may also separate into various grades ore which has been cleaned.	Ore sorters (S and U).
Painter (S).....	Does necessary painting in the maintenance of buildings and equipment, by hand with a brush or spray machine.	Other employees (S and U).

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Patrolman, fire (U).....	(See Mine patrolman, U).....	Other employees (S and U).
Patrolman, mine (U).....	do.....	Do.
Pipeman (S and U).....	Lays and repairs water and compressed-air pipes both underground and on the surface.	Pipemen (S and U).
Pipeman's helper (S and U).	Helps in handling heavy tools and pipe, cutting and threading pipes, screwing ends, etc., as directed by the pipeman.	Other employees (S and U).
Pluggerman (U).....	Keeps ore chutes open and free of obstructions. whenever a bowlder blocks a chute, the pluggerman drills a few holes in it with a jack-hammer drill, loads holes with explosives, and sets them off, blasting the bowlder into small parts which pass freely down the chute.	Do.
Policeman (S).....	(See Watchman, S).....	Watchmen (S).
Powder man (U).....	Has charge of underground powder magazine and issues explosives to the men as needed.	Powder men (U).
Production checker (S and U).	(See Checker, production, S and U).....	Other employees (S and U).
Pump man (U).....	Is in charge of underground pumping stations operated for the purpose of disposing of surplus water which accumulates in the mines. Considerable mechanical skill is required.	Pump men (U).
Pumper, air (S and U).....	(See Air pumper, S and U).....	Other employees (S and U).
Pusher (U).....	(See Shaft pusher, U).....	Do.
Raise driller (U).....	Operates drilling machine to drive raises which are shafts leading from a lower level of the mine upward through rock, earth, etc., to ore bed above, or to an upper level of the mine. (See also Drilling-machine operator, company (U).)	Drilling-machine operators, company (U).
Raise-driller's helper (U)	(See Drilling-machine operator's helper, U).....	Drilling-machine operators' helpers (U).
Repair man, car (S and U).	(See Car repair man, S and U).....	Other employees (S and U).
Repair man, general (S and U).	(See Rigger, S and U).....	Do.
Repair man, mechanical.	(See Machinist, S and U).....	Machinists (S and U).
Repair man, shaft (U).....	(See Shaft repair man, U).....	Other employees (S and U).
Repair man, slopes, rollers (U).	(See Roller man, U).....	Do.
Rigger (S and U).....	General handy man working about the mine doing ordinary repair work which requires moderate skill and experience.	Do.
Rock passer (U).....	(See Mucker, U).....	Muckers (U).
Roller man (U).....	Travels up and down inclines and slopes inspecting idle rolls over which hoist cable passes; also oils rolls and replaces or repairs any defective ones.	Do.
Roller repair man, slopes (U).	(See Roller man, U).....	Other employees (S and U).
Roof loosener (U).....	(See Roof trimmer, U).....	Roof trimmers (U).
Roof trimmer (U).....	Inspects roofs of working places after a blast and knocks down loose ore or rock to prevent its falling and injuring workmen.	Do.
Rope man (S and U).....	(See Rope splicer, S and U).....	Other employees (S and U).
Rope rider (U).....	Attaches and detaches cars to cable; rides cars that are pulled on an incline (several may be coupled together)—loaded cars going up the incline and empties coming down on parallel tracks; also sees that cars do not become detached when going over rough places or top of incline.	Trip riders (U).
Rope splicer (S and U).....	Splices and repairs rope (cable) used on hoisting machinery in and about mine.	Other employees (S and U).
Safety man (U).....	(See Mine patrolman, U).....	Do.
Sampler (U).....	Selects from each car or designated group of cars sample pieces of ore to be analyzed. Each sample is marked with record of location and other necessary data.	Do.
Saw filer (S).....	Uses hand file to sharpen teeth of saws used in timber mill or for other purposes; also sets cutting width of saws.	Do.
Sawmill man (S).....	(See Timber framer, S).....	Timber framers (S).
Sawyer (S).....	Operates power saw in cutting to designated length timbers needed about the mine. Is not a timber framer.	Other employees (S and U).
Scraper, hand (U).....	(See Stope scraper, U).....	Muckers (U).
Scraper, machine (U).....	(See Loading-machine operator, U).....	Loading-machine operators (U).
Scraper operator (U).....	do.....	Do.
Scraper, stopes (U).....	(See Stope scraper, U).....	Muckers (U).

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Screen ape (U).....	(See Dumper, U).....	Other employees (S and U).
Screen man (U).....	do.....	Do.
Shaft boss (S and U).....	(See Shaft pusher, U).....	Do.
Shaft driller (U).....	Sinks shafts, which are perpendicular passage ways from the surface to lower levels, generally doing his own drilling, shooting, mucking, and finishing (in timber or concrete). He is assisted by "top-man" who handles muck and materials on the upper level, and by shaft-hoist or winze-hoist man who hoists muck and lowers supplies. (Also known as shaft man, shaft sinker, or shaft miner.) Highest paid miner because of great skill required and also because of hazardous nature of work. (See also Drilling-machine operator, company, U.)	Drilling-machine operators, company (U).
Shaft-hoist man (U).....	(See Winze-hoist man, U).....	Hoist men (U).
Shaft miner, drilling (U).....	(See Shaft driller, U).....	Drilling-machine operators, company (U).
Shaft miner, repairs (U).....	(See Shaft repair man, U).....	Other employees (S and U).
Shaft pusher (U).....	Working boss who, when sinking a shaft, serves as a leader and thus "pushes" his men by working harder than others of his group.	Do.
Shaft repair man (U).....	Rides cage or other hoisting device to inspect and repair shaft, replacing timbers, guides, guards, or any defective parts; hazardous work.	Do.
Shaft sinker (U).....	(See Shaft driller, U).....	Drilling-machine operators, company (U).
Shaft man (U).....	do.....	Do.
Sheave man (U).....	(See Shaft repair man, U).....	Other employees (S and U).
Shed man (S).....	Has charge of storerooms on the surface, reports low stocks, and hands out supplies as needed.	Do.
Shifter (U).....	Working foreman in charge of a shift, who also regularly does considerable productive work.	Do.
Shot firer (U).....	(See Blaster, U).....	Do.
Shovel operator (U).....	(See Loading-machine operator, U).....	Loading-machine operators (U).
Shuttle man (S).....	Operates surface locomotive about mine yard for transfer of timbers and other supplies to and from entrance to mine.	Other employees (S and U).
Sinker-hoist man (U).....	Operates shaft or sinker-hoist machinery used in handling ore, rock, refuse, or supplies in shaft-sinking work. (See also Hoist man, S.)	Hoist men (U).
Skinner (U).....	(See Driver, mule, U).....	Drivers, mule (U).
Skipper (U).....	Responsible for loading of ore skip and for movement of ore skip from different loading stations in mine to the surface. Most skips are loaded automatically, the skipper merely supervising the loading mechanism, and when skip is loaded signals hoist man to raise it. The skipper is generally assisted by a helper who keeps ore moving down the chutes from storage bins to loading mechanism.	Skippers (U).
Skipper's helper (U).....	Assists skipper by keeping open at all times the ore chutes which lead from the ore bins, and does other general work under his direction.	Other employees (S and U).
Slope repair man (U).....	(See Shaft repair man, U).....	Do.
Sorter, ore (S).....	(See Ore sorter, S).....	Ore sorters (S and U).
Specimen boss (U).....	Is the first to enter stope after a round has been fired to investigate nature of ore shot down. This occupation is found in "specimen mines," i. e., mines where a precious metal is found in its pure state.	Other employees (S and U).
Splicer, cables (S and U)	(See Rope splicer, S and U).....	Do.
Splicer, rope (S and U)	do.....	Do.
Stable man (S and U).....	(See Barn man, S and U).....	Do.
Station man (U).....	Has charge of stations which are loading points where materials are loaded in skip or on cage to be raised to the surface.	Station men (U).
Station tender (U).....	(See Station man, U).....	Do.
Stationary engineer (S).....	(See Engineer, stationary, S).....	Engineers, stationary (S).
Stationary fireman (S).....	(See Fireman, stationary, S).....	Firemen, stationary (S).
Stope driller (U).....	Operates mounted drill in a room or stope of the mine; drills holes into ore body, loads holes with explosives, and sets off charge; may be assisted by helper, mucker, or another driller working level-banded with him. (See also Drilling-machine operator, contractor (U).)	Drilling-machine operators, contract (U).
Stope driller's helper (U).	(See Drilling-machine operator's helper, U).....	Drilling-machine operators' helpers (U).

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Stope scraper.....	Uses a shovel by hand to remove ore and refuse from stopes, placing it into mine cars.	Muckers (U).
Supply man (U).....	(See Nipper, U).....	Nippers (U).
Swamper (S).....	Assists driver or teamster in loading and unloading materials about mine yard.	Topmen (S).
Tally man (U).....	(See Chute checker, U).....	Other employees (S and U).
Tapper, chute (U).....	(See Chute tapper, U).....	Do.
Teamster (S).....	(See Driver, S).....	Drivers (S).
Timber framer (S).....	Cuts and fits timbers which are used in mines as props or supports in passage ways, stopes, etc., to prevent fall of ore, rock, or dirt.	Timber framers (S).
Timber framer's helper (S).	Assists framer in handling, cutting, and fitting mine timbers; may be considered as understudy to timber framer.	Other employees (S and U).
Timber sprinkler (U)...	Uses spray gun to sprinkle timbers inside mine with chemical solution to prevent fire.	Do.
Timber trammer (S)....	Pushes, by hand, a small car to convey mine props or timbers from stock pile to shaft entrance.	Do.
Timberman (U).....	Places timbers and supports in stopes and entries, erects ladders, builds ore chutes and doors, and erects framework wherever needed. All underground work.	Timbermen (U).
Timberman's helper (U).	Assists timberman in fitting and setting timbers used as supports in passageways or other places in the mine.	Timbermen's helpers (U).
Tinsmith (S and U)....	Uses hand tools to cut, shape, rivet, or solder sections of tin, sheet metal, etc., used in repair work about the mine.	Other employees (S and U).
Tipple man (U).....	Operates an automatic car dumper, used in some mines, which takes five cars at a time and dumps them by turning them over on one side; and is assisted by a car cutter who uncouples the train into groups of five cars. Machine is located just over the raise leading to the storage bin.	Do.
Tool dresser (S).....	Operates special machine with dies of specific sizes used to sharpen drills which have previously been heated to required temperature by his helper, then quenches them in oil or water to harden and temper them; in smaller mines tools are sharpened by hand.	Tool dressers (S).
Tool dresser's helper (S).	Looks after heating of stock, and assists the tool dresser in sharpening and tempering tools, drills, etc., working under tool dresser's supervision.	Other employees (S and U).
Tool sharpener (S).....	(See Tool dresser, S).....	Tool dressers (S).
Tool sharpener's helper (S).	(See Tool-dresser's helper, S).....	Other employees (S and U).
Top lander (S).....	(See Lander, S).....	Dumpers (S).
Topman (S).....	Does various kinds of unskilled labor about the mine surface.	Topmen (S).
Torch man (S and U)...	Uses acetylene torch to weld metal sections or parts, and to mend broken parts.	Other employees (S and U).
Track cleaner (S).....	Keeps track and switches free of rock, dirt, and other refuse.	Topmen (S).
Trackman (S).....	Lays and repairs surface tracks about mine yards and its railroad siding.	Other employees (S and U).
Trackman (U).....	Lays and repairs tracks used for transportation of mine cars inside the mines.	Trackmen (U).
Trackman's helper (S)...	(See Trackman's helper, U).....	Other employees (S and U).
Trackman's helper (U)...	Assists trackman in laying tracks, replacing old ties with new ones, and does other work under his direction.	Trackmen's helpers (U).
Train dispatcher (U)....	Regulates movement of ore trains on underground main-haulage tracks.	Other employees (S and U).
Trammer (U).....	Pushes loaded mine cars from stopes, where motors do not enter or mules are not used, to places where they may be conveniently hauled. This work is sometimes done by the mucker. The trammer may also have to load his own tram.	Trammers (U).
Tramway operator (S)...	(See Incline-railway operator, S).....	Other employees (S and U).
Trimmer, roof (U).....	(See Roof trimmer, U).....	Roof trimmers (U).
Trip rider (U).....	Rides on motors and assists motormen by handling brakes, throwing switches, opening and closing ventilation doors, etc.	Trip riders (U).
Truck operator (S).....	Operates motor trucks in and about yards, doing all kinds of hauling.	Truck operators (S).
Tugger man (U).....	Operates hoist machinery used in handling ore, rock, refuse, or supplies underground. (See also Hoist man, S.)	Hoist men (U).

Underground mines—Continued

Mine term	Definition	Classified by bureau under—
Utility man (S and U) ..	Is fairly skilled worker who can take the place of men in any one of several occupations and carry on the work; may also make ordinary repairs requiring moderate skill and experience.	Other employees (S and U).
Wall builder (U).....	Experienced mason who uses stone or brick and mortar or cement, etc., to erect stone or concrete walls in some mines where these materials are used for supports instead of timber. (See also Mason, S and U.)	Do.
Washer, boilers (S)	(See Boiler cleaner, S).....	Other employees (S and U).
Watchman (S).....	Is stationed at mine entrance or may patrol various points about mine yard to protect mine property, and sometimes keeps a check on those who enter and come out of the mine.	Watchmen (S).
Weighman (S and U)....	Weighs each ore-loaded mine car or other container before it is dumped, and maintains records of these weights. This serves the purpose of showing the quantity of ore mined, and affords a basis on which contract prices are paid.	Other employees (S and U).
Wheeler, ash (S).....	(See Ash wheeler, S).....	Topmen (S).
Winze driller (U).....	Operates drilling machine to sink winzes, which are small experimental shafts, or passage ways from the surface to lower levels of the mine or from one level to another. Work is done in a manner similar to that done by the regular shaft driller.	Drilling-machine operators, company (U).
Winze-hoist man (U) ..	Operates hoist machinery used in handling ore, rock, refuse, or supplies in a small underground shaft or incline. (See also Hoist man, S.)	Hoist men (U).
Working foreman (S and U).	An employee who has supervisory duties, but also regularly does considerable productive work.	Other employees (S and U).

Open-pit mines

Blacksmith (O P).....	Makes new parts and does repair work on mine cars, wagons, and general machinery; resets and fits horseshoes; dresses, hardens, and tempers tools; sharpens steel and does all general blacksmith work.	Blacksmiths (O P).
Blacksmith's helper (O P).	Uses sledge at direction of blacksmith, looks after forge fire, cuts and arranges stock, and does any work assigned to him by blacksmith.	Blacksmiths' helpers (O P).
Brakeman (O P).....	(See Trip rider, O P).....	Trip riders (O P).
Carpenter (O P).....	Builds and repairs wooden structures and does general carpentry work around open-pit mines.	Carpenters (O P).
Carpenter's helper (O P).	Assists carpenter in a general way and does rough unskilled carpentry work under his supervision.	Carpenters' helpers (O P).
Churn-drill operator (O P).	Operates a churn drill, the motive power being furnished by air from compressors; usually called a miner; is assisted by a helper. Drill is generally located on one of the shelves, and drills a vertical hole in the rock, into which explosives are inserted and fired to loosen rock and ore so that it may be easily loaded into cars.	Drilling-machine operators (O P).
Churn-drill operator's helper (O P).	Assists churn driller in setting up churn drill and works in a general way under his supervision.	Drilling-machine operators' helpers (O P).
Craneman, steam shovel (O P).	(See Shovel craneman, O P).....	Shovel cranemen (O P).
Doble man (O P).....	(See Shot firer, O P).....	Shot firers (O P).
Driller, hand (O P).....	Uses steel drill and hammer by hand to drill holes in ore, rock, etc., into which explosives are placed for blasting. A knowledge of explosives is necessary in order properly to place holes for blasting.	Drillers, hand (O P).
Drilling-churn machine operator (O P).	(See Churn-drill operator, O P).....	Drilling-machine operators (O P).
Drilling-churn machine operator's helper (O P).	(See Churn-drill operator's helper, O P).....	Drilling-machine operators' helpers (O P).
Drilling-machine operator (O P).	Operates mounted drilling machine in open-pit mine; sets up machine and drills a hole from a lower level or table into side or flank of an upper level in open pit; must be familiar with drills and be able to make needed adjustments and minor repairs; is generally assisted by a helper. Explosives are inserted into the drill holes and fired, thus loosening rock and ore, so that it may be easily loaded into cars. Drills are operated by compressed air or electricity. (See also Churn-drill operator, O P.)	Drilling-machine operators (O P).

Open-pit mines—Continued

Mine term	Definition	Classified by bureau under—
Drilling-machine operator's helper (O P).	Assists drilling-machine operator (O P) in setting up drill, and helps in a general way, working under his supervision.	Drilling-machine operators' helpers (O P).
Dump man (O P).....	(See Dumper, O P).....	Dumpers (O P).
Dumper (O P).....	Stationed at ore bins or on refuse dump; opens car doors or latches, to dump cars, and closes latches or doors after dumping.	Do.
Electrician (O P).....	Installs and repairs electrical machinery and light and power wiring.	Electricians (O P).
Engineer, locomotive (O P).	(See Locomotive engineer, O P).....	Locomotive engineers (O P).
Engineer, steam shovel (O P).	(See Shovel engineer, O P).....	Shovel engineers (O P).
Engineer, stock pile (O P).	(See Stock-pile engineer, O P).....	Other employees (O P).
Fireman, locomotive (O P).	(See Locomotive fireman, O P).....	Locomotive fireman (O P).
Fireman, steam shovel (O P).	(See Shovel fireman, O P).....	Shovel fireman (O P).
Gopherman (O P).....	Uses pick, shovel, and drill to mine and blast ore located in pockets or other isolated parts of mine not accessible for machine drilling; places explosive as well as fires them.	Drillers, hand (O P).
Jack hammerman (O P).	Operates jack hammer with which to drill auxiliary holes into sides of the level to be mined; also drills holes into bowlders which must be broken up. These holes are later charged with explosives and fired.	Drilling-machine operators (O P).
Laborer (O P).....	Does general unskilled labor on dumps or in pits; not much training required.	Laborers (O P).
Locomotive engineer (O P).	Operates haulage or shifting locomotives, of steam railroad type, to transport ore trains through and about open-pit mines and to and from crushers or mills.	Locomotive engineers (O P).
Locomotive fireman (O P).	Works with locomotive engineer and fires boilers to keep up steam in locomotive engines used for haulage or shifting purposes in and about open-pit mines.	Locomotive firemen (O P).
Machinist (O P).....	Makes necessary repairs and adjustments to machines used in pit and operates lathes and other metal-working machines to make needed machine parts.	Machinists (O P).
Machinist's helper (O P).	Workman of some degree of skill who assists machinist in the repair and adjustment of machines, working under his direction.	Machinists' helpers (O P).
Miner (O P).....	(See Drilling-machine operator, O P; see also Churn-drill operator, O P.)	Drilling-machine operators (O P).
Mounted-drill operator (O P).	(See Drilling-machine operator, O P).....	Do.
Mounted-drill operator's helper (O P).	(See Drilling-machine operator's helper, O P).....	Drilling-machine operators' helpers (O P).
Oiler (O P).....	Uses oil or grease to lubricate bearings of ore cars, machinery, etc., in open-pit mines.	Oilers (O P).
Pipeman (O P).....	Lays and repairs water and compressed-air pipes used in open-pit mines.	Pipemen (O P).
Pitman (O P).....	Works in pit around shovels or cranes, and assists in a general way, moving up supplies, power lines, water lines, etc.; removes obstructions in path of the steam shovel; levels and blocks shovels when moved to a new place of work; and wheels coal from storage pile to steam shovel for firing boilers.	Pitmen (O P).
Pump man (O P).....	Tends pumping machinery at water plant which supplies water for mine and community.	Pump men (O P).
Pumper, water (O P)...	(See Pump man, O P).....	Do.
Repair man (O P).....	Makes minor repairs and adjustments to steam shovels, cranes, and other machinery and equipment which do not require the services of a machinist.	Repair men (O P).
Shot firer (O P).....	Blasts rock and ore after it has been drilled and charged with explosives; may set off shots, by using a battery or an electric firing machine; sometimes called a "doble man."	Shot fires (O P).
Shovel craneman (O P)..	Operates, by means of levers, the loading mechanism of a steam or electric shovel.	Shovel cranemen (O P)
Shovel engineer (O P)...	Has charge of steam or electric shovel, keeps its machinery in working condition, and supervises moving of shovel from one place to another in the pit.	Shovel engineers (O P).
Shovel fireman (O P)....	Fires boiler which furnishes power for operating steam shovel.	Shovel firemen (O P).

Open-pit mines—Continued

Mine term	Definition	Classified by bureau under—
Shovel laborer (O P)....	Does unskilled work such as handling timbers and materials used in moving steam shovel from one location to another.	Laborers (O P).
Steam-shovel craneman (O P).	(See Shovel craneman, O P).....	Shovel craneman (O P).
Steam-shovel engineer (O P).	(See Shovel engineer, O P).....	Shovel engineers (O P).
Steam-shovel fireman (O P).	(See Shovel fireman, O P).....	Shovel firemen (O P).
Steam-shovel laborer (O P).	(See Shovel laborer, O P).....	Laborers (O P).
Stock-pile engineer (O P).	Operates crane used for putting ore on a stock or storage pile.	Other employees (O P).
Switchman (O P).....	Operates and throws switches of railroad tracks where there are no automatically operated switches.	Switchmen (O P).
Track-moving machine operator (O P).	Operates machine which lays and moves tracks in the pit, mechanically, by picking up required portion of track and moving it to the desired position without having to uncouple it; also tightens loose ties and restores proper gauge to tracks after being moved.	Other employees (O P).
Trackman (O P).....	Lays, moves, and repairs tracks in the pit or on the dump. In some mines the laying and moving of tracks is now done mechanically. (See also Track-moving machine operator, O P.)	Trackmen (O P).
Trip rider (O P).....	Ride ore trains and locomotives and assists motormen by handling brakes, throwing switches, etc.	Trip riders (O P).
Truck operator (O P)....	Operates motor truck in and about open-pit mine, doing all kinds of hauling.	Truck operators (O P).
Watchman (O P).....	Performs duties of caretaker and does general patrol work, watching steam shovels, etc.; also may keep up fires under boilers when temporarily not in use or at night.	Watchmen (O P).
Water-plant operator (O P).	(See Pump man, O P).....	Pump men (O P).