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WILLIAM F. WHITING, SECRETARY

BUREAU OF MINES

SCOTT TURNER, DIRECTOR

**COAL-MINE FATALITIES IN THE
UNITED STATES
1927**

BY

WILLIAM W. ADAMS



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COAL-MINE FATALITIES IN THE UNITED STATES, 1927¹

By WILLIAM W. ADAMS

INTRODUCTION

In 1927 the loss of life per ton of coal mined in the United States was lower than in any other year except 1920. In other words, the output of coal for each fatal accident was, with the exception noted, greater than ever before. Whether the death rate per thousand men employed also declined can not be stated at present, as operators' reports showing the number of employees will not be complete until 8 or 10 months after the close of the year. It is gratifying, however, to know that in 1927 the Nation's coal supply was obtained at a lower cost in human life.

Reports received by the Bureau of Mines from the chief mine inspectors of the various States and from producing companies in the few States that have no official inspectors showed that 2,224 men lost their lives from accidents at coal mines in 1927. Later this figure may be slightly increased, as some of the more serious injuries of the past year may prove fatal. The present figure indicates a death rate of 3.70 per million tons of coal produced. It is believed that later returns will hardly increase the death rate beyond 3.73 and may not increase it to that figure. Even should the rate prove to be 3.73 deaths per million tons the record for 1927 will still show an improvement over the previous year's rate, 3.83. The significance of the lower death rate for 1927 is further revealed by the industry's record for earlier years. In 1870, the first year for which figures are available, more than 13 lives were lost for each million tons of coal produced. Five years later the same quantity of coal cost 9.5 lives. In 1880 the human-life cost of a million tons of coal was 5.2, and in 1885 it was 5.9. In 1890 the rate had been reduced to 5 lives per million tons, but in 1895 it rose to 6. In 1900 the loss was 5.7 lives per million tons, and in 1905 it was 5.8. In 1910, 1,000,000 tons of coal cost 5.6 lives, while in 1915 the rate had been lowered to 4.3. The 1920 figure was the lowest on record—3.5 lives per million tons—and this low rate has not been reached since. In 1925 and 1926 the cost was 3.8 and in 1927, 3.7.

It should be made clear that the death rate per million tons is strictly a cost figure that has no relation to the question of whether

¹ Work on this manuscript completed June, 1928.

mining is becoming less or more hazardous to the men who work in the mines. The lowering of the cost of coal in lives has been brought about not only by safety measures but also by the mechanization of the mines, which allows a larger average output per man employed, and in turn, lowers the cost per ton in lives. This is illustrated for bituminous coal mines by the fact that in 1900, a year in which 25 per cent of all bituminous coal was machine mined, the daily output of coal was 3 tons per man and the death rate per million tons was 5.3; in 1926, when 72 per cent of all bituminous coal was machine mined, the daily output per man was 4.5, tons and the death rate per million tons was 3.6. These figures show that an increase of 188 per cent in the proportion of coal that was machine mined was accompanied by an increase of 50 per cent in the average daily output per employee and a reduction of 32 per cent in the human-life cost of a ton of coal. The use of cutting machines can not be given the entire credit for the reduction in the death rate per ton nor for the increased productivity per man, as improvements in haulage and other equipment and in working methods followed the increased use of machines; but there can be no doubt that much of the increased productivity per man is explained by the increased use of coal-cutting machines.

As already stated, reduction in the cost of coal in lives, brought about largely by increased mechanization which raises the average production per worker, does not imply that persons employed in the mines are finding their work less hazardous than before; in other words, lowering the death rate per ton of coal produced does not in itself indicate that men who work in coal mines are becoming more acceptable as applicants for insurance covering their lives as individuals. The individual workman measures his personal safety more by the number of chances he has of doing a year's work without being injured or killed than by the number of tons of coal represented if he is killed. These chances are usually measured by figures showing the number of injuries or deaths during a year among each thousand employees. If, for example, an employee finds that 996 out of every 1,000 men employed in his mine completed a year's work without being killed, as against 995 in the previous year, he may know that he and his fellow workers were working under less hazardous or at least more fortunate conditions than in the year before, regardless of whether the tonnage per death was greater or less than in the previous year.

Table 1 presents a summary of labor and accident data for the coal-mining industry since 1906.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 1.—*Fatality rates for the years 1906 to 1927*

Year	Men employed		Average days active	Total shifts	Men killed	Killed per thousand 300-day workers	Production (short tons)	Production per death (short tons)	Average production per man		Deaths per million tons
	Actual number	Equivalent in 300-day workers							Tons per year	Tons per day	
1906 ¹	630,283	439,097	209	131,729,147	2,138	4.87	405,955,888	189,876	644	3.08	5.27
1907 ¹	674,613	519,452	231	155,835,603	3,242	6.24	477,892,536	147,407	708	3.07	6.78
1908 ¹	678,873	441,267	195	132,380,235	2,445	5.54	409,309,857	167,407	603	3.09	5.97
1909 ¹	666,535	490,763	221	147,228,770	2,642	5.38	460,807,263	174,416	691	3.13	5.73
1910	725,030	531,689	220	159,506,600	2,821	5.31	501,596,378	177,808	692	3.14	5.62
Average ..	675,067	484,454	215	145,336,071	2,658	5.49	451,112,384	169,719	668	3.10	5.89
1911	728,348	534,122	220	160,236,560	2,656	4.97	496,371,126	186,887	682	3.10	5.35
1912	722,662	541,997	225	162,598,950	2,419	4.46	534,466,580	220,945	740	3.29	4.53
1913	747,644	593,131	238	177,939,272	2,785	4.70	570,048,125	204,685	762	3.20	4.89
1914	763,185	526,598	207	157,979,295	2,454	4.66	513,525,477	209,261	673	3.25	4.78
1915	734,008	511,598	209	153,479,495	2,269	4.44	531,619,487	234,297	724	3.46	4.27
Average ..	739,169	541,489	220	162,446,714	2,517	4.65	529,206,159	210,253	716	3.26	4.76
1916	720,971	565,766	235	169,729,816	2,226	3.93	590,098,175	265,094	818	3.48	3.77
1917	757,317	634,666	251	190,399,080	2,696	4.25	651,402,374	241,618	860	3.42	4.14
1918	762,426	654,973	258	196,491,984	2,580	3.94	678,211,904	262,879	890	3.45	3.80
1919	776,569	542,217	209	162,665,023	2,323	4.28	553,952,259	238,464	713	3.41	4.19
1920	784,621	601,283	230	180,384,942	2,272	3.78	658,264,932	289,729	839	3.65	3.45
Average ..	760,381	599,781	237	179,934,289	2,419	4.03	626,385,929	258,944	824	3.48	3.86
1921	823,253	474,529	173	142,358,691	1,995	4.20	506,395,401	253,832	615	3.56	3.94
1922	844,807	405,056	144	121,516,822	1,984	4.90	476,951,121	240,399	565	3.92	4.16
1923	862,536	560,646	195	168,193,738	2,462	4.39	657,903,671	267,223	763	3.91	3.74
1924	779,613	499,896	192	149,968,980	2,402	4.80	571,613,400	237,974	733	3.81	4.20
1925	748,805	480,227	192	144,068,232	2,234	4.65	581,869,890	260,461	777	4.04	3.84
Average ..	811,803	484,071	179	145,221,293	2,215	4.58	558,946,697	252,346	689	3.85	3.96
1926	759,033	559,426	221	167,827,732	2,518	4.50	657,804,437	261,241	867	3.92	3.83
1927	757,000	.....	.....	.....	2,224	.....	600,456,000	269,989	793	.....	3.70

¹ Figures are only for States under inspection service. Figures for 1909 as to average days active and total shifts were estimated by the Bureau of Mines.

² Number of employees based on estimates of State mine inspectors.

³ Estimated.

TABLE 2.—United States: Fatalities at coal mines for the years ended December 31, 1926 and 1927

Cause of accident	Number killed		Deaths per million tons	
	1926	1927	1926	1927
Underground:				
Falls of roof or face.....	1, 214	1, 145	1. 84	1. 91
Mine cars and locomotives.....	433	352	. 66	. 58
Explosions of gas or coal dust—				
Local explosions.....	74	92	. 11	. 15
Major explosions.....	348	155	. 53	. 26
Explosives.....	96	110	. 15	. 18
Electricity.....	96	100	. 15	. 17
Mining machines.....	26	28	. 04	. 05
Mine fires.....	1	4	(¹)	. 01
Miscellaneous.....	77	87	. 12	. 14
Total underground.....	2, 365	2, 073	3. 60	3. 45
Shaft: Total shaft.....	35	29	. 05	. 05
Surface:				
Haulage.....	50	46	. 08	. 07
Machinery.....	9	10	. 01	. 02
Miscellaneous.....	59	66	. 09	. 11
Total surface.....	118	122	. 18	. 20
Grand total.....	2, 518	2, 224	3. 83	3. 70

¹ Less than 0.005.

ACKNOWLEDGMENTS

The Bureau of Mines gratefully acknowledges the cooperation of the State mine inspectors and other State officials whose voluntary reports of accidents furnish the basis of the tables in this bulletin. Acknowledgment is also made to mining companies in various States and to F. G. Tryon, of the Bureau of Mines, for information on the number of employees in the coal-mining industry, days of operation, amount of coal produced, and other matters bearing upon the study of accidents in mines. Miss Lillian Chenoweth, of the Bureau of Mines, assisted by Miss E. V. Walters, also of the bureau, prepared the statistical tables presented herein. Miss Lily S. Gerry prepared the list of State mining officials and compensation commissions and of mining officials of several foreign countries.

CAUSES OF FATALITIES IN 1927, BY STATES AND MONTHS

The causes of fatal accidents at coal mines in 1927, by States and months, are shown in Tables 3 to 17, inclusive.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 3.—United States: Coal-mine fatalities during the year ended December 31, 1927, by causes and States

State	Underground										Shaft				Surface						Total by States						
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting of steam pipes	Railway cars and locomotives	Other causes	Total	1927	1926	
																											Total		Total
Alabama.....	60	1	14	3	1	8	2	2	2	2	2	91	1	1	1	1	1	1	1	1	1	1	2	93	139		
Alaska.....	1											1												1	1	7	
Arkansas.....	3		2	1	2	1						9													9		
California, Idaho, Arizona, and Oregon.....	16	12	6	7	3	2	1	1	1	2	2	50	1	1	1	1	2	2	2	2	2	2	1	53	0		
Colorado.....	1		1			1						2												2	53	3	
Georgia and North Carolina.....	44	15	17	4	4	5	1	3	6	6	9	95	1	1	2	1	4	4	4	4	4	4	5	104	166		
Illinois.....	15		9	1	2	3	1	3	1	1	3	32	2	2	2	1	5	5	5	5	5	5	2	39	78		
Indiana.....	9	3	1			2						15												15	16	16	
Iowa.....	5				1							6	2	2	2	2	2	2	2	2	2	2	1	9	17	17	
Kansas.....	109	1	34	24	3	13	1	3	2	2	189	6	6	6	6	6	6	6	6	6	6	6	1	194	5	12	
Kentucky.....	2	2	2									4												4	5	12	
Maryland.....	1				1							3												3	1	1	
Michigan.....	3		3		1	1						7												7	8	9	
Missouri.....	6		3		4	2						12												13	8	8	
Montana.....	13		4		1	1						18												18	13	13	
New Mexico.....	1		4		1	1						7												7	2	1	
North Dakota.....	37		6	1	4	1	1	1	1	1	52	2	2	2	2	2	2	2	2	2	2	2	7	61	80		
Ohio.....	14		2	10	2	3					29	1	1	1	1	1	1	1	1	1	1	1	30	124	124		
Oklahoma.....	187	28	63	10	12	16	1	7	8	8	334	8	8	8	8	8	8	8	8	8	8	8	22	356	420		
Pennsylvania (bituminous).....	10		3			4					17													17	50	0	
South Dakota.....	2										2													2	0	0	
Tennessee.....	19		3			2					23													23	2	0	
Texas.....	29		1		1	1					34													34	26	20	
Utah.....	6		1		1	3					11													11	44	59	
Virginia.....	241	25	116	111	11	24	1	11	4	8	21	546	4	4	4	4	4	4	4	4	4	4	1	22	15	15	
Washington.....	10	5	2	1	1	2					21	2	2	2	2	2	2	2	2	2	2	2	14	587	576	576	
West Virginia.....																											
Wyoming.....																											
Total (bituminous).....	889	81	300	187	48	94	6	27	4	35	1,625	7	7	7	7	7	7	7	7	7	7	36	88	1,735	2,065		
Pennsylvania (anthracite).....	172	53	52	60	62	7	6	1	1	34	448	3	3	3	3	3	3	3	3	3	3	5	84	489	483		
Total, 1927.....	1,011	134	352	247	110	111	100	7	28	4	69	2,073	10	3	12	4	29	31	14	10	2	15	50	122	2,224	2,224	
Total, 1926.....	1,093	121	433	422	96	14	96	7	26	1	56	2,365	3	6	16		35	30	16	9		20	43	118	433	2,518	

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 4.—United States: Coal-mine fatalities during the years ended December 31, 1926 and 1927, by causes and months

Month	Underground										Shaft					Surface					Grand total									
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Railing down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and locomotives	Electricity	Machinery		Boiler explosions or bursting steam pipes	Railway cars and locomotives	Other causes	Total					
1926																														
January	103	4	40	152	3	1	7	1	3	2	1	1	1	3	1	1	1	1	13	6	16	13	2	4	4	1	3	1	316	
February	79	10	29	29	7	1	8	5	3	2	2	1	1	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	171	
March	79	13	38	24	7	1	7	1	1	2	2	1	1	2	2	1	1	1	2	2	1	1	1	1	1	1	1	1	109	
April	82	9	27	1	7	3	7	3	1	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	140	
May	84	8	36	18	6	3	2	3	7	7	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	174	
June	84	8	31	12	6	3	10	4	5	5	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	165	
July	80	5	47	19	10	3	11	1	5	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	180	
August	97	15	40	51	8	16	16	3	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	195	
September	83	8	33	23	7	1	8	1	2	8	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	172	
October	101	10	31	38	6	1	7	1	2	6	1	1	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	203	
November	106	12	42	12	13	1	9	1	1	6	1	1	1	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	216	
December	108	17	39	43	13	1	9	3	3	3	5	1	1	5	1	1	1	1	2	2	2	2	2	2	2	2	2	2	237	
Total, 1926	1,063	121	433	422	96	14	96	7	26	1	56	2,365	13	6	16	35	30	16	9	20	43	118	2,518	35	30	16	9	20	43	118
1927																														
January	91	13	42	14	11	2	10	1	4	1	8	197	1	1	2	3	8	1	1	2	6	17	217	3	8	1	2	5	3	18
February	84	12	43	6	9	4	6	1	4	10	10	174	1	1	2	3	3	3	3	3	3	3	13	190	2	5	2	2	6	8
March	103	17	30	18	4	3	9	1	3	3	9	189	1	1	2	2	3	3	3	3	3	3	197	2	5	2	2	6	8	13
April	68	7	32	108	13	1	11	1	3	7	248	180	2	2	2	2	3	3	3	3	3	3	263	2	3	2	2	3	6	186
May	82	13	26	25	13	1	11	2	7	7	159	180	1	1	1	1	2	2	2	2	2	2	172	1	2	1	1	4	12	172
June	84	13	18	12	13	2	16	1	3	2	130	130	1	1	2	4	4	4	4	4	4	4	139	1	2	1	1	4	6	186
July	63	7	28	4	8	1	16	1	2	2	161	161	3	3	1	1	1	1	1	1	1	1	139	1	1	1	1	2	1	172
August	91	4	24	18	6	2	8	1	5	4	155	155	3	3	1	1	1	1	1	1	1	1	141	2	3	2	2	5	4	171
September	88	14	23	7	6	2	9	1	3	5	155	155	3	3	1	1	1	1	1	1	1	1	141	2	3	2	2	5	4	171
October	107	17	31	13	8	1	9	1	3	3	178	178	3	3	2	2	3	3	3	3	3	3	141	2	3	2	2	5	4	171
November	87	13	29	4	11	1	9	1	3	3	155	155	3	3	2	2	3	3	3	3	3	3	141	2	3	2	2	5	4	171
December	69	14	26	18	10	1	3	1	1	6	147	147	1	1	1	1	1	1	1	1	1	1	155	1	1	1	1	2	4	155
Total, 1927	1,011	134	352	247	110	11	100	7	28	4	69	2,073	10	3	12	29	31	14	10	20	43	122	2,224	29	31	14	10	20	43	122

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 5.—United States: Coal-mine fatalities during January, 1927, by causes and States

State	Underground										Shaft				Surface						Total by States					
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting of steam pipes	Railway cars and locomotives	Other causes	Total	1927	1926
Alabama.....	6																								6	37
Alaska.....																									0	0
Arkansas.....				2																					2	0
California, Idaho, Nevada, and Arizona.....		3				1																1			0	0
Colorado.....	2																								8	10
Georgia and North Carolina.....	7			2		1		2														1			20	19
Illinois.....			2																						3	0
Indiana.....		1																							1	0
Iowa.....																									0	2
Kansas.....	12		6	4	1	2		1																	27	18
Kentucky.....																									0	1
Maryland.....																									1	0
Michigan.....	1																								1	1
Missouri.....			1																						2	2
Montana.....	2																								0	0
New Mexico.....																									0	0
North Dakota.....	4						1																		7	4
Ohio.....	2																								2	2
Oklahoma.....	4																								2	95
Pennsylvania (bituminous).....	12	3	9	1	2	4																			36	35
South Dakota.....																									0	0
Tennessee.....	3																								0	3
Texas.....																									0	0
Texas (bituminous).....																									0	0
Texas (anthracite).....																									1	1
Virginia.....	2																								2	2
Washington.....	1																								1	1
West Virginia.....	20	2	14	4		1		1																	43	86
Wyoming.....	3																								4	3
Total (bituminous).....	75	12	37	8	7	9	1	4	1	3	159	1													171	322
Pennsylvania (anthracite).....	16	1	5	6	4	1		5		38															46	3
Total, January, 1927.....	91	13	42	14	11	2	10	1	4	1	197	1													217	555
Total, January, 1926.....	103	4	40	152	3	1	7	1	3		316	1													217	325

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 6.—United States: Coal-mine fatalities during February, 1927, by causes and States

State	Underground										Shaft				Surface						Total by States					
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or burst pipes	Railway cars and locomotives	Other causes	Total	1927	1926
Alabama.....	5	1	1						1																9	2
Alaska.....																									0	0
Arkansas.....				1								1													2	1
California, Idaho, Nevada, and Arizona.....	1	1			3																				0	0
Colorado.....	6		3	1																		1			5	3
Georgia and North Carolina.....	4		1																						11	16
Illinois.....	1											1													7	8
Indiana.....	2																								1	3
Iowa.....	1																								2	1
Kansas.....	11		5																						16	15
Kentucky.....	2																								1	1
Maryland.....																									0	1
Michigan.....																									1	1
Missouri.....																									1	0
Montana.....			1																						1	0
New Mexico.....	2																								2	2
North Dakota.....	7				1																				2	0
Ohio.....			3																						10	10
Oklahoma.....			1	1																					2	0
Pennsylvania (bituminous).....	20	2	6																						32	52
South Dakota.....																									0	0
Tennessee.....																									0	3
Texas.....																									0	0
Utah.....	1		1																						5	1
Virginia.....	3		1																						5	8
Washington.....																									2	2
West Virginia.....	12		14									3													35	48
Wyoming.....																									0	0
Total (bituminous).....	76	5	37	2	6	6	6	6	4	2	138	6			1	1	1	2	3	1			2	3	149	173
Pennsylvania (anthracite).....	8	7	6	4	3	3	3	3	8	8	36	1			1	1	1	1	1	1			3	4	41	9
Total, February, 1927.....	84	12	43	6	9	9	9	9	4	10	174	6			1	2	3	3	3	2			5	3	190	182
Total, February, 1926.....	79	10	29	23	7	1	8	5	3	171	2	1	2	1	1	1	1	3	3	2			3	5	182	---

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 8.—United States: Coal-mine fatalities during April, 1927, by causes and States

State	Underground											Shaft					Surface						Total by States			
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting steam pipes	Railway cars and locomotives	Other causes	Total	1927	1926
Alabama	3		3																						6	11
Alaska																									0	0
Arkansas																									0	0
California, Idaho, Nevada, and Arizona																									0	0
Colorado	1		1																						2	3
Georgia and North Carolina				1																					0	0
Illinois																									4	10
Indiana																									0	3
Iowa	2																								2	0
Kansas																									0	0
Kentucky	4		2																						8	12
Maryland																									0	0
Michigan	1																								1	0
Missouri																									0	0
Montana	1																								1	0
New Mexico																									0	0
New York																									1	0
North Dakota	2				1																				0	0
Ohio				1																					4	8
Oklahoma	1																								2	1
Pennsylvania (bituminous)	12		9	6	3																				33	30
South Dakota																									0	0
Tennessee	1																								1	4
Texas																									0	0
Utah	2		1																						0	0
Virginia	3																								3	3
Washington																									3	1
West Virginia			10	91	2		3		2	3															144	28
Wyoming	20	3	10																						28	0
Total (bituminous)	53	3	26	99	6		5		3	3															221	115
Pennsylvania (anthracite)	15	4	6	9	6				1	1															42	33
Total, April, 1927	68	7	32	108	12		5	1	3	3															203	148
Total, April, 1926	82	9	27	1	7	1	7		6	6															---	---

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 9.—United States: Coal-mine fatalities during May, 1927, by causes and States

State	Underground										Shaft					Surface						Total by States				
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or burst pipes	Hallway cars and locomotives	Other causes	Total	1927	1926
Alabama.....	4				1		1																		6	2
Alaska.....																									1	0
Arkansas.....			1																						1	0
California, Idaho, Nevada, and Arizona.....																									0	0
Colorado.....		1		7																					0	0
Georgia and North Carolina.....	2								2																0	0
Illinois.....	1																								4	12
Indiana.....	1																								6	1
Iowa.....																									1	0
Kansas.....	9		3	1					1																15	15
Kentucky.....																									0	1
Maryland.....																									0	0
Michigan.....																									0	0
Missouri.....																									0	0
Montana.....																									1	0
New Mexico.....	1																								1	0
North Dakota.....	4																								5	9
Ohio.....	1																								2	2
Oklahoma.....	16	5	1																						25	27
Pennsylvania (bituminous).....																									0	1
South Dakota.....																									0	0
Tennessee.....																									0	0
Texas.....	3																								0	0
Utah.....	5																								3	3
Virginia.....	1																								3	3
Washington.....	15	3	11	8	1																				9	6
West Virginia.....																									2	4
Wyoming.....	1																								50	43
Total (bituminous).....	63	9	22	16	2	10			3	127														133	133	
Pennsylvania (anthracite).....	19	4	4	53					4	53														53	47	
Total, May, 1927.....	82	13	26	25	13	11			2	180														186	186	
Total, May, 1926.....	89	10	36	18	6	3			7	174														5	180	

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 10.—United States: Coal-mine fatalities during June, 1927, by causes and States

State	Underground										Shaft				Surface						Total by States						
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down	Shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting steam pipes	Hallway cars and locomotives	Other causes	Total	1927	1926
Alabama.....	4			1																						5	13
Alaska.....																										0	0
Arizona.....	1																									1	0
California, Idaho, Nevada and Arizona.....	1	1													1											0	0
Colorado.....																										3	0
Georgia and North Carolina.....																										0	0
Illinois.....																										0	3
Indiana.....	1				1																					1	0
Iowa.....																										0	0
Kansas.....																										1	0
Kentucky.....	6																									9	16
Maryland.....		1																								1	3
Michigan.....																										0	0
Missouri.....																										0	0
Montana.....																										2	0
New Mexico.....	3																									3	2
New York.....																										0	0
North Dakota.....																										3	0
Ohio.....																										2	0
Oklahoma.....	1																									2	0
Pennsylvania (bituminous).....	17			2	3		2																			27	21
Pennsylvania (anthracite).....																										0	0
South Dakota.....																										0	0
Tennessee.....																										0	0
Texas.....																										0	0
Utah.....	2																									1	0
Virginia.....																										1	0
Washington.....																										2	2
West Virginia.....																										1	0
Wyoming.....	23	7	8	4	1		1		2	2	48								1	1		1	2	5	53	45	
Total (bituminous).....	59	10	14	7	6	6	6		2	3	107				1				1	3	1	1	4	10	118	123	
Pennsylvania (anthracite).....	25	3	4	5	7	2	1		1	4	52								1	1	1	2	2	2	54	48	
Total June, 1927.....	84	13	18	12	13	2	7		3	7	150				1				2	4	1	1	4	12	172	171	
Total June, 1926.....	84	8	31	12	9	1	10		4	5	165								1	2		1	3	6	---	---	

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 11.—United States: Coal-mine fatalities during July, 1927, by causes and States

State	Underground										Shaft					Surface						Total by States				
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or burst pipes	Railway cars and locomotives	Other causes	Total	1927	1928
Alabama.....	7	1	3					1																11	23	
Alaska.....																									0	0
Arkansas.....	1																								1	0
California, Idaho, Nevada, and Arizona.....																									0	0
Colorado.....			1																						1	2
Georgia and North Carolina.....																									0	0
Illinois.....																									1	0
Indiana.....																									0	0
Iowa.....																									1	1
Kansas.....																									17	16
Kentucky.....	7		5				4																	1	0	0
Maryland.....			1																						1	0
Michigan.....																									0	0
Missouri.....																									0	0
Montana.....																									0	0
New Mexico.....																									0	0
North Dakota.....																									0	0
Ohio.....	3				2																				6	2
Oklahoma.....																									4	1
Pennsylvania (bituminous).....	12	3	5	2																					6	6
South Dakota.....																									25	24
Tennessee.....	1																								3	0
Texas.....																									0	0
Utah.....	1																								1	1
Virginia.....																									1	1
Washington.....																									5	5
West Virginia.....	19	2	7		2																				35	40
Wyoming.....																									1	4
Total (bituminous).....	51	5	24	2	4		15																	109	134	
Pennsylvania (anthracite).....	12	2	4	2	4																			30	61	
Total, July, 1927.....	63	7	28	4	8		16																	139	195	
Total, July, 1926.....	80	5	47	19	10	3	11																	---	---	

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 12.—United States: Coal-mine fatalities during August, 1927, by causes and States

State	Underground										Shaft				Surface						Total by States					
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting steam pipes	Railway cars and locomotives	Other causes	Total	1927	1926
Alabama.....	8																								8	10
Alaska.....																									0	0
Arkansas.....			1																						1	1
California, Idaho, Nevada, and Arizona.....																									0	0
Colorado.....	3							1																	0	5
Georgia and North Carolina.....																									0	0
Illinois.....	1																								2	14
Indiana.....				1																					1	3
Iowa.....							2																		2	1
Kansas.....																									1	0
Kentucky.....	14		2	15			1	1																	34	17
Maryland.....																									0	0
Michigan.....																									0	0
Missouri.....																									0	0
Montana.....																									0	0
New Mexico.....	1		1																						1	1
North Dakota.....	2		1																						2	2
Ohio.....																									1	1
Oklahoma.....																									0	0
Pennsylvania (bituminous).....	16	3	5	2			1	1	1	3															34	71
South Dakota.....																									0	0
Tennessee.....	2		1																						3	2
Texas.....																									0	0
Utah.....	1																								0	0
Virginia.....	3		1				1																		1	3
Washington.....																									5	4
West Virginia.....	25		8				2	2																	38	68
Wyoming.....	4																								5	2
Total (bituminous).....	80	3	21	16	2		8	1	5	3															146	214
Pennsylvania (anthracite).....	11	1	3	2	3		1			1															26	41
Total, August, 1927.....	91	4	24	18	5		9	1	5	4															172	255
Total, August, 1926.....	97	15	40	51	8		16	1	3	1															---	---

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 14.—United States: Coal-mine fatalities during October, 1927, by causes and States

State	Underground										Shaft			Surface					Total by States							
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or burst pipes	Hallway cars and locomotives	Other causes	Total	1927	1926
Alabama	13		1	1																					15	10
Alaska																									0	0
Arkansas																									0	2
California, Idaho, Nevada, and Arizona																									0	0
Colorado		1	1																						0	0
Georgia and North Carolina			1																						0	4
Illinois	5		1	1																					11	12
Indiana			2																						4	5
Iowa	1	1																							2	1
Kansas																									2	2
Kentucky	12		1																						14	16
Maryland																									1	1
Michigan																									0	0
Missouri	3		1																						3	2
Montana	1																								0	0
Nebraska	1		1																						0	0
Nevada																									0	0
New Mexico																									0	0
North Dakota																									2	6
Ohio																									2	4
Oklahoma	1			3																					2	4
Pennsylvania (bituminous)	12	3	3	3																					22	34
South Dakota																									0	0
Tennessee	1		1																						3	27
Texas																									0	0
Utah	2																								2	2
Virginia	3		1																						6	10
Washington	2																								2	1
West Virginia	28		13	2	1																				48	46
Wyoming	1																								1	0
Total (bituminous)	86	6	27	6	7	1	8	1	3	2	140	3	1	4	1	1	1	1	1	1	1	3	5	5	149	181
Pennsylvania (anthracite)	15	1	4								38	1													43	35
Total October, 1927	101	7	31	13	8	8	9	1	3	5	178	3	1	4	3	2	1	1	1	1	1	4	10	10	192	216
Total, October, 1926	101	10	31	38	6	6	8	1	2	5	202	3	3	3	2	3	1	2	3	1	2	3	11	11	192	216

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 16.—United States: Coal-mine fatalities during December, 1927, by causes and States

State	Underground										Shaft					Surface					Total by States					
	Falls of roof (coal, rock, etc.)	Falls of face or pillar coal	Mine cars and locomotives	Explosions of gas or coal dust	Explosives	Subsidence from mine gases	Electricity	Animals	Mining machines	Mine fires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling down shafts or slopes	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting steam pipes	Hallway cars and locomotives	Other causes	Total	1927	1926
Alabama.....	3		2																						5	10
Alaska.....	1																								1	0
Arkansas.....	1																								1	2
California, Idaho, Nevada, and Arizona.....		2																							0	0
Colorado.....	1																								4	9
Georgia and North Carolina.....	6		3	1																					18	28
Illinois.....	6		1	8																					5	41
Indiana.....	2																								2	3
Iowa.....																									0	1
Kansas.....																									7	14
Kentucky.....	4	1	2																						0	0
Maryland.....																									0	0
Michigan.....			2																						2	0
Missouri.....																									2	1
Montana.....	1																								1	1
New Mexico.....			1																						0	0
North Dakota.....	4				1										1										0	0
Ohio.....	1			1																					6	10
Oklahoma.....				1																					2	0
Pennsylvania (bituminous).....	11	3	4		1																				24	25
South Dakota.....																									0	0
Tennessee.....																									0	0
Texas.....			1																						0	0
Utah.....	2																								3	1
Virginia.....	3																								3	6
West Virginia.....	10	4	8		1																				2	5
Wyoming.....	1														1										33	37
Wyoming.....	1																								1	2
Total (bituminous).....	61	10	24	10	3					3	1				1	1	1	1	1	1	1	1	1	1	122	208
Pennsylvania (anthracite).....	8	4	2	8	7																				33	46
Total, December, 1927.....	69	14	26	18	10					3	1				1	1	1	1	1	1	1	1	1	1	155	254
Total, December, 1926.....	108	17	39	43	13	1				9	1				5	1	1	1	1	1	1	1	1	1	155	254

DETAILS RELATING TO PRINCIPAL CAUSES OF ACCIDENTS

In order that more detailed information may be available regarding accidents which are usually attributed to falls of roof, haulage, electricity, explosives, etc., all fatal accidents at coal mines since 1920 have been presented in Table 17 according to the bureau's classification of causes. It is believed that the figures should be of considerable assistance to safety engineers and others interested in the prevention of mine accidents.

TABLE 17.—United States: Coal-mine fatalities, by detailed causes, 1920 to 1927

Cause of accident	1927												1926	1925	1924	1923	1922	1921	1920	Total
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.								
NUMBER KILLED UNDERGROUND																				
1. Falls of roof (coal, rock, etc.):																				
(a) At working face.....	640	519	518	783	665	812	68	50	63	74	62	49	750	812	728					
(b) In room or chamber.....	188	214	115	129	140	158	8	8	13	14	13	7	140	149	140					
(c) On road, entry, or gangway.....	174	183	144	133	128	115	11	5	15	7	12	9	110	92	88					
(d) On slope.....	10	9	11	13	8	8	2	1		3	3		11	8	8					
Total.....	1,012	925	788	1,058	941	977	84	63	91	88	101	69	1,011	1,093	977					
2. Falls of face or pillar coal:																				
(a) At working face.....	93	86	106	97	104	108	10	8	4	9	11	13	112	108	93					
(b) On road, entry, or gangway.....	29	14	14	12	17	13	2	1		5	2	1	22	13	10					
Total.....	122	100	120	109	121	121	12	7	4	14	13	14	134	121	103					
3. Mine cars and locomotives:																				
(a) Switching and spragging.....	6	13	3	5	5	13	2	1	1	1	3	1	8	13	7					
(b) Coupling cars.....	13	18	4	12	7	5	1	1	1	1	1	1	12	5	5					
(c) Falling from trips.....	26	11	12	15	18	23	4	2	2	1	3	3	22	20	20					
(d) Run over by car or motor.....	164	120	135	144	117	160	21	11	7	10	9	10	136	121	121					
(e) Caught between car and rib.....	99	98	105	121	92	106	8	5	6	6	6	6	91	91	106					
(f) Caught between car and roof while riding.....	18	26	24	26	29	16	1	2	2	3	3	1	19	19	16					
(g) Runaway car or trip.....	43	32	41	51	39	41	2	1	3	2	1	4	32	38	41					
(h) Miscellaneous.....	39	23	24	39	47	87	4	3	1	2	6	2	32	42	47					
Total.....	408	341	341	413	354	361	43	28	24	23	31	26	352	433	361					

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 17.—United States: Coal-mine fatalities, by detailed causes, 1920 to 1927—Continued

Cause of accident	1927												Total						
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.							
NUMBER KILLED UNDERGROUND—continued																			
4. Explosions of gas or coal dust:																			
(a) Due to open light.....	86	127	106	372	536	345	422	14	6	18	108	25	12	4	18	4	18	247	
(b) Due to defective safety lamps.....	5	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
(c) Due to electric arc.....	10	54	10	54	54	54	54	4	4	4	4	4	4	4	4	4	4	4	4
(d) Due to shot.....	37	51	84	36	21	4	4	2	4	1	8	1	1	1	1	1	1	1	1
(e) Due to explosions of powder.....	17	15	12	3	4	4	3	7	1	1	1	1	1	1	1	1	1	1	1
(f) Miscellaneous.....	10	8	4	15	86	135	184	7	7	1	192	22	8	2	3	3	7	142	
Total.....	160	126	311	372	536	345	422	14	6	18	108	25	12	4	18	4	18	247	
5. Explosives:																			
(a) Transportation.....	3	7	5	5	5	5	9	4			1	1	1	1	1	1	1	1	1
(b) Charging.....	4	10	5	9	9	1	3	5			1	1	1	1	1	1	1	1	1
(c) Suffocation.....	4	18	5	9	6	8	6	2			2	2	2	2	2	2	2	2	2
(d) Drilling into old holes.....	3	3	1	1	1	1	1	1											
(e) Striking in loose rock or coal.....																			
(f) Thawing.....	3	2	3	3	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1
(g) Caps, detonators, etc.....	2	4	3	8	0	0	2	4	1	1	4	4	3	1	1	1	1	1	1
(h) Unguarded shots.....	12	12	11	16	13	9	9	0	2	2	5	2	6	4	3	5	2	2	2
(i) Returned too soon.....	59	47	32	35	37	36	32	2	1	1	5	2	6	4	3	5	2	2	2
(j) Premature shot.....	3	9	7	4	1	1	3	3	2	2	1	1	1	1	1	1	1	1	1
(k) Sparks from match, lamp, or candle.....	14	13	7	6	0	8	10	1	1	2	2	1	1	1	1	1	1	1	1
(l) Delayed blast.....	1	1	2	4	3	3	7	2	4	2	1	1	1	1	1	1	1	1	1
(m) Shot breaking through rib or pillar.....	21	12	11	13	11	14	19	1	3	3	3	4	3	2	2	1	2	1	20
(n) Miscellaneous.....																			
Total.....	131	142	93	115	99	102	96	11	9	4	12	13	13	8	5	6	8	11	110
6. Suffocation from mine gases.....	18	9	9	9	13	8	14	2		3	1	1	2			2		1	11
7. Electricity:																			
(a) Direct contact with trolley wire.....	29	35	29	36	45	35	34	8	3	1	1	2	2	8	3	3	7	5	1
(b) Bar or tool striking trolley wire.....	3	6	3	3	4	1	2	1	1	1	1	1	1	1	1	1	1	1	1
(c) Contact with mining machine.....	10	11	12	12	5	7	6	2	1	3	1	1	1	3	2	1	1	1	1
(d) Contact with machine feed wire.....	3	5	5	4	4	4	2	1	1	3	2	1	1	3	2	1	1	1	1
(e) Contact with haulage motor.....	22	20	26	18	17	30	43	1	1	4	3	7	3	4	1	3	1	1	27
(f) Miscellaneous.....																			
Total.....	76	80	74	75	80	84	96	10	6	9	5	11	7	16	9	8	9	7	3

COAL-MINE FATALITIES IN THE UNITED STATES

	4	7	5	10	4	5	7	1	1	1	1	1	1	1	1	1	1	1	1		
8. Animals.....																				1	
9. Mining machines (other than 7 c)).....	37	18	21	23	30	35	26	4	4	1	3	2	3	2	5	1	3			28	
10. Mine fires (burned, suffocated, etc.).....	8	16			2	10	1	1		3										4	
11. Other causes:																					
(a) Fall of person.....	2	17	7	4	6	5	10	1	2			2	3	1		1	1			12	
(b) Machinery (other than 9).....	1	5	4	6	5	5	5					1				1				2	
(c) Rush of coal or gob.....	9	9	6	13	12	7	7	2	6	7						1				2	
(d) Falling timber.....	11	10	8	14	3	2	5			1					2					16	
(e) Suffocation in chutes.....	6	8		4	5	2	4									1	2			4	
(f) Hand tools, axes, bars, etc.....	3	3		2	1	1	2				1									1	
(g) Nails, splinters, etc.....	16	22	18	31	23	20	23	5	2	2	1	4	4	1	1	3	2	3	3	31	
(h) Miscellaneous.....																					
Total.....	45	75	43	74	55	43	56	8	10	3	9	7	7	2	4	5	5	3	6	69	
Total underground.....	2,021	1,839	1,805	2,258	2,235	2,073	2,365	197	174	189	248	180	159	130	161	155	178	155	147	2,073	
NUMBER KILLED IN SHAFT.....																					
12. Falling down shafts or slopes.....	27	18	14	22	15	15	13	1							1	3				10	
13. Objects falling down shafts or slopes.....	8	9	4	3	5	3	6		1						1					3	
14. Cage, skip, or bucket:																					
(a) Runaway.....	11	3	1	7	1		1													1	
(b) Riding with rock or coal.....	2																				
(c) Riding with timber or tools.....	4	2	10	5	4	6	4		1			1		1	1	1				6	
(d) Struck by.....	2	2	9	8	2	4	11	2	1					1	1	1				5	
(e) Miscellaneous.....																					
Total.....	19	9	20	20	7	10	16	2	2			1	2	1	2	1	2	1	2	12	
15. Other causes:																					
(a) Overwinding.....																					
(b) Breaking of cables.....	2	2	1	1	1	5					1				1					3	
(c) Miscellaneous.....																					
Total.....	2		3	1	2	6					2				1					4	
Total shaft.....	56	36	41	46	29	34	35	3	3	2	2	1	4	3	2	4	3	4	3	4	29

1 Includes 91 men killed in an explosion, underground; 6 men, on the surface, were also killed by the effects of the explosion.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 17.—United States: Coal-mine fatalities, by detailed causes, 1930 to 1927—Continued

Cause of accident	1927												Total						
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.							
NUMBER KILLED ON SURFACE																			
16. Mine cars and mine locomotives.....	54	25	32	36	50	24	30	8	3					31					
17. Electricity.....	17	17	9	8	16	16	16		1		4	1	2	3	2	1	14		
18. Machinery.....	25	16	20	26	8	9	9	1	2	1	1			2	1	1	10		
19. Boiler explosions or bursting steam pipes.....	4	1	3			2								1		1	2		
20. Railway cars and locomotives.....	24	20	22	24	20	16	20	2	5	2	1	2	1			1	15		
21. Other causes:																			
(a) Explosives.....	11	5	9	10	3	6	2	1			2			2			5		
(b) Fall of person.....	0	0	6	15	7	12	6	1	1		2		1	3			8		
(c) Falling objects (derricks, booms, etc.).....	10	5	2	2	8	1	3	1	1	1				1		1	6		
(d) Suffocation in chute, bin, or culm.....	0	1	2	2	1	1	2							1			2		
(e) Falls or slides of rock or coal.....	9	2	7	10	2	3	2	1						1			1		
(f) Steam shovels.....	1	1	5	1	1	1						1	1	2			4		
(g) Hand tools.....	1													1			1		
(h) Miscellaneous.....	25	18	21	24	23	32	28	2	3	4	17	2	2			1	24		
Total.....	71	41	52	64	44	60	43	6	3	6	8	3	4	1	4	5	4	50	
Total surface.....	195	120	138	158	138	127	118	17	13	8	13	6	12	5	8	14	10	122	
Grand total.....	2,272	1,995	1,984	2,462	2,402	2,234	2,518	217	190	197	263	186	172	139	172	171	192	155	2,224

1 Includes 91 men killed in an explosion, underground; 6 men, on the surface, were also killed by the effects of the explosion.

PRINCIPAL COAL-MINE DISASTERS

Table 18 gives what is believed to be a complete list of all coal-mine disasters in the United States causing five or more deaths each. The bureau will appreciate notice of any omissions or inaccuracies in the list.

TABLE 18.—Coal-mine disasters in the United States in which five or more men were killed

Date	Name of mine	Location of mine	Nature of accident	Killed
1839 Mar. 18	Black Heath	Near Richmond, Va.	Explosion	40
1846 Jan. 12	Delaware & Hudson ¹	Carbondale, Pa.	Cave-in	14
1847 Feb. —	Spencer ¹	Pottsville, Pa.	Explosion	7
1850	Cox's pit, Clover Hill	Winterpock, Va.	do.	7
1854	Chesterfield	Near Richmond, Va.	do.	19
1855	Midlothian	Coalfield, Va.	do.	55
1859	Bright Hope, Clover Hill	Winterpock, Va.	do.	9
1863	Raccoon, Clover Hill	do.	do.	17
1867 Apr. 3	Bright Hope, Clover Hill	do.	do.	69
1869 Sept. 6	Avondale ¹	Plymouth, Pa.	Mine fire	179
1870 Mar. 22	Potts ¹	Potts Mine, Pa.	Explosion of breaker boilers	5
1870 Aug. 10	Heins & Glassmire ¹	Middleport, Pa.	Cage fell down shaft	9
1870 Aug. 29	Preston No. 3 ¹	Girardville, Pa.	Cage fell down slope	7
1871 May 27	West Pittston ¹	West Pittston, Pa.	Smoke from burning breaker	20
1871 Aug. 14	Eagle Shaft ¹	Pittston, Pa.	Explosion	17
1871 Oct. 2	Otto Red Ash ¹	Branch Dale, Pa.	do.	5
1873 June 10	Henry Clay ¹	Shamokin, Pa.	do.	10
1876 May 20	Midlothian	Coalfield, Va.	do.	8
1876 July 24	Black Diamond	Nortonville, Calif.	do.	6
1877 May 9	Wadesville ¹	Wadesville, Pa.	do.	7
1877 July 11	Brookfield	Brookfield, Ohio.	Suffocated by gases from mine locomotives	7
1878 Jan. 15	Potts ¹	Locust Dale, Pa.	Explosion	5
1878 Nov. 21	Sullivan	Sullivan, Ind.	do.	8
1879 May 6	Audenried ¹	Audenried, Pa.	do.	6
1879 Nov. 2	Mill Creek	Mill Creek, Pa.	do.	5
1880 May 3	Lykens Valley ¹	Shamokin, Pa.	do.	5
1881 Feb. 10	Robbins	Robbins, Ohio.	do.	6
1881 Mar. 4	Almy	Almy, Wyo.	do.	38
1882 Feb. 3	Midlothian	Coalfield, Va.	do.	32
1882 May 24	Kohinoor ¹	Shenandoah, Pa.	do.	5
1883 Jan. 9	Coulterville	Coulterville, Ill.	do.	10
1883 Feb. 16	Diamond	Braidwood, Ill.	Inrush of surface water into workings	69
1884 Jan. 24	Crested Butte	Crested Butte, Colo.	Explosion	59
1884 Feb. 20	West Leisenring	West Leisenring, Pa.	do.	19
1884 Mar. 13	Laurel	Pocahontas, Va.	do.	112
1884 Aug. 21	Buck Ridge ¹	Shamokin, Pa.	Mine fire	7
1884 Oct. 27	Youngstown	Uniontown, Pa.	Explosion	14
1885 Apr. 6	Cuyler ¹	Raven Run, Pa.	Fall of roof	10
1885 Aug. 11	West End ¹	Mocanaqua, Pa.	Gas from boiler fires in mine	10
1885 Oct. 21	Plymouth No. 2 ¹	Plymouth, Pa.	Explosion	6
1885 Dec. 18	Nanticoke No. 1 ¹	Nanticoke, Pa.	Buried by inrush of quicksand	26
1886 Jan. 13	Almy No. 4	Almy, Wyo.	Explosion	13
1886 Jan. 21	Newburg	Newburg, W. Va.	do.	39
1886 Aug. 30	Fair Lawn ¹	Scranton, Pa.	do.	6
1886 Sept. 13	Marvine ¹	do.	Suffocated by inrush of mine gas	8
1886 Nov. 26	Conyngham ¹	Wilkes-Barre, Pa.	Explosion	12
1887 Apr. 27	Tunnel ¹	Ashland, Pa.	Suffocated by inrush of mine gas	5
1887 Oct. 1	Bast	Big Mine Run, Pa.	do.	5
1888 Mar. 29	Keith & Perry No. 6	Rich Hill, Mo.	Explosion	24
1888 Nov. 3	Kettle Creek	Clinton County, Pa.	do.	17
1888 Nov. 9	Shaft No. 2	Frontenac, Kans.	do.	40
1889 May 9	Kaska William ¹	Middleport, Pa.	Mine car fell on men in cage	10
1889 Sept. 9	White Ash	Jefferson County, Colo.	Inrush of water from old shaft	10
1890 Feb. 1	Nottingham ¹	Plymouth, Pa.	Explosion	8
1890 Mar. 3	Shaft No. 3 ¹	South Wilkes-Barre, Pa.	do.	8
1890 Apr. 2	Susquehanna No. 4 ¹	Nanticoke, Pa.	do.	5
1890 May 15	Jersey No. 8 ¹	Ashley, Pa.	do.	26
1890 June 16	Hill Farm ¹	Dunbar, Pa.	Mine fire	31

¹Anthracite mine

TABLE 18.—Coal-mine disasters in the United States in which five or more men were killed—Continued

Date	Name of mine	Location of mine	Nature of accident	Killed
1891 Jan. 27	Mammoth	Mount Pleasant, Pa.	Explosion	109
1891 Feb. 4	Spring Mountain No. 1 ¹	Jeanesville, Pa.	Drowned by inrush of water from abandoned workings and asphyxiated by gas from fire built by imprisoned men.	13
1891 Oct. 23	Richardson ¹	Glencarbon, Pa.	Imprisoned by rush of coal and suffocated by mine gas.	7
1891 Nov. 8	Susquehanna No. 1 ¹	Nanticoke, Pa.	Explosion	12
1892 Jan. 7	No. 11	Krebs, Okla.	do.	100
1892 Apr. 20	Lytle ¹	Minersville, Pa.	Drowned by water from old workings.	10
1892 May 10	Roslyn	Roslyn, Wash.	Explosion	45
1892 July 23	York Farm ¹	Pottsville, Pa.	do.	15
1893 Jan. 10	Como	King, Colo.	do.	24
1893 Feb. 14	Chicago and Iowa	Albia, Iowa	do.	8
1893 Apr. 1	Neilson ¹	Shamokin, Pa.	Mine fire	10
1893 June 22	Susquehanna No. 1 ¹	Nanticoke, Pa.	Explosion	5
1893 Sept. 21	Lance No. 11 ¹	Plymouth, Pa.	do.	6
1894 Feb. 13	Gaylord ¹	do.	Fall of roof	13
1894 July 17	East Sugar Loaf ¹	Stockton, Pa.	Dynamite explosion	8
1894 Aug. 24	Franklin	Franklin, Wash.	Mine fire	37
1894 Oct. 8	Luke Fidler ¹	Shamokin, Pa.	do.	5
1894 Oct. 11	Henry Clay ¹	do.	Boiler explosion	6
1894 Nov. 20	Blanche	Standard, W. Va.	Explosion	8
1895 Jan. 22	Tate	Sturgis, Ky.	Powder explosion	5
1895 Feb. 18	West Bear Ridge ¹	Mahanoy Plane, Pa.	Explosion	5
1895 Feb. 27	White Ash	Cerrillos, N. Mex.	do.	24
1895 Mar. 20	Red Canyon	Red Canyon, Wyo.	do.	60
1895 Apr. 8	Blue Canyon	Lake Whatcom, Wash.	do.	23
1895 Oct. 7	Dorrance ¹	Wilkes-Barre, Pa.	do.	7
1895 Dec. 19	Cumnock	Cumnock, N. C.	do.	39
1895 Dec. 20	Nelson	Dayton, Tenn.	do.	28
1896 Feb. 18	Vulcan	New Castle, Colo.	do.	49
1896 Mar. 23	Berwind	Dubois, Pa.	do.	13
1896 June 28	Twin ¹	Pittston, Pa.	Fall of roof	58
1896 Oct. 29	Shaft No. 3 ¹	South Wilkes-Barre, Pa.	Explosion	6
1896 Dec. 26	Oswald	Princeton, Ind.	do.	7
1897 Jan. 4	No. 1	Alderson, Okla.	do.	5
1897 Jan. 13	Wadesville ¹	Wadesville, Pa.	Crosshead fell down shaft.	5
1897 Mar. 4	Kansas & Texas No. 44	Huntington, Ark.	Explosion	14
1897 Sept. 3	Sunshine	Sunshine, Colo.	do.	12
1897 Sept. 20	Belle Ellen	Belle Ellen, Ala.	Mine fire	5
1897 Sept. 28	Jermyn No. 1 ¹	Rendham, Pa.	do.	5
1897 Oct. 30	Von Storch ¹	Scranton, Pa.	do.	6
1898 May 26	Kaska William ¹	Middleport, Pa.	Drowned by water from old workings.	6
1898 Sept. 23	Umpire	Brownsville, Pa.	Explosion	8
1898 Oct. 1	Midvale ¹	Wilkes-Barre, Pa.	Mine fire	5
1898 Nov. 5	Exeter ¹	West Pittston, Pa.	Mine car fell on men in cage.	9
1899 Feb. 21	Blocton No. 2	Blocton, Ala.	Explosion	5
1899 Apr. 21	Cook & White	Madrid, N. Mex.	do.	5
1899 May 23	Cumnock	Cumnock, N. C.	do.	23
1899 July 24	Grindstone	Grindstone, Pa.	do.	5
1899 Dec. 9	Carbon Hill No. 7	Carbonado, Wash.	do.	31
1899 Dec. 23	Sumner	Sumner, Pa.	do.	19
1900 Mar. 6	Red Ash	Red Ash, W. Va.	do.	46
1900 May 1	Winter Quarters 1 and 4	Scofield, Utah	do.	200
1900 Aug. 21	Issaquah No. 4	Issaquah, Wash.	Smoke from burning air shaft.	5
1900 Nov. 2	Berryburg	Berryburg, W. Va.	Powder explosion	15
1900 Nov. 9	Buck Mountain ¹	Mahanoy, Pa.	Explosion	7
1901 Feb. 25	Diamondville No. 1	Diamondville, Wyo.	Mine fire	28
1901 Apr. 29	McAlester No. 5	Alderson, Okla.	Blown-out or windy shot.	6
1901 May 15	Chatham	Farmington, W. Va.	Explosion	10
1901 May 27	Richland	Dayton, Tenn.	do.	20
1901 June 10	Port Royal No. 2	Port Royal, Pa.	do.	19
1901 Sept. 16	Spring Gulch	Spring Gulch, Colo.	do.	6
1901 Oct. 25	Buttonwood ¹	Plymouth, Pa.	do.	6
1901 Oct. 26	Diamondville	Diamondville, Wyo.	do.	22
1901 Nov. 14	Peachontas	Peachontas, Va.	Mine fire and explosion	9
1901 Nov. 22	do.	do.	Mine fire	8
1901 Dec. 28	No. 1	Hartshorne, Okla.	Fell from cage.	6
1902 Jan. 13	Milby & Dow	Dow, Okla.	Mine fire	10
1902 Jan. 24	Lost Creek No. 2	Oskaloosa, Iowa	Explosion	20
1902 Mar. 6	Catsburg	Monongahela, Pa.	do.	5
1902 Mar. 31	Nelson	Dayton, Tenn.	do.	16
1902 May 19	Fraterville	Coal Creek, Tenn.	do.	184

¹ Anthracite mine.

TABLE 18.—Coal-mine disasters in the United States in which five or more men were killed—Continued

Date	Name of mine	Location of mine	Nature of accident	Killed
1902 July 10	Rolling Mill	Johnstown, Pa.	Explosion	112
1902 Aug. 7	Bowen	Bowen, Colo.	do.	13
1902 Sept. 15	Algoma No. 7	Algoma, W. Va.	do.	17
1902 Sept. 22	Stafford	Stafford, W. Va.	do.	6
1902 Oct. 1	Lawson	Black Diamond, Wash.	do.	11
1902 Nov. 29	Luke Fidler ¹	Shamokin, Pa.	do.	7
1902 Dec. 9	South Wilkes-Barre ¹	South Wilkes-Barre, Pa.	Dynamite explosion	5
1903 Mar. 15	Cardiff	Cardiff, Ill.	Explosion	5
1903 Mar. 23	Athens No. 2	Athens, Ill.	Windy shot	6
1903 Mar. 31	Sandoval	Sandoval, Ill.	Blown-out shot	8
1903 Apr. 12	Central Slope 77	Carbon, Okla.	Explosion	6
1903 June 19	Blossburg No. 3	Blossburg, N. Mex.	Powder explosion	5
1903 June 30	Hanna No. 1	Hanna, Wyo.	Explosion and fire	169
1903 Nov. 20	Bonanza No. 20	Bonanza, Ark.	Explosion	11
1903 Nov. 21	Ferguson	Connellsville, Pa.	do.	17
1904 Jan. 25	Harwick	Cheswick, Pa.	do.	179
1904 Jan. 30	Maple Hill ¹	Mahanoy City, Pa.	Dynamite explosion	5
1904 Apr. 20	Stearns No. 5	Stearns, Ky.	Explosion	5
1904 May 5	Lance ¹	Plymouth, Pa.	Dynamite explosion	5
1904 do.	Locust Gap ¹	Locust Gap, Pa.	Mine fire	5
1904 May 11	Big Muddy	Herrin, Ill.	Powder explosion	10
1904 May 25	Williamstown ¹	Williamstown, Pa.	Suffocated by gases from locomotive.	10
1904 Oct. 28	Tercio	Tercio, Colo.	Explosion	19
1904 Nov. 2	Auchinclos ¹	Nanticoke, Pa.	Fell down shaft	10
1904 Dec. 7	No. 5	Burnett, Wash.	Explosion	17
1905 Jan. 16	Decatur	Decatur, Ill.	Mine fire	6
1905 Feb. 18	Lytle ¹	Minersville, Pa.	Fall of roof	5
1905 Feb. 20	Virginia City	Virginia City, Ala.	Explosion	108
1905 Feb. 26	Grapevine	Wilece, W. Va.	do.	6
1905 Mar. 9	Clear Spring ¹	West Pittston, Pa.	Fell down shaft	7
1905 Mar. 18	Rush Run and Red Ash	Red Ash, W. Va.	Explosion	24
1905 Mar. 19				
1905 Mar. 22	Oswald	Princeton, Ind.	do.	9
1905 Apr. 3	Zeigler	Zeigler, Ill.	do.	49
1905 Apr. 20	Cabin Creek	Kayford, W. Va.	Powder explosion	6
1905 Apr. 26	Conyngham ¹	Wilkes-Barre, Pa.	Fell down shaft	10
1905 Apr. 27	Eleanora	Dubois, Pa.	Explosion	13
1905 Apr. 30	No. 19	Wilburton, Okla.	do.	13
1905 July 6	Fuller	Searight, Pa.	do.	6
1905 Oct. 13	Clyde	Frederickstown, Pa.	Mine fire	6
1905 Oct. 29	Hazel Kirk No. 2	Monongahela, Pa.	Explosion	5
1905 Nov. 4	Tidewater	Vivian, W. Va.	do.	7
1905 Nov. 15	Braznell	Bentleyville, Pa.	do.	7
1905 Dec. 1	Diamondville No. 1	Diamondville, Wyo.	do.	18
1905 Dec. 4	Horton	Horton, W. Va.	Mine fire	7
1906 Jan. 4	Coaldale	Coaldale, W. Va.	Explosion	22
1906 Jan. 18	Detroit	Detroit, W. Va.	do.	14
1906 Jan. 24	Poteau No. 6	Witteville, Okla.	Dynamite explosion	14
1906 Feb. 8	Parral	Parral, W. Va.	Explosion	23
1906 Feb. 19	Maitland	Walsenburg, Colo.	do.	14
1906 Feb. 27	Little Cahaba	Piper, Ala.	do.	12
1906 Mar. 22	Century No. 1	Century, W. Va.	do.	23
1906 Apr. 22	Cuatro	Tercio, Colo.	do.	18
1906 May 15	Shenandoah City ¹	Shenandoah, Pa.	Dynamite explosion	7
1906 June 7	Red Lodge	Red Lodge, Mont.	Mine fire	7
1906 Aug. 6	Susquehanna No. 7 ¹	Nanticoke, Pa.	Explosion	6
1906 Oct. 3	Pocahontas	Pocahontas, Va.	do.	35
1906 Oct. 5	Dutchman	Blossburg, N. Mex.	do.	10
1906 Oct. 24	Rolling Mill	Johnstown, Pa.	do.	7
1906 Nov. 3	San Toy No. 1	Corning, Ohio	Fell down shaft	5
1906 Dec. 20	Fidelity No. 1	Stone City, Kans.	Powder explosion	7
1906 Dec. 22	Breese-Trenton	Breese, Ill.	Cage with men fell down shaft.	6
1907 Jan. 14	Deering No. 7	Clinton, Ind.	Powder explosion	7
1907 Jan. 23	Primero	Primero, Colo.	Explosion	24
1907 Jan. 26	Lorentz	Penco, W. Va.	Powder explosion	12
1907 Jan. 29	Johnston City	Johnston City, Ill.	do.	7
1907 do.	Stuart	Stuart, W. Va.	Explosion	84
1907 Feb. 4	Thomas No. 25	Thomas, W. Va.	do.	25
1907 Mar. 2	Holden ¹	Taylor, Pa.	do.	7
1907 Mar. 16	Bond and Bruce	Tacoma, Va.	do.	11
1907 Apr. 26	Morgan	Black Diamond, Wash.	do.	7
1907 May 1	Whipple	Scarboro, W. Va.	do.	16
1907 May 19	Engleville	Engleville, Colo.	Mine fire	5
1907 June 18	Johnson No. 1 ¹	Priceburg, Pa.	Explosion	7
1907 Aug. 17	Sonman	Sonman, Pa.	Fell down shaft	5
1907 Dec. 1	Naomi	Fayette City, Pa.	Explosion	34
1907 Dec. 6	Monongah Nos. 6 and 8	Monongah, W. Va.	do.	361
1907 Dec. 16	Yolande	Yolande, Ala.	do.	86
1907 Dec. 19	Darr	Jacobs Creek, Pa.	Explosion	239
1907 Dec. 31	Bernal	Carthage, N. Mex.	do.	11

¹ Anthracite mine.

TABLE 18.—Coal-mine disasters in the United States in which five or more men were killed—Continued

Date	Name of mine	Location of mine	Nature of accident	Killed	
1908	Jan. 30	Backman	Hawks Nest, W. Va	Explosion	9
1908	Feb. 10	Moody	South Carrollton, Ky	do	9
1908	Mar. 28	Hanna No. 1	Hannah, Wyo	do	59
1908	May 12	Mount Lookout ¹	Wyoming, Pa	do	12
1908	May 13	Prospect ¹	Midvale, Pa	Fall of roof	5
1908	July 15	Williamstown ¹	Williamstown, Pa	Powder explosion	6
1908	Aug. 26	Hailey-Ola No. 1	Haileyville, Okla	Mine fire	29
1908	Aug. 28	Warrior Run ¹	Wilkes-Barre, Pa	Mine cars	6
1908	Nov. 28	Red Lodge	Red Lodge, Mont	Mine fire	9
1908	Nov. 28	Rachel and Agnes	Marianna, Pa	Explosion	154
1908	Dec. 29	Lick Branch	Switchback, W. Va	do	50
1909	Jan. 10	Zeigler	Zeigler, Ill	Mine fire and explosion	26
1909	Jan. 12	Lick Branch	Switchback, W. Va	Explosion	67
1909	Jan. 19	Stone Canyon	Chancellor, Calif	do	6
1909	Jan. 25	Washington No. 5	Franklin, Md	Mine cars (surface)	5
1909	do	Orenda No. 2	Boswell, Pa	Explosion	5
1909	Feb. 2	Short Creek	Short Creek, Ala	do	16
1909	Mar. 2	No. 14 ¹	Pittston, Pa	do	8
1909	Mar. 20	Sunnyside	Evansville, Ind	do	6
1909	Mar. 31	Echo	Buery, W. Va	Dynamite explosion	6
1909	Apr. 9	Eureka No. 37	Windber, Pa	do	7
1909	June 23	Lackawanna No. 4	Wehrun, Pa	Explosion	21
1909	July 6	Toller	Tollerville, Colo	do	9
1909	Oct. 3	Northwestern	Roslyn, Wash	do	10
1909	Oct. 21	Rock Island No. 8	Hartshorne, Okla	do	10
1909	Oct. 31	Franklin No. 2	Johnstown, Pa	do	13
1909	Nov. 9	Auchincloss ¹	Nanticoke, Pa	Mine fire	9
1909	Nov. 13	St. Paul No. 2	Cherry, Ill	do	259
1909	Dec. 11	Baker No. 5	Clay, Ky	Explosion	7
1909	Dec. 23	Mine A	Herrin, Ill	do	8
1910	Jan. 11	Nottingham ¹	Plymouth, Pa	do	7
1910	Jan. 31	Primero	Primero, Colo	do	75
1910	Feb. 1	Browder	Browder, Ky	do	34
1910	Feb. 5	Ernest No. 2	Ernest, Pa	do	12
1910	Feb. 8	Barthell No. 1	Stearns, Ky	do	6
1910	Mar. 12	South Wilkes-Barre No. 5 ¹	Wilkes-Barre, Pa	do	7
1910	Mar. 31	Great Western No. 2	Wilburton, Okla	do	6
1910	Apr. 20	Mulga	Mulga, Ala	do	40
1910	Apr. 21	Amsterdam	Amsterdam, Ohio	do	15
1910	May 5	Palos No. 3	Palos, Ala	do	83
1910	Oct. 8	Starkville	Starkville, Colo	do	56
1910	Nov. 3	Yolande No. 1	Yolande, Ala	do	5
1910	Nov. 6	Lawson	Black Diamond, Wash	do	16
1910	Nov. 8	Victor American No. 3	Delagua, Colo	Mine fire and explosion	79
1910	Nov. 11	Shoal Creek No. 1	Panama, Ill	Explosion	6
1910	Nov. 25	Providence No. 3	Providence, Ky	Powder explosion	10
1910	Dec. 14	Greeno	Tacoma, Va	Explosion	8
1910	do	Leyden	Leyden, Colo	Mine fire	10
1910	Dec. 31	Lick Fork	Thacker, W. Va	Mine cars	10
1911	Jan. 20	Carbon Hill	Carbon Hill, Va	Explosion	5
1911	Feb. 9	Cokedale	Trinidad, Colo	do	17
1911	Mar. 18	No. 16	Mineral, Kans	do	5
1911	Mar. 22	Hazel	East Canonsburg, Pa	Fall of roof	9
1911	Apr. 7	Price-Pancoast ¹	Throop, Pa	Mine fire	72
1911	Apr. 8	Banner	Littleton, Ala	Explosion	128
1911	Apr. 24	Ott No. 20	Elk Garden, W. Va	do	23
1911	May 27	Cameron ¹	Shamokin, Pa	do	5
1911	July 13	Sykesville	Sykesville, Pa	do	21
1911	Sept. 12	Marvine ¹	Scranton, Pa	Mine cars	5
1911	Oct. 3	Drifton No. 2 ¹	Freeland, Pa	Cave-in	5
1911	Oct. 23	O'Gara No. 9	Harrisburg, Ill	Explosion	8
1911	Nov. 9	Adrian	Punxsutawney, Pa	do	8
1911	Nov. 18	Bottom Creek	Vivian, W. Va	do	18
1911	Dec. 9	Cross Mountain	Briceville, Tenn	do	84
1912	Jan. 9	Parrish ¹	Plymouth, Pa	do	6
1912	Jan. 16	Carbon Hill	Carbon Hill, Va	Dynamite explosion	5
1912	Jan. 19	Central	Central City, Ky	Explosion	5
1912	Jan. 20	Kemmerer No. 4	Kemmerer, Wyo	do	6
1912	Feb. 22	Western No. 5	Lehigh, Okla	Mine fire	9
1912	Mar. 20	San Bois No. 2	McCurtain, Okla	Explosion	73
1912	Mar. 26	Jed	Jed, W. Va	do	81
1912	Apr. 21	Coil	Madisonville, Ky	do	5
1912	June 18	Hastings	Hastings, Colo	do	12
1912	July 11	Panama	Moundsville, W. Va	do	8
1912	July 16	Old Dominion No. 1	Carbon Hill, Va	do	8
1912	July 24	Superba and Lemont	Evans Station, Pa	Cloudburst flooded mine	18
1912	Aug. 13	Abernant	Abernant, Ala	Explosion	18
1913	Feb. 19	Seagraves	Eldorado, Ill	do	5
1913	Apr. 23	Cincinnati	Finleyville, Pa	do	96
1913	May 6	Taylor	Hartford, Ky	Overcome by gas	5

¹ Anthracite mine.

Not included in State inspector's statement of mine fatalities.

TABLE 18.—Coal-mine disasters in the United States in which five or more men were killed—Continued

Date	Name of mine	Location of mine	Nature of accident	Killed	
1913	May 17	Imperial	Belle Valley, Ohio	Explosion	15
1913	Aug. 2	East Brookside ¹	Tower City, Pa.	do	19
1913	Oct. 22	Stag Canon No. 2	Dawson, N. Mex.	do	263
1913	Nov. 18	Acton No. 2	Acton, Ala.	do	24
1913	Dec. 16	Vulcan	New Castle, Colo.	do	37
1914	Jan. 10	Rock Castle	Rock Castle, Ala.	do	12
1914	Jan. 14	Spencer-Newland	Mulberry, Kans.	Cage with men fell down shaft.	6
1914	Apr. 28	Eccles Nos. 5 and 6	Eccles, W. Va.	Explosion	181
1914	Apr. 29	Union Pacific No. 2	Cumberland, Wyo.	Mine cars	5
1914	May 29	Maryd ¹	Maryd, Pa.	Overwinding of cage	6
1914	June 30	Cinderella	Cinderella, W. Va.	Suffocated by fumes from fire in fan house.	5
1914	Sept. 4	No. 1	Adamson, Okla.	Cave-in	13
1914	Sept. 16	Lehigh No. 4 ¹	Lansford, Pa.	Explosion	7
1914	Oct. 5	Mulga	Mulga, Ala.	do	16
1914	Oct. 27	North or No. 1	Royalton, Ill.	do	52
1914	Dec. 9	Tripp ¹	Scranton, Pa.	Collapse of bottom of cage	13
1915	Feb. 6	Carlisle	Carlisle, W. Va.	Explosion	21
1915	Feb. 17	Prospect ¹	Wilkes-Barre, Pa.	do	13
1915	Feb. 18	Atlas	Rich Hill, Mo.	Powder and mine explosion.	5
1915	Mar. 2	Layland No. 3	Layland, W. Va.	Explosion	112
1915	Apr. 5	Shoal Creek	Panama, Ill.	do	11
1915	May 24	Smokeless Valley No. 1	Johnstown, Pa.	do	9
1915	July 27	United Coal No. 1	Christopher, Ill.	do	9
1915	July 30	Patterson No. 2	Elizabeth, Pa.	Mine cars	9
1915	Aug. 31	Orenda	Boswell, Pa.	Explosion	19
1915	Nov. 16	Northwestern	Ravensdale, Wash.	do	31
1915	Nov. 30	Boomer No. 2	Boomer, W. Va.	do	23
1916	Feb. 8	Lance ¹	Plymouth, Pa.	do	7
1916	Feb. 11	Jefferson and Clearfield No. 2	Ernest, Pa.	do	27
1916	Feb. 29	Davis No. 42	Kempton, W. Va.-Md.	do	16
1916	Mar. 9	Hollenback ¹	Wilkes-Barre, Pa.	do	6
1916	Mar. 28	King	Kimball, W. Va.	do	6
1916	Mar. 30	Robindale	Seward, Pa.	do	8
1916	Aug. 8	Woodward ¹	Wilkes-Barre, Pa.	do	6
1916	Oct. 19	Jamison No. 7	Barrackville, W. Va.	do	10
1916	Oct. 22	Roden	Marvel, Ala.	do	18
1916	Nov. 4	Bessie	Palos, Ala.	do	30
1916	Dec. 13	Fidelity No. 9	Stone City, Kans.	do	20
1917	Mar. 13	Henderson No. 1	Hendersonville, Pa.	do	14
1917	Apr. 18	Lynden	Mason, W. Va.	Lightning exploded powder in powder house.	5
1917	Apr. 27	Hastings	Hastings, Colo.	Explosion	121
1917	June 2	Rend No. 2	Herrin, Ill.	do	9
1917	Aug. 4	West Kentucky No. 7	Clay, Ky.	do	62
1917	Nov. 29	Old Ben No. 11	Christopher, Ill.	do	17
1917	Dec. 15	Yukon No. 1	Bluefield, W. Va.	do	17
1917	Dec. 17	Wilkeson	Wilkeson, Wash.	Inrush of water and gravel	6
1917	Dec. 20	Nemo	Harriman, Tenn.	Explosion	11
1918	May 20	Villa	Charleston, W. Va.	Mine fire	13
1918	Aug. 7	Harmar	Harmarville, Pa.	Explosion	8
1918	Aug. 28	Burnett	Burnett, Wash.	do	12
1918	Sept. 28	North	Royalton, Ill.	do	21
1919	Mar. 31	Empire	Aguliar, Colo.	do	13
1919	Apr. 29	Majestic	Majestic, Ala.	do	22
1919	June 5	Baltimore tunnel No. 2 ¹	Wilkes-Barre, Pa.	Powder explosion	92
1919	June 30	Alderson No. 5	Alderson, Okla.	Explosion	15
1919	July 8	Lansford colliery ¹	Lansford, Pa.	do	8
1919	July 18	Carswell	Kimball, W. Va.	do	6
1919	Aug. 6	Weirwood	Weirwood, W. Va.	do	7
1919	Aug. 18	Oakdale	Laveta, Colo.	do	18
1919	Oct. 29	Amsterdam No. 2	Amsterdam, Ohio	Mine fire	20
1920	Apr. 14	Stag Canon Nos. 1 and 6	Dawson, N. Mex.	Explosion	5
1920	May 3	Submarine	Clinton, Ind.	do	5
1920	June 2	Ontario	Cokeburg, Pa.	do	6
1920	July 19	Union	Renton, Pa.	do	9
1920	July 26	No. 6	Sublet, Wyo.	Blowing up of powder magazine.	8
1920	Aug. 21	No. 19	Degnan, Okla.	Explosion	10
1920	Nov. 16	Arnold	Earlinton, Ky.	Mine fire	6
1920	Nov. 23	Parrish	Parrish, Ala.	Explosion	12
1921	Feb. 12	Oak Hill Nos. 1 and 2	Oak Creek, Colo.	do	5
1921	Feb. 23	Kathleen	Dowell, Ill.	Mine fire	7
1921	Mar. 9	Rahn No. 11 ¹	Seek, Pa.	Explosion	5
1921	Aug. 31	Harco	Harrisburg, Ill.	do	11
1921	Dec. 13	Satanic	Morrison, Colo.	Mine fire	6

¹ Anthracite mine.

TABLE 18.—*Coal-mine disasters in the United States in which five or more men were killed—Continued*

Date	Name of mine	Location of mine	Name of accident	Killed
1922 Jan. 30	Layman	Pineville, Ky.	Explosion	6
1922 Feb. 2	Belle Ellen No. 2	Belle Ellen, Ala.	do.	9
1922 do.	Gates No. 2	Brownsville, Pa.	do.	25
1922 Feb. 7	Marietta	Pinson Fork, Ky.	do.	9
1922 Mar. 20	Dilltown No. 1	Dilltown, Pa.	do.	5
1922 Mar. 24	Sopris	Sopris, Colo.	do.	17
1922 May 25	Acmar No. 3	Acmar, Ala.	do.	11
1922 June 25	No. 6	Huntington, Ark.	Suffocation from mine gases.	³ 5
1922 Sept. 23	Raleigh-Wyoming No. 2	Glen Rogers, W. Va.	Falling cage	5
1922 Sept. 29	Lake Creek	Johnston City, Ill.	Explosion	5
1922 Oct. 30	No. 11	McCurain, Okla.	do.	8
1922 Nov. 3	Eddy Creek ¹	Olyphant, Pa.	Premature shot	6
1922 Nov. 6	Reilly No. 1	Spangler, Pa.	Explosion	77
1922 Nov. 22	Dolomite No. 3	Dolomite, Ala.	do.	90
1922 Nov. 25	No. 4	Cerillos, N. Mex.	do.	7
1923 Jan. 10	Dolomite No. 1	Dolomite, Ala.	do.	5
1923 Feb. 8	Stag Canon No. 1	Dawson, N. Mex.	do.	120
1923 Feb. 21	Alliance ¹	Kaska, Pa.	do.	5
1923 Mar. 2	Arista	Arista, W. Va.	do.	10
1923 May 5	Southwestern	Aguilar, Colo.	do.	10
1923 June 26	Richards colliery ¹	Mount Carmel, Pa.	do.	5
1923 Aug. 14	Frontier No. 1	Kemmerer, Wyo.	do.	99
1923 Oct. 7	Midwest	Palisades, Colo.	do.	6
1923 Nov. 6	Glen Rogers	Beckley, W. Va.	do.	27
1923 Dec. 7	Happy	Happy, Perry Co., Ky.	do.	9
1923 Dec. 8	Mount Jessup No. 2 ¹	Jessup, Pa.	Fall of roof	5
1924 Jan. 25	McClintock	Johnston City, Ill.	Explosion	33
1924 Jan. 26	Lancashire No. 18	Shanktown, Pa.	do.	36
1924 Mar. 8	No. 2	Castle Gate, Utah	do.	171
1924 Mar. 28	Yukon No. 2	Yukon, W. Va.	do.	24
1924 Apr. 28	Benwood	Benwood, W. Va.	do.	119
1924 June 6	Loomis collieries ¹	Wilkes-Barre, Pa.	do.	14
1924 July 25	Gates No. 1	Brownsville, Pa.	do.	10
1924 Sept. 16	Sublet No. 5	Sublet, Wyo.	do.	39
1924 Sept. 21	Rains	Rains, Utah	do.	5
1924 Dec. 17	Burnett	Burnett, Wash.	do.	7
1925 Jan. 15	Diamond No. 1	Providence, Ky.	do.	6
1925 Feb. 20	City	Sullivan, Ind.	do.	52
1925 Mar. 17	Barrickville	Barrackville, W. Va.	do.	33
1925 Apr. 26	Hutchison	West Newton, Pa.	do.	5
1925 May 26	Woodward ¹	Edwardsville, Pa.	do.	7
1925 May 27	Farmville	Coal Glen, N. C.	do.	53
1925 May 31	No. 2	Piper, Ala.	do.	6
1925 June 8	No. 9	Sturgis, Ala.	do.	17
1925 July 23	Rockwood	Rockwood, Tenn.	do.	10
1925 Aug. 3	Dorrance ¹	Wilkes-Barre, Pa.	do.	10
1925 Nov. 13	Finley	Madisonville, Ky.	do.	5
1925 Dec. 10	Overton No. 2	Acmar, Ala.	do.	52
1925 Dec. 14	Wilkeson	Tacoma, Wash.	do.	9
1925 Dec. 23	Webb	Bellaire, Ohio	Mine fire	9
1926 Jan. 13	No. 21	Wilburton, Okla.	Explosion	91
1926 Jan. 14	Jamison No. 8	Farmington, W. Va.	do.	19
1926 Jan. 29	New Orient No. 2	West Frankfort, Ill.	do.	5
1926 do.	Mossboro No. 1	Helena, Ala.	do.	27
1926 Feb. 3	Horning No. 4	Horning, Pa.	do.	20
1926 Feb. 16	Nelson	Nelson Creek, Ky.	do.	8
1926 Mar. 8	Crab Orchard No. 5	Eccles, W. Va.	do.	19
1926 May 6	Randolph colliery ¹	Port Carbon, Pa.	do.	5
1926 July 3	Pettebone colliery No. 6 ¹	Near Kingston, Pa.	do.	7
1926 July 21	Dixie	Moffat, Ala.	do.	9
1926 Aug. 26	Clymer No. 1	Clymer, Pa.	do.	44
1926 Sept. 3	Tahona	Tahona, Okla.	do.	16
1926 Oct. 4	Rockwood	Rockwood, Tenn.	do.	27
1926 Oct. 30	Colliery No. 7 ¹	Nanticoke, Pa.	do.	9
1926 Nov. 15	Mound	Moundsville, W. Va.	do.	5
1926 Dec. 9	Francisco No. 2	Francisco, Ind.	do.	37
1927 Mar. 30	Saline No. 2	Ledford, Ill.	do.	8
1927 Apr. 2	No. 53	Cokeburg, Pa.	do.	7
1927 Apr. 8	Carbonado	Carbonado, Wash.	Rush of gravel and mud	6
1927 Apr. 30	Federal No. 3	Everettville, W. Va.	Explosion	97
1927 May 13	Shanon Branch No. 3	Capels, W. Va.	do.	8
1927 May 26	Woodward No. 3 ¹	Edwardsville, Pa.	do.	7
1927 May 27	Delagua	Delagua, Colo.	do.	7
1927 Aug. 3	Clay No. 7	Clay, Ky.	do.	15
1927 Dec. 20	Franco No. 1	Johnston City, Ill.	do.	7

¹ Anthracite mine.³ Includes 4 nonemployees.

NOTE.—An explosion of gas, caused by an electric switch on pump, killed 8 men on Sept. 15, 1926, in the Missouri Valley Tunnel at Kansas City, Mo.

An explosion of gas evidently ignited by the lights used by the workmen occurred on Apr. 26, 1925, at a new slope being opened in Sewickley Township, Pa.; it caused the death of 5 men.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 19.—Production, men employed, and number killed in and about the coal mines in the United States during the year ended December 31, 1926

State	Production (short tons)	Number employed				Number of days of labor performed	Average age of active	Number killed			Number killed per thousand workers			Number killed per million short tons mined	Production per death (short tons)
		Underground						Under-ground	Sur-face	Total	Under-ground	Sur-face	Total		
		Miners, loaders, and shot-firers	Haul-and and track	All others	Total										
Alabama.....	21,000,962	16,140	3,378	3,506	23,024	4,321	27,345	135	4	139	6.61	1.04	5.73	6.62	151,086
Alaska.....	87,300	47	8	24	79	52	131	1	1	2	17.24	1	10.42	11.45	87,300
Arkansas.....	1,459,017	2,213	251	392	2,856	733	3,589	6	1	7	4.66	3.02	4.32	4.80	208,431
California, Idaho, Nevada, Arizona, and Oregon.....	19,332	52	4	16	72	20	92	49	4	53	6.70	3.03	6.14	4.98	200,702
Colorado.....	10,637,225	8,160	1,456	1,238	10,854	1,961	12,815	2	2	4	16.81	7.19	11.63	25.47	39,269
Georgia and North Carolina.....	117,808	65	43	22	130	152	282	2	1	3	4.16	.69	3.81	2.39	417,873
Illinois.....	69,366,923	51,993	8,191	8,104	68,288	7,582	75,870	163	3	166	4.16	.62	5.78	3.36	297,256
Indiana.....	23,186,006	14,664	2,623	2,754	20,041	3,863	23,404	77	1	78	6.66	.84	2.96	3.46	289,093
Iowa.....	4,625,487	6,438	748	1,006	8,192	677	8,869	14	2	16	2.80	4.84	3.96	3.46	289,093
Kansas.....	4,416,480	5,700	590	541	6,831	1,341	8,172	17	17	34	4.74	.73	3.83	2.83	353,508
Kentucky.....	62,924,462	35,964	7,443	8,257	51,664	8,914	60,578	173	5	178	4.37	.73	3.83	2.83	353,508
Maryland.....	3,078,353	2,449	390	368	3,207	3,681	8,659,921	12	12	24	4.77	1.11	1.11	3.90	256,529
Michigan.....	686,707	1,111	182	151	1,444	1,129	269,104	1	1	2	1.22	1.22	1.11	1.46	686,707
Minnesota.....	3,008,495	3,363	322	417	4,102	1,168	5,270	9	9	18	3.77	---	2.94	2.99	334,277
Missouri.....	2,797,760	1,445	296	261	2,002	417	2,419	5	5	10	4.62	---	3.83	1.79	559,552
Montana.....	2,817,923	1,930	373	357	2,660	507	3,167	13	13	26	5.84	---	4.90	4.61	216,763
New Mexico.....	1,370,244	712	70	76	858	430	1,288	1	1	2	2.16	---	1.44	2.16	1,370,244
North Dakota.....	27,872,488	26,895	3,495	3,462	33,852	4,895	38,547	75	5	80	4.19	2.01	3.93	2.87	348,406
Ohio.....	2,842,678	2,898	688	682	4,268	1,132	5,400	123	1	124	47.33	1.45	37.71	43.62	22,925
Oklahoma.....	153,041,638	102,717	16,254	16,958	135,959	20,940	155,999	401	19	420	3.94	1.27	3.60	2.74	364,385
Pennsylvania (bituminous).....	14,428	52	---	---	52	---	52	---	---	---	---	---	---	---	---
South Dakota.....	5,788,741	4,912	1,014	824	6,750	1,198	7,948	49	1	50	9.30	1.07	8.06	8.64	115,775
Tennessee.....	1,091,153	1,107	202	105	1,414	236	1,650	20	20	40	10.98	---	9.12	4.57	218,690
Texas.....	4,373,793	2,174	425	344	2,943	602	3,545	59	59	118	5.83	---	4.90	4.17	239,549
Utah.....	14,133,386	7,008	1,967	2,592	11,567	2,197	13,764	3	3	6	7.96	---	6.31	5.80	172,438
Virginia.....	2,586,568	1,988	370	502	2,860	749	3,609	15	15	30	6.55	2.39	5.90	4.01	249,148
Washington.....	143,509,340	64,389	18,068	17,495	99,952	18,774	118,726	539	37	576	7.11	---	6.23	3.38	296,013
West Virginia.....	6,512,288	3,705	693	504	4,903	959	5,862	21	22	43	5.41	1.43	4.86	3.60	277,660
Wyoming.....	573,366,985	370,292	69,544	70,988	510,824	82,822	593,647	1,980	85	2,065	4.10	1.04	3.37	5.36	186,396
Total (bituminous).....	81,963	20,000	24,268	26,231	39,155	165,386	40,312,226	4,420	33	453	4.10	1.31	4.50	3.83	261,241
Pennsylvania (anthracite).....	452,255	89,544	95,256	637,055	121,978	759,033	167,827,732	2,400	118	2,518	5.11	1.31	4.50	3.83	261,241
Total, 1926.....	657,804,437	452,255	89,544	95,256	637,055	121,978	759,033	2,400	118	2,518	5.11	1.31	4.50	3.83	261,241

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 20.—Production, men employed, and number killed in and about the coal mines in the United States during the year ended December 31, 1925

State	Production (short tons)	Number employed				Number of days of labor performed	Average days active	Number killed			Number killed per thousand workers		Number killed per million short tons mined	Pro-duction per death (short tons)	
		Underground		Surface				Total	Under-ground	Sur-face	Total	Under-ground			Sur-face
		Miners, loaders, and shot flers	Haul-ers and track	All others	Total										
Alabama.....	20,004,395	15,596	3,251	3,792	22,639	4,458	27,097	6,665,311	159	2	161	8.57	7.25	8.05	124,251
Alaska.....	82,868	55	10	66	91	66	157	38,132	12	1	13	11.26	9.55	10.66	93,849
Arkansas.....	1,256,030	2,088	373	3,888	2,840	789	4,082	4,082	12	1	13	7.26	3.11	5.13	184,117
California, Idaho, Nev., and Oreg.....	12,625	27	3	5	24	13	42	7,302	153	4	153	360.54	283.48	3.57	2,478
Colorado.....	10,331,327	8,472	1,453	1,269	11,194	2,009	13,203	2,532,384	111	9	120	10.06	2.24	8.87	248,150
Georgia and North Carolina.....	66,094,369	53,242	8,524	8,568	70,344	7,479	77,823	12,551,391	103	103	206	3.98	2.51	4.43	411,296
Illinois.....	21,224,846	14,412	2,028	2,031	19,371	3,820	22,732	3,693,597	11	19	30	2.96	4.95	3.52	283,859
Indiana.....	4,114,843	7,462	568	1,102	9,337	1,188	10,167	1,559,292	191	3	194	5.78	3.17	4.45	224,548
Iowa.....	5,023,270	3,916	7,361	7,462	48,612	3,985	57,024	11,749,710	11	1	12	5.10	4.82	6.19	161,647
Kansas.....	2,068,570	2,498	350	7,266	3,327	453	3,580	7,580	5	1	6	5.10	3.89	4.08	244,929
Kentucky.....	2,908,273	2,094	300	132	1,440	1,140	2,680	2,680	11	1	12	4.72	3.92	3.97	507,281
Maryland.....	2,034,243	1,574	203	360	2,291	1,413	5,114	448,309	16	6	22	8.47	3.25	7.04	142,047
Missouri.....	2,053,686	1,248	416	322	2,868	458	3,407	694,387	17	3	20	6.76	8.98	4.53	220,770
Montana.....	7,559,820	2,718	71	76	34,826	4,322	39,658	5,997,011	88	7	95	0.61	2.87	3.39	295,096
New Mexico.....	38,324,712	27,543	853	677	34,608	4,623	5,631	8,861,584	11	2	13	4.68	4.53	5.39	178,911
North Dakota.....	3,023,019	103,698	14,697	137,462	136,798	136,798	156,798	31,417,005	299	10	309	3.26	7.77	2.26	443,133
Oklahoma.....	14,447	49	5	825	7,053	1,250	8,314	1,751,005	26	2	28	5.25	4.45	4.77	209,770
Pennsylvania (bituminous).....	5,454,971	5,171	194	163	1,033	1,315	2,108	3,157,520	26	2	28	2.23	1.90	1.08	504,188
South Dakota.....	4,900,373	2,576	406	585	3,600	835	4,431	795,500	91	3	94	6.02	9.05	5.12	195,431
Texas.....	17,737,343	6,886	2,135	2,442	11,263	2,414	13,677	3,467,163	48	48	96	5.04	4.15	3.75	266,655
Utah.....	2,537,543	5,059	370	527	2,973	3,736	3,736	7,203,442	30	3	33	13.65	6.20	13.74	76,906
Virginia.....	128,369	60,323	17,240	14,705	92,555	17,831	110,180	24,176,545	451	28	479	6.52	2.10	3.91	255,493
West Virginia.....	6,353,232	3,934	776	601	5,311	927	6,238	1,111,342	17	17	34	8.39	4.50	2.59	385,484
Total (bituminous).....	520,052,741	68,526	70,559	506,541	1,152,568	81,052	588,493	114,958,333	1,757	77	1,834	5.33	1.44	3.53	283,562
Pennsylvania (anthracite).....	61,817,149	17,000	24,795	120,568	120,568	39,744	160,312	22,109,689	350	50	400	4.80	2.08	6.47	154,543
Total.....	581,869,890	446,229	85,354	627,109	627,109	121,696	748,805	144,068,232	2,107	127	2,234	5.24	1.63	3.84	260,461

1 Mine explosion at Coal Glen, N. C.

TABLE 22.—Number of coal-mine fatalities, by causes, 1917 to 1927 (anthracite and bituminous mines)

Cause of accident	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total 10 years	1927
<i>Underground</i>												
Falls of roof (coal, rock, etc.):												
Ordinary disaster.....	1,057	1,182	954	1,012	925	788	1,053	941	977	1,093	9,982	1,011
Major disaster ¹							5				5	
Falls of face or pillar coal:	173	112	153	122	100	120	109	121	103	121	1,234	134
Mine cars and locomotives:												
Ordinary disaster.....	488	506	382	408	341	341	413	354	361	433	4,027	352
Explosions of gas or coal dust:												
Ordinary disaster.....	109	88	102	113	105	42	76	77	84	74	870	92
Major disaster.....	251	41	89	47	21	269	296	458	261	348	2,081	155
Explosives:												
Ordinary disaster.....	110	135	114	131	142	87	115	100	102	96	1,132	110
Major disaster.....			92			6					98	
Suffocation from mine gases:												
Ordinary disaster.....	8	15	11	18	9	4	9	13	8	14	109	11
Major disaster.....						2	5				5	
Electricity.....	79	88	68	76	80	74	75	80	84	96	800	100
Animals.....	9	8	2	4	7	5	10	4	5	7	61	7
Mining machines.....	19	17	26	37	18	21	23	30	35	26	252	28
Mine fires (burned, suffocated, etc.):												
Ordinary disaster.....	2	13	2	2	3			2	1	1	26	4
Major disaster.....		13	20	6	13				9		61	
Other causes:												
Ordinary disaster.....	64	63	68	45	75	43	74	55	43	56	586	62
Major disaster.....	6										6	7
Total.....	2,375	2,281	2,083	2,021	1,839	1,805	2,258	2,235	2,073	2,365	21,335	2,073
Ordinary disaster.....	2,118	2,227	1,882	1,968	1,805	1,525	1,957	1,777	1,803	2,017	19,079	1,911
Major disaster.....	257	54	201	53	34	280	301	458	270	348	2,256	162
<i>Shaft</i>												
Falling down shafts or slopes.....	21	21	20	27	18	14	22	15	15	13	186	10
Objects falling down shafts or slopes.....	12	9	6	8	9	4	3	5	3	6	65	3
Cage, skip, or bucket:												
Ordinary disaster.....	22	17	20	19	9	15	20	7	10	16	155	12
Major disaster.....						5					5	
Other causes.....	5	5	6	2		3	1	2	6		30	4
Total.....	60	52	52	56	36	41	46	29	34	35	441	29
Ordinary disaster.....	60	52	52	56	36	36	46	29	34	35	436	29
Major disaster.....						5					5	
<i>Surface</i>												
Mine cars and mine locomotives.....	74	87	71	54	25	32	30	50	24	30	483	31
Electricity.....	17	15	10	17	17	9	8	16	16	16	141	14
Machinery.....	46	40	22	25	16	20	26	8	9	9	221	10
Boiler explosion or bursting steam pipes.....	8	7	6	4	1	3			2		31	2
Railway cars and locomotives.....	36	31	22	24	20	22	24	20	16	20	235	15
Other causes:												
Ordinary disaster.....	75	67	57	63	41	52	64	44	60	43	566	50
Major disaster.....	5			8							13	
Total.....	261	247	188	195	120	138	158	138	127	118	1,690	122
Ordinary disaster.....	256	247	188	187	120	138	158	138	127	118	1,677	122
Major disaster.....	5			8							13	
Grand total.....	2,696	2,580	2,323	2,272	1,995	1,984	2,462	2,402	2,234	2,518	23,466	2,224
Ordinary disaster.....	2,434	2,526	2,122	2,211	1,961	1,699	2,161	1,944	1,964	2,170	21,192	2,062
Major disaster.....	262	54	201	61	34	285	301	458	270	348	2,274	162

¹ A major disaster is defined as one causing the death of 5 or more men.² Includes 4 nonemployees.

TABLE 23.—Coal-mine fatalities: Percentages, by causes, 1917 to 1927 (anthracite and bituminous mines)

Cause of accident	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total 10 years	1927
<i>Underground</i>												
Falls of roof (coal, rock, etc.):												
Ordinary disaster.....	39.21	45.82	41.07	44.54	46.37	39.72	42.77	39.18	43.73	43.41	42.54	45.46
Major disaster ¹.....							.20				.02	
Falls of face or pillar coal:												
Mine cars and locomotives:												
Ordinary disaster.....	18.10	19.61	16.44	17.96	17.09	17.19	16.77	14.74	16.16	17.20	17.16	15.83
Explosions of gas or coal dust:												
Ordinary disaster.....	4.04	3.41	4.39	4.97	5.27	2.12	3.09	3.20	3.76	2.94	3.71	4.14
Major disaster.....	9.31	1.59	3.83	2.07	1.05	13.56	12.02	19.07	11.68	13.82	8.87	6.97
Explosives:												
Ordinary disaster.....	4.08	5.23	4.90	5.77	7.12	4.38	4.67	4.16	4.57	3.81	4.82	4.95
Major disaster.....			3.96			.30					.42	
Suffocation from mine gases:												
Ordinary disaster.....	.30	.58	.47	.79	.45	.20	.36	.54	.36	.56	.46	.49
Major disaster.....						.25					.02	
Electricity.....	2.93	3.41	2.93	3.34	4.01	3.73	3.05	3.33	3.76	3.81	3.41	4.50
Animals.....	.33	.31	.09	.18	.35	.25	.41	.17	.22	.28	.26	.31
Mining machines.....	.71	.66	1.12	1.63	.90	1.06	.93	1.25	1.57	1.03	1.07	1.26
Mine fires (burned, suffocated, etc.):												
Ordinary disaster.....	.07	.50	.09	.09	.15			.08	.04	.04	.11	.18
Major disaster.....		.50	.86	.26	.65				.40		.26	
Other causes:												
Ordinary disaster.....	2.37	2.44	2.93	1.98	3.76	2.17	3.01	2.29	1.93	2.22	2.50	2.79
Major disaster.....	.22										.03	.31
Total.....	88.09	88.40	89.67	88.95	92.18	90.98	91.71	93.05	92.79	93.92	90.92	93.21
Ordinary disaster.....	78.56	86.31	81.02	86.62	90.48	76.87	79.49	73.98	80.71	80.10	81.31	85.93
Major disaster.....	9.53	2.09	8.65	2.33	1.70	14.11	12.22	19.07	12.08	13.82	9.61	7.28
<i>Shaft</i>												
Falling down shafts or slopes:												
Objects falling down shafts or slopes.....	.44	.35	.26	.35	.45	.20	.12	.21	.13	.24	.28	.13
Cage, skip, or bucket:												
Ordinary disaster.....	.81	.66	.86	.84	.45	.76	.81	.29	.45	.63	.66	.54
Major disaster.....						.25					.02	
Other causes.....	.19	.20	.26	.09		.15	.04	.08	.27		.13	.18
Total.....	2.22	2.03	2.24	2.47	1.80	2.07	1.87	1.21	1.52	1.39	1.88	1.30
Ordinary disaster.....	2.22	2.03	2.24	2.47	1.80	1.82	1.87	1.21	1.52	1.39	1.86	1.30
Major disaster.....						.25					.02	
<i>Surface</i>												
Mine cars and mine locomotives.....	2.74	3.37	3.06	2.38	1.26	1.61	1.46	2.08	1.07	1.19	2.06	1.39
Electricity.....	.63	.58	.43	.75	.85	.45	.32	.67	.72	.63	.60	.63
Machinery.....	1.71	1.55	.95	1.10	.80	1.01	1.06	.33	.40	.36	.94	.45
Boiler explosions or bursting steam pipes.....	.30	2.77	.26	.17	.05	.15			.09		.13	.09
Railway cars and locomotives.....	1.34	1.20	.94	1.06	1.00	1.11	.98	.83	.72	.80	1.00	.68
Other causes:												
Ordinary disaster.....	2.78	2.60	2.45	2.77	2.06	2.62	2.60	1.83	2.69	1.71	2.41	2.25
Major disaster.....	.19			.35							.06	
Total.....	9.68	9.57	8.09	8.58	6.02	6.95	6.42	5.74	5.69	4.69	7.20	5.49
Ordinary disaster.....	9.50	9.57	8.09	8.23	6.02	6.95	6.42	5.74	5.69	4.69	7.14	5.49
Major disaster.....	.19			.35							.06	
Grand total.....	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Ordinary disaster.....	20.28	97.91	91.35	97.32	98.30	85.64	87.77	80.93		86.18	90.31	92.72
Major disaster.....	9.72	2.09	8.65	2.68	1.70	14.36	12.23	19.07		13.82	9.69	7.28

¹ A major disaster is defined as one causing the death of 5 or more men.
² Includes 4 nonemployees.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 24.—Number of men killed, by causes, per thousand 300-day workers, 1922 to 1926 (anthracite and bituminous mines)

Cause of accident	Based on total 300-day workers						Based on underground 300-day workers, and surface 300-day workers					
	1922	1923	1924	1925	1926	Total 5 years	1922	1923	1924	1925	1926	Total 5 years
<i>Underground</i>												
Falls of roof (coal, rock, etc.):												
Ordinary disaster	1.95	1.88	1.88	2.04	1.95	1.94	2.36	2.27	2.25	2.43	2.33	2.32
Major disaster ¹		.01				(²)		.01				(²)
Falls of face or pillar coal	.30	.19	.24	.21	.22	.23	.36	.23	.29	.25	.26	.28
Mine cars and locomotives:												
Ordinary disaster	.84	.74	.71	.75	.78	.76	1.02	.89	.85	.90	.92	.91
Explosions of gas or coal dust:												
Ordinary disaster	.10	.14	.15	.18	.13	.14	.13	.16	.18	.21	.16	.17
Major disaster	.66	.53	.92	.54	.62	.65	.81	.64	1.10	.65	.74	.78
Explosives:												
Ordinary disaster	.22	.20	.20	.21	.17	.20	.26	.25	.24	.25	.20	.24
Major disaster	.02					(²)	.02					(²)
Suffocation from mine gases:												
Ordinary disaster	.01	.02	.02	.02	.03	.02	.01	.02	.03	.02	.03	.02
Major disaster	³ .01					(²)	.01					(²)
Electricity	.18	.13	.16	.18	.17	.16	.22	.16	.19	.21	.20	.20
Animals	.01	.02	.01	.01	.01	.01	.01	.02	.01	.01	.02	.02
Mining machines	.05	.04	.06	.07	.05	.06	.06	.05	.07	.09	.06	.06
Mine fires (burned, suffocated, etc.):												
Ordinary disaster			.01		(²)	(²)			.01	(²)	(²)	(²)
Major disaster				.02		.01				.02		.01
Other causes:												
Ordinary disaster	.11	.13	.11	.09	.10	.11	.13	.16	.13	.11	.12	.13
Major disaster												
Total	4.46	4.03	4.47	4.32	4.23	4.29	5.40	4.86	5.35	5.15	5.04	5.14
Ordinary disaster	3.77	3.49	3.55	3.76	3.61	3.63	4.56	4.21	4.25	4.48	4.30	4.35
Major disaster	.69	.54	.92	.56	.62	.66	.84	.65	1.10	.67	.74	.79
<i>Shaft</i>												
Falling down shafts or slopes	.03	.04	.03	.03	.02	.03	.04	.05	.03	.04	.03	.04
Objects falling down shafts or slopes	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
Cage, skip, or bucket:												
Ordinary disaster	.04	.03	.01	.02	.03	.03	.05	.04	.02	.02	.03	.03
Major disaster	.01					(²)	.01					(²)
Other causes	.01	(²)	.01	.01		(²)	.01	(²)	.01	.01		.01
Total	.10	.08	.06	.07	.06	.07	.12	.10	.07	.08	.07	.09
Ordinary disaster	.09	.08	.06	.07	.06	.07	.11	.10	.07	.08	.07	.09
Major disaster	.01					(²)	.01					(²)
<i>Surface</i>												
Mine cars and mine locomotives	.08	.07	.10	.05	.05	.07	.45	.38	.61	.31	.33	.41
Electricity	.02	.01	.03	.03	.03	.03	.13	.08	.19	.20	.18	.16
Machinery	.05	.05	.01	.02	.02	.03	.28	.27	.10	.12	.10	.17
Boiler explosion or bursting steam pipes	.01			.01		(²)	.04			.03		.01
Railway cars and locomotives	.05	.04	.04	.03	.03	.04	.31	.25	.24	.20	.22	.25
Other causes:												
Ordinary disaster	.13	.11	.09	.12	.08	.10	.73	.67	.54	.77	.48	.63
Major disaster												
Total	.34	.28	.27	.26	.21	.27	1.94	1.65	1.68	1.63	1.31	1.63
Ordinary disaster	.34	.28	.27	.26	.21	.27	1.94	1.65	1.68	1.63	1.31	1.63
Major disaster												
Grand total	4.90	4.39	4.80	4.65	4.50	4.63						
Ordinary disaster	4.20	3.85	3.89	4.09	3.88	3.97						
Major disaster	.70	.54	.91	.56	.62	.66						

¹ A major disaster is defined as one causing the death of 5 or more men.² Less than 0.005.³ Includes 4 nonemployees.

FALLS OF ROOF AND COAL

Nearly one-half of all fatalities and about one-third of all nonfatal lost-time injuries from accidents at coal mines in the United States are caused by falls of roof and coal. This statement is based on annual statistics of fatal accidents and on a special study of nonfatal injuries made from complete reports of all lost-time injuries at certain typical coal mines.

Reports for the calendar year 1927 showed that falls of roof and coal resulted in 1,145 deaths out of a total of 2,224 deaths from accidents from all causes at coal mines. Falls of roof and coal were thus responsible for 51 per cent of the total number of accidental deaths during the year. Excluding deaths from surface accidents and considering only those occurring underground and in shafts the fatalities from falls of roof and coal amounted to nearly 55 per cent. As the production of coal during the year is estimated at 600,456,000 short tons the 1,145 deaths from falls represent 1.91 fatalities for each million tons of coal produced, indicating a slight increase over the previous year's rate of 1.84.

Nine hundred and twenty deaths from falls occurred at bituminous coal mines in various States; the remaining 225 occurred at anthracite mines in Pennsylvania. The death rate per million tons was 1.77 for bituminous mines and 2.79 for anthracite mines.

As complete information showing the number of men employed is not at hand, the death rate per thousand employees in 1927 can not be stated at this time. Final figures for 1926, however, indicated a lower death rate from falls of roof and coal than in the previous year for both bituminous and anthracite mines, particularly the latter.

The hazard from falls of roof and coal is not the same in all coal-producing States. Records covering four 5-year periods show that the death rates from accidents of this class have been much higher in some States than in others. Taking the death rate for the United States as a standard for comparison the figures show that the rates for certain States run consistently higher and those for other States consistently lower than the average for the whole country. The average death rate from falls of roof and coal for all coal mines in the United States was 1.049 per million man-hours worked underground during the five years ended 1923, 1.047 for the five years ended 1924, 1.078 for the five years ended 1925, and 1.076 for the five years ended 1926. For purposes of comparison each of these rates may be considered as representing 100 per cent for the 5-year period to which the figures relate. With this figure as a standard it will be seen from Tables 24 to 27 that the death rates for some States are much higher than the average for the United States as a whole. For example, the death rates for Colorado for the four 5-year periods mentioned were 186, 172, 174, and 169, indicating that the death

rates from falls of roof and coal in the mines of that State were 86, 72, 74, and 69 per cent higher than in the country as a whole. New Mexico's rate was even higher, being 97, 98, 92, and 91 per cent higher than the country's average. On the other hand, some States, such as Pennsylvania, Illinois, Indiana, Iowa, Kansas, Oklahoma, and Alabama, had death rates that have usually been lower than the average for the whole country.

Differences in the death rates are partly accounted for by natural conditions in the mines in different parts of the United States. The figures emphasize the fact, however, that those States whose death rates from falls are always high as compared with the country's average are confronted with a type of hazard that demands constant study if the number of deaths from falls is to be reduced to a minimum.

HAULAGE (UNDERGROUND)

Underground haulage accidents are usually responsible for about 17 per cent of the annual death toll from accidents at coal mines, as well as for about 30 per cent of the nonfatal lost-time injuries. Reports for 1927 show that of 2,224 fatalities from all causes those from haulage accidents underground numbered 352, or 15.8 per cent of the total number, a somewhat smaller proportion than the average over a period of years. Fifty-two of the fatalities were at anthracite mines in Pennsylvania; 300 were at bituminous mines in various States. In addition to the fatalities underground 31 deaths were caused by mine cars and locomotives on the surface and 15 by railway cars and locomotives at the mines.

Based upon the estimated production of coal in 1927 the death rate per million tons was 0.58 as compared with 0.66 for 1926. These rates are based upon underground accidents only. The death rates per thousand employees can not be stated at this time, as the number of men employed during the year is not known. The death rate in 1926, however, calculated on the basis of 300 workdays per year, underground and surface, was 0.78 per thousand employees. Calculated on the number of underground employees only the rate was 0.92 per thousand employees. Each of these rates indicated an increase over the rate for the previous year.

Records for a long period of years indicate that deaths from haulage accidents, in relation to the number of men employed, have been increasing. For example, during the five-year period 1911 to 1915, the death rate was 0.327 per million man hours of exposure underground; it increased to 0.368 during the five years 1916 to 1920 and to 0.372 during the five years 1921 to 1925. During 1922 to 1926, the latest five-year period for which complete figures are available, the death rate was 0.377. It is evident, therefore, that haulage accidents will continue to increase unless special effort is made to avoid accidents of this type.

As is true for falls of roof the death rate from haulage accidents varies in the different States. Considering the record over a five-year period—for example, 1922 to 1926—the figures show a death rate of 0.377 per million hours for the United States. The rate for Illinois was 3 per cent higher than the average rate for the United States; in other words, it was 0.388 per million man hours. The rate for Kentucky was 11 per cent higher than the United States rate; that for Indiana was 23 per cent higher. The rate for Wyoming was 58 per cent higher; for Colorado, 63 per cent higher; for West Virginia, 73 per cent higher; and for Utah, 103 per cent higher. Other States had lower rates than the United States. Ohio's rate, for instance, was 5 per cent lower and therefore better than the country's average. Virginia's rate was 10 per cent better than the average for the United States. The rates for other States as compared with the United States as a whole were, for Tennessee, 14 per cent better than the country's average; for bituminous mines in Pennsylvania, 23 per cent better; for anthracite mines in Pennsylvania, 26 per cent better; for Oklahoma, 37 per cent better, and for Iowa, 59 per cent better.

The rates for these and other States are shown in Tables 26, 27, and 28.

EXPLOSIONS OF GAS OR COAL DUST

Two hundred and forty-seven men were killed by explosions of gas or coal dust during the calendar year 1927. This number includes 155 deaths from eight major explosions, a major explosion being defined as one in which five or more lives were lost. The remaining 92 deaths resulted from "ordinary" or local explosions, these terms signifying that from one to four deaths occurred in each. Reports received by the Bureau of Mines do not indicate the number of separate explosions in which the 92 deaths occurred.

The death rate from all explosions was 0.41 per million tons in 1927 as compared with 0.64 in 1926. For local explosions the death rate was 0.15 as against 0.11, while for major explosions the death rate was 0.26 as compared with 0.53. The year 1927, therefore, witnessed a slight increase in the death rate from ordinary or local explosions but a very large reduction in the death rate from major explosions.

The eight major explosions in 1927 are listed in Table 18.

A review of the accident record for the United States shows a widely fluctuating annual death rate from explosions at coal mines. The death rate for any given year depends not so much on the number of separate explosions as on whether or not many men happen to be in the mine when the explosion occurs or rather in the pathway of the explosion. Experiments by the Bureau of Mines have demonstrated that local explosions can be prevented from spreading through large areas of the mine. The preventive is rock dust, which, when mixed with coal dust in proper proportions, forms a nonexplosive mixture and thus prevents the spread of the explosion. Specific

instructions covering the use of rock dust to prevent or limit explosions may be obtained from the Bureau of Mines upon request.

The death rate from explosions, like the death rate from other kinds of accidents, varies in the different States. The rate appears to be characteristically high in some States and low in others. This fact is revealed by figures covering the latest 5-year period, for which complete data are available—1922 to 1926. During those years the average death rate from explosions in all coal mines was 0.393 per million man hours of exposure. If this rate is considered as representing 100 per cent the rate for Illinois, for example, might be expressed as 48 per cent. In other words, the Illinois rate was 52 per cent lower and therefore better than the average rate for the United States. The percentage or index figure for bituminous mines in Pennsylvania was 50 and for anthracite mines 47, indicating that these two groups of mines were 50 per cent and 53 per cent, respectively, better than the United States average. All of the explosions in the Pennsylvania anthracite mines were gas explosions, as no reports of dust explosions in anthracite mines have ever been received. Present opinion is that anthracite dust is not explosive under normal working conditions, if, indeed, it is explosive at all. A few States, including Colorado, Washington, Tennessee, Indiana, Alabama, Wyoming, and others shown in Table 26, have experienced comparatively high death rates from explosions. When death rates from explosions are studied, it is particularly advisable that conclusions should not be drawn hastily from a State's death rate for explosions for any single year. For this reason the foregoing comparisons are based upon a 5-year record. The following figures show the death rates from explosions per million man-hours underground during 5-year periods ending each calendar year from 1915 to 1926:

Death rate from explosions per million man-hours underground

5-year period:	Rate	5-year period:	Rate
1911-1915.....	0. 313	1917-1921.....	0. 170
1912-1916.....	. 283	1918-1922.....	. 176
1913-1917.....	. 291	1919-1923.....	. 228
1914-1918.....	. 229	1920-1924.....	. 297
1915-1919.....	. 206	1921-1925.....	. 347
1916-1920.....	. 180	1922-1926.....	. 393

EXPLOSIVES

The coal-mining industry is the largest consumer of industrial explosives in the United States. In 1927 more than 207,000,000 pounds were used at the mines. Of this quantity 112,570,075 pounds were black blasting powder, 60,941,682 pounds permissible explosives, and 34,173,009 pounds high explosives other than permissibles. For the country as a whole between 2½ and 3 tons of coal are produced for every pound of explosives used.

During 1927 accidents from explosives directly caused 110 deaths. At least 21 additional deaths were caused indirectly by explosives, the direct cause of the fatalities being explosions of gas or coal dust; the dust or gas had been ignited by explosives, however. In such instances the resulting deaths are classified under "Explosions."

Most of the 110 deaths from explosives were due to premature shots, 37 fatalities being accounted for in this way. Twelve fatalities were caused by shots breaking through the rib or pillar and nine were due to employees returning too soon after the shots were fired. Other detailed causes of the accidents are given in Table 17.

The 110 fatalities represent a death rate of 0.18 per million tons of coal produced as compared with the previous year's rate of 0.15. Because the number of men employed in 1927 is not yet known the year's death rate per thousand employees can not be stated. Figures for 1926 showed a death rate of 0.17 per thousand employees (300-day workers) considering all men in and about the mines, or 0.20 per thousand employees considering only the men who worked underground. The latter rate is the equivalent of a death rate of 0.085 per million man-hours of exposure underground, and the figure represents an improvement over the previous year's record, which showed a death rate of 0.105.

Accidents from explosives have decreased during recent years. Records beginning with 1911 show that during the five years ending with 1915 the death rate was 0.128. During the next five years, 1916-1920, the average rate was 0.123, and for 1921-1925 it was 0.113. Carrying the rate through 1926 the rate for the five years 1922-1926 was 0.100. Thus the death rate has declined 22 per cent from its level of 1911-1915.

The death rate for accidents of this class is lower for bituminous than for anthracite or hard coal mines. For example, in 1911-1915 the rate for bituminous coal mines was 0.075 as compared with 0.291 for anthracite mines. During the next five years the bituminous rate was 0.072 and the anthracite 0.329. For the period 1921-1925 the bituminous rate was 0.077 as compared with 0.243 for anthracite mines. For the years 1922-1926 the rate for bituminous mines was 0.066 as compared with 0.228 for anthracite mines.

Not only does the death rate for explosives differ as between anthracite and bituminous mines, but the rate for bituminous mines varies among the different States. Figures for Indiana, Kansas, Montana, New Mexico, North Dakota, Oklahoma, Utah, and Washington show higher death rates during all or most of the 5-year periods mentioned than those for Pennsylvania bituminous, Virginia, Michigan, Missouri, Colorado, Illinois, and Iowa.

ELECTRICITY

With the rapid mechanization of the coal-mining industry in the United States electricity is constantly becoming a more and more important factor in the production of the nation's coal. About 70 per cent of the annual output of bituminous coal is now being cut by machines before blasting. Latest figures, those for 1926, showed 17,466 cutting machines in use at bituminous mines. Nearly all of these machines were operated by electric power.

In addition to its use in connection with coal-cutting machines electricity is an important factor in underground haulage operations at coal mines, and in this respect its importance is increasing annually. Figures for 1924² showed that 14,280 electric haulage locomotives of all types were used in coal mines and that 11,986 of this number were electric trolley locomotives.

The foregoing facts are mentioned as a background for the statement that accidents caused by electricity resulted in 100 deaths among underground employees and 14 deaths among surface employees at coal mines during 1927. Direct contact with electric trolley wires was the immediate cause of 44 of the fatalities underground, 16 were due to contact with machine-feed wires, and 10 resulted from contact with mining machines. (See Table 17.)

In addition to the 114 fatalities from electricity referred to above 33 deaths resulted from gas or dust explosions in which the gas or dust was ignited by electric arcs; these deaths, however, are included under the general classification of "Explosions" in this publication.

The death rate based upon the 100 fatalities from electricity underground was 0.17 per million tons, as compared with a death rate of 0.15 per million tons in 1926, when 96 lives were lost in accidents of the same class. The death rate, based upon number of employees or number of hours of exposure, can not be stated, as the number of employees in 1927 is not yet known. In 1926, however, the death rate underground from electricity accidents was 0.17 per thousand employees underground (300-day workers), or 0.085 deaths per million man-hours of exposure underground. The previous year's rate was 0.086, while that for 1924 was 0.079.

Considering the rates over 5-year periods, beginning with 1911, the figures show a death rate of 0.074 for 1911 to 1915 as compared with 0.081 for 1922 to 1926, the latest period for which final data are available. These rates and those for each of the past 16 years indicate a slightly upward trend in the death rates from accidents caused by electricity in underground operations at coal mines.

² Tryon, F. G., and Mann, L., *Coal in 1925: Mineral Resources of the United States*, part 2 (pp. 441 and -48.) Bureau of Mines, 1927.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 25.—Coal mines: Death rates per million man-hours and deaths per million tons, 1911 to 1926—Continued

State and period	Man-hours			Number of men killed			Death rates per million man-hours										Deaths per million tons		
	Underground	Surface	Total	Underground			Underground, excluding shaft											Surface	Grand total
				All except shaft	Shaft	Total	Falls of roof or coal	Haulage	Gas or dust explosion	Explosives	Electricity	All other underground		Total	Shaft	Total underground			
												Electricity	Total						
Underground	Surface	Total	Underground	Surface	Grand total	Falls of roof or coal	Haulage	Gas or dust explosion	Explosives	Electricity	All other underground	Total	Shaft	Total underground	Surface	Grand total			
Michigan:																			
1911-1915	19,531,400	4,391,400	23,922,800	22	3	25	27	0.665	0.211		0.205	0.256	1.126	0.154	1.280	0.455	1.129		
1916-1920	18,919,500	2,725,900	21,645,400	20	2	22	27	.634	.462	0.159	.053	.077	1.057	1.06	1.163	1.834	1.247		
1921-1925	12,984,400	1,372,700	14,357,100	16	3	19	19	.616	.431		.077	.084	1.232	1.463	1.403	1.834	1.823		
1922-1926	11,874,000	1,166,600	13,040,600	18	2	17	19	.774	.300		.084	.084	1.067	1.432	1.171	1.834	1.834		
1922	2,561,800	249,200	2,811,000	3		3	3	.787	.300			.313	1.171	1.171	1.171	1.171	1.171		
1923	3,192,000	327,600	3,519,600	4	1	5	5	.627	.313				1.253	1.313	1.497	1.421	1.421		
1924	2,002,100	206,500	2,208,600	2	1	3	3	.639	.499				998	499	1,497	1,497	1,497		
1925	2,142,700	206,800	2,349,500	5		5	5	.634	.934		.466		2.334		2.334	2.128	2.128		
1926	1,975,400	176,500	2,151,900	1		1	1	.506					.506		.506	1.456	1.456		
Missouri:																			
1911-1915	64,630,000	8,529,600	73,160,200	63	9	72	73	.619	.082	.077	.08	.031	.974	1.39	1.113	.117	.998		
1916-1920	65,652,000	17,127,500	82,680,100	46	4	50	51	.534	.046	.030	.046	.015	.701	.061	.762	.584	.616		
1921-1925	33,137,100	4,248,400	37,385,500	46	5	51	51	.686	.060	.060	.060	.121	1.388	1.51	1.539	1.232	1.232		
1922-1926	29,016,300	7,780,700	37,396,900	40	8	48	48	.646	.068	.034	.068	.135	1.351	2.70	1.621	1.284	1.308		
1922	6,550,400	1,390,300	7,940,700	6		6	6	.792	.153				916		916	756	2,051		
1923	6,910,200	1,742,500	8,652,700	14	2	16	16	.726	.153		.145	.145	2.026	289	2.315	1.849	4,702		
1924	5,114,100	1,366,000	6,480,100	5	1	6	6	.678					978	196	1.174	926	2,418		
1925	5,263,000	1,636,500	6,899,500	9	2	11	11	.570	.190	.190	.190	.570	1.710	380	2.090	1,594	4,083		
1926	5,778,500	1,645,400	7,423,900	6	3	9	9	.638					1.038	.519	1.557	1,212	2,992		
Montana:																			
1911-1915	24,831,000	5,418,700	30,249,700	56	2	58	62	1.651	.362	.242	.062	.031	2.255	.081	2.336	.738	2,050		
1916-1920	32,267,000	8,522,400	40,789,200	72	3	75	81	1.270	.744	.062	.062	.162	2.231	.093	2.324	.704	1,986		
1921-1925	18,507,200	3,560,400	22,067,600	53	1	54	55	1.801	.456	.108	.216	.162	2.663	.054	2.917	.281	2,492		
1922-1926	17,165,900	3,284,000	20,449,900	46	1	47	47	1.748	.466	.116	.175	.175	2.878	.058	2.738	2,298	3,249		
1922	3,477,300	602,700	4,080,000	10		10	10	1.735	.863	.116	.175	.175	2.878		2.878	2,451	3,888		
1923	4,254,400	785,200	5,039,600	11		11	11	1.880	.863	.235	.470	.288	3.485		3.485	2,183	3,495		
1924	3,735,200	727,500	4,462,700	18		18	13	2.071	.803		.536		4.016		4.016	4,016	5,163		
1925	3,078,900	622,900	3,701,800	5	1	6	6	.974	.600				1.624		1.949	1,621	1,971		
1926	2,620,100	545,700	3,165,800	5		5	5	1.144		.382	.382		1.908		1.908	1,579	1,787		

TABLE 25.—Coal mines: Death rates per million man-hours and deaths per million tons, 1911 to 1926—Continued

State and period	Man-hours				Number of men killed				Death rates per million man-hours									Deaths per million tons				
	Underground		Surface		Underground		Surface		Underground, excluding shaft													
	Total		Grand total		Total		Grand total		Falls of roof or coal	Haulage	Gas or dust explosion	Explosives	Electricity	All other underground	Total	Shaft	Total underground		Surface	Grand total		
	Underground	Surface	Underground	Surface	Underground	Surface	Underground	Surface	All except shaft	Shaft	Total	Gas or dust explosion	Explosives	Electricity	All other underground	Total	Shaft		Total underground	Surface	Grand total	
South Dakota:																						
1911-1915	67,500	45,600	113,100						207	8	0.986	0.197	0.055	0.077	0.022	2.268		0.411		1.941	6,829	
1916-1920	216,300	248,500	464,800						104	1	105.788	224	153	0.12	0.59	1.228		0.45		1.228	3,382	
1921-1925	239,700	32,200	271,900						102	3	77.4	319	319	0.84	1.18	1.01		0.17		1.732	4,175	
1922-1926	249,200	249,200	498,400						140	4	144	892	746	1.14	0.87	0.81		0.16		2.271	5,390	
1922	39,700	39,700	79,400						26	2	1,600	160	160	0.80	1.80	0.80				2,080	1,865	
1923	37,300	37,300	74,600						18	1	1,427	427	142	1.42	0.71	0.71				1,280	1,079	
1924	40,700	49,700	90,400						21	1	22	393	589	294	0.98	2.94				2,060	4,829	
1925	63,100	63,100	126,200						26	1	825	165	173	0.83	2.94					2,146	1,821	
1926	59,400	59,400	118,800						49	1	1,176	314	2.118	2.35						3,843	4,767	
Tennessee:																						
1911-1915	91,274,300	19,485,300	110,759,600						207	8	215	0.986	0.197	0.055	0.077	0.022	2.268		0.411		1.941	6,829
1916-1920	84,688,800	22,254,300	106,943,100						104	1	105	788	224	153	0.12	0.59				1.228	3,382	
1921-1925	59,473,400	11,290,200	70,763,600						102	3	102	774	319	319	0.84	1.18				1.715	4,938	
1922-1926	61,631,000	11,343,200	72,974,200						139	1	144	892	746	1.14	0.87	0.81				2,255	5,741	
1922	12,503,000	2,512,900	15,015,900						26	2	28	1,600	160	0.80	1.80	0.80				2,080	1,865	
1923	14,066,400	2,608,600	16,675,000						18	1	18	427	427	1.42	0.71	0.71				1,280	1,079	
1924	10,195,000	1,796,700	11,991,700						20	1	21	393	589	294	0.98	2.94				2,060	4,829	
1925	12,113,800	2,161,800	14,275,600						26	1	26	825	165	173	0.83	2.94				2,146	1,821	
1926	12,751,900	2,263,200	15,015,100						49	1	50	1,176	314	2.118	2.35					3,843	4,767	
Texas:																						
1911-1915	44,928,800	6,362,300	51,291,100						22	3	26	311	045	.022	.067	045	490	067	.557	.157	.507	2,362
1916-1920	34,677,200	5,905,800	40,583,000						10	8	18	1,115	128	.058	.115	288	231	.519	.443	.519	1,818	
1921-1925	15,568,600	2,200,900	17,769,500						5	3	8	128	128	.064	.064	.321	193	.514	.454	.506	1,660	
1922-1926	14,818,900	2,243,000	17,061,900						5	2	7	135	135	.087	.087	.337	135	.472	.472	.472	1,264	
1922	4,088,400	493,500	4,581,900						3	1	4	489	489	.245	.245	.794	244	.978	.978	.978	3,616	
1923	3,851,000	499,500	4,350,500						1	1	2	489	489	.245	.245	.734	244	.978	.978	.978	3,616	
1924	2,664,000	443,200	3,107,200						1	1	2	851	400	.489	.489	.794	244	.978	.978	.978	3,616	
1925	2,841,800	411,400	3,253,200						2	2	4	854	400	.489	.489	.794	244	.978	.978	.978	3,616	
1926	2,869,300	395,400	3,264,700						2	2	4	854	400	.489	.489	.794	244	.978	.978	.978	3,616	

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 25.—Coal mines Death rate per million man-hours and deaths per million tons, 1911 to 1926—Continued

State and period	Man-hours			Number of men killed			Death rates per million man-hours										Deaths per million tons			
	Underground	Surface	Total	Underground			Underground, excluding shaft						Shaft			Total underground		Surface	Grand total	
				All except shaft	Shaft	Total	Haulage	Gas or dust explosion	Explosives	Electricity	All other underground		Total							
											Falls of roof or coal	Shaft		Total						
Underground	Surface	Total	Underground	Surface	Grand total	Falls of roof or coal	Haulage	Gas or dust explosion	Explosives	Electricity	All other underground	Total	Shaft	Total underground	Surface	Grand total				
United States (bituminous):	4,486,996,500	698,997,400	5,185,993,900	8,829	173	9,002	482	9,484	1,043	0.333	0.362	0.075	0.093	0.062	1.968	0.039	2,007	0.600	1,829	4,311
1911-1915	4,706,240,700	1,001,116,700	5,707,357,400	8,464	192	8,656	627	9,283	1,995	0.391	0.186	0.072	0.078	0.076	1.798	0.041	1,839	0.626	1,826	3,479
1916-1920	3,750,410,100	638,286,700	4,388,696,800	8,243	139	8,382	443	8,825	1,138	0.399	0.394	0.077	0.088	0.092	2.198	0.037	2,235	0.603	2,011	3,667
1921-1925	3,957,238,700	666,436,500	4,623,675,200	8,556	141	8,697	445	9,442	1,132	0.405	0.452	0.066	0.088	0.085	2.258	0.036	2,294	0.688	2,042	3,683
1922-1926	697,274,100	120,929,300	788,203,400	1,546	36	1,582	102	1,684	1,169	0.424	0.447	0.083	0.106	0.088	2.317	0.034	2,351	0.843	2,137	3,988
1922	867,872,400	151,059,700	1,018,932,100	1,825	31	1,856	97	1,953	1,092	0.392	0.380	0.076	0.081	0.082	2.103	0.036	2.139	0.843	2,017	3,459
1923	735,281,900	121,232,800	856,514,700	1,805	17	1,822	84	1,906	1,151	0.403	0.661	0.062	0.088	0.080	2.455	0.023	2,478	0.603	2,179	3,941
1924	794,094,000	129,283,400	928,377,400	1,727	30	1,757	77	1,834	1,139	0.382	0.378	0.061	0.100	0.101	2.161	0.038	2,199	0.596	2,075	3,527
1925	887,716,300	143,931,300	1,031,647,600	1,953	27	1,980	85	2,065	1,120	0.429	0.420	0.052	0.106	0.073	2.200	0.030	2,230	0.591	2,002	3,602
Pennsylvania (anthracite):	1,404,141,500	510,923,100	1,915,064,600	2,585	130	2,725	374	3,099	884	0.283	0.140	0.291	0.011	0.229	1.848	0.093	1,941	0.722	1,618	6,946
1911-1915	1,181,162,300	492,340,000	1,673,502,300	2,323	77	2,400	218	2,618	972	0.282	0.139	0.329	0.028	0.197	1.967	0.063	1,834	0.841	1,545	6,088
1916-1920	1,074,460,800	383,161,600	1,457,622,400	1,967	47	2,014	238	2,252	908	0.283	0.197	0.283	0.022	0.167	1.850	0.041	1,871	0.638	1,545	5,801
1921-1925	1,067,604,400	561,427,700	1,629,032,100	1,888	44	1,932	234	2,158	893	0.278	0.184	0.228	0.021	0.157	1.761	0.041	1,802	0.700	1,583	6,646
1922-1926	138,048,900	51,424,700	189,473,600	259	5	264	36	300	927	0.420	0.694	0.275	0.022	0.138	1.876	0.036	1,912	0.661	1,603	5,453
1922	245,961,700	92,239,300	338,201,000	433	15	448	61	509	890	0.297	0.171	0.199	0.020	0.183	1.760	0.061	1,821	0.606	1,414	6,641
1923	261,643,800	89,095,900	350,739,700	430	12	442	54	496	825	0.222	0.191	0.202	0.031	0.172	1.643	0.046	1,689	0.641	1,414	6,471
1924	175,547,000	57,867,300	233,414,300	346	4	350	50	400	968	0.319	0.245	0.302	0.023	0.114	1.971	0.023	1,994	0.864	1,414	6,471
1925	246,403,000	76,430,500	322,833,500	412	8	420	33	453	988	0.211	0.199	0.203	0.008	0.158	1.672	0.033	1,705	0.832	1,403	5,365
1926	5,829,605,500	1,162,206,900	6,991,812,400	11,424	303	11,727	856	12,583	1,015	0.327	0.313	0.128	0.074	0.103	1.960	0.032	2,012	0.737	1,800	4,755
United States (total):	5,917,282,400	1,471,589,800	7,388,822,200	10,217	269	10,486	1,041	11,527	985	0.368	0.180	0.123	0.068	0.099	1.823	0.045	2,068	0.707	1,637	3,862
1911-1915	4,864,876,600	984,754,100	5,849,630,700	10,210	181	10,391	681	11,077	1,085	0.372	0.347	0.113	0.081	0.108	2.099	0.038	2,137	0.692	1,804	3,964
1916-1920	5,808,228,200	1,008,504,400	6,816,732,600	10,736	185	10,921	679	11,600	1,076	0.377	0.393	0.100	0.081	0.100	2.127	0.036	2,163	0.773	1,915	3,937
1921-1925	1,244,171,900	171,821,500	1,415,993,400	1,805	41	1,846	138	1,984	1,273	0.422	0.385	0.115	0.092	0.096	2.233	0.031	2,264	0.803	2,025	4,160
1922-1926	1,068,690,500	231,917,000	1,300,607,000	2,255	29	2,284	158	2,442	1,053	0.367	0.331	0.098	0.079	0.103	2.008	0.041	2,049	0.694	1,989	3,742
1923	1,068,690,500	198,784,100	1,267,474,600	2,235	29	2,264	138	2,402	1,053	0.351	0.351	0.098	0.079	0.103	2.215	0.029	2,243	0.694	1,989	4,202
1924	971,756,300	188,577,700	1,160,334,000	2,073	34	2,107	127	2,234	1,111	0.372	0.355	0.105	0.086	0.104	2.133	0.031	2,168	0.673	1,625	3,839
1925	1,135,436,100	217,404,100	1,352,840,200	2,365	35	2,400	118	2,518	1,069	0.381	0.372	0.085	0.085	0.091	2.083	0.031	2,114	0.943	1,861	3,828

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 26.—Index numbers, comparing coal-mine fatality rates per million man-hours, underground, for different States, with the average rate for the United States, 1920 to 1924

Falls of roof and coal		Haulage (underground)		Gas or dust explosions		Miscellaneous (underground)		Total underground (including shaft)	
State	Index number	State	Index number	State	Index number	State	Index number	State	Index number
Alaska, California, Idaho, Nevada, and Oregon	15	Arkansas	20	Virginia	4	Alaska, California, Idaho, Nevada, and Oregon	25	South Dakota	59
South Dakota	58	Alaska, California, Idaho, Nevada, and Oregon	24	Missouri	8	Georgia and North Carolina	54	Alaska, California, Idaho, Nevada, and Oregon	26
Texas	66	Georgia and North Carolina	29	Michigan	36	South Dakota	58	Texas	29
Michigan	75	South Dakota	35	Georgia and North Carolina	50	Iowa	59	Georgia and North Carolina	59
North Dakota	77	Michigan	40	South Dakota	51	Missouri	62	Iowa	60
Tennessee	78	Texas	76	Ohio	62	Kansas	77	Michigan	62
Oklahoma	81	Maryland	79	Tennessee	66	Pennsylvania (bituminous)	73	Iowa	64
Pennsylvania (bituminous)	83	Texas	79	Pennsylvania (bituminous)	93	Illinois	77	Maryland	65
Indiana	85	Ohio	80	Illinois	94	Virginia	82	Pennsylvania (bituminous)	73
Pennsylvania (anthracite)	86	North Dakota	88	Kentucky	100	Tennessee	88	Tennessee	74
Kansas	86	Pennsylvania (anthracite)	90	Pennsylvania (anthracite)	118	Ohio	88	Kansas	77
Pennsylvania (anthracite)	91	Virginia	92	West Virginia	134	Texas	95	Illinois	80
Missouri	93	Tennessee	92	Colorado	149	Ohio	99	Virginia	85
Iowa	93	Alabama	92	United States (0.297)	158	Michigan	100	North Dakota	88
Alabama	95	Michigan	92	United States (0.367)	180	United States (0.338)	100	Pennsylvania (anthracite)	91
United States (1.047)	100	United States (0.367)	100	United States (0.297)	204	United States (2.049)	100	Indiana	99
Maryland	107	Ohio	103	West Virginia	232	Alabama	102	United States (2.049)	100
Kentucky	112	Indiana	103	Kansas	275	Kentucky	106	Kentucky	102
Virginia	113	Illinois	111	West Virginia	296	West Virginia	107	Ohio	102
Georgia and North Carolina	115	Colorado	114	United States (0.367)	296	Wyoming	110	Ohio	105
Washington	130	Alabama	114	United States (0.297)	296	Colorado	112	Alabama	115
Ohio	139	West Virginia	114	United States (0.297)	296	Utah	144	Oklahoma	125
Arkansas	148	West Virginia	121	United States (0.297)	296	Pennsylvania (anthracite)	145	Montana	136
West Virginia	155	Washington	132	United States (0.297)	296	Indiana	149	Washington	143
Montana	167	New Mexico	135	United States (0.297)	296	Montana	159	Arkansas	146
Colorado	179	Wyoming	169	United States (0.297)	296	New Mexico	164	West Virginia	145
Colorado	186	West Virginia	182	United States (0.297)	296	North Dakota	165	Colorado	163
Wyoming	198	Colorado	187	United States (0.297)	296	Oklahoma	187	Wyoming	284
New Mexico	219	Utah	206	United States (0.297)	296	Washington	202	New Mexico	375
Utah	219	Utah	296	United States (0.297)	296	Arkansas	239	Utah	518

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 27.—Index numbers, comparing coal-mine fatality rates per million man-hours, underground, for different States, with the average rate for the United States, 1921 to 1925

Falls of roof and coal		Haulage (underground)		Gas or dust explosions		Miscellaneous (underground)		Total underground (including shaft)	
State	Index number	State	Index number	State	Index number	State	Index number	State	Index number
Alaska, California, Idaho, Nevada, and Oregon.....	12	Alaska, California, Idaho, Nevada, and Oregon.....	16	Virginia.....	4	Alaska, California, Idaho, Nevada, and Oregon.....	43	South Dakota.....	24
South Dakota.....	57	Michigan.....	21	Missouri.....	41	Georgia and North Carolina.....	56	Texas, California, Idaho, Nevada, and Oregon.....	27
Texas.....	72	South Dakota.....	34	Michigan.....	41	South Dakota.....	57	Kansas.....	64
Illinois.....	77	Missouri.....	41	Ohio.....	4	Maryland.....	70	Michigan.....	68
Tennessee.....	76	Arkansas.....	39	South Dakota.....	4	Kansas.....	72	Iowa.....	68
Ohio.....	80	Texas.....	41	Ohio.....	4	Pennsylvania (bituminous).....	57	Pennsylvania (bituminous).....	68
Pennsylvania (bituminous).....	79	Oklahoma.....	53	North Dakota.....	42	Illinois.....	59	West Virginia.....	72
Indiana.....	80	Virginia.....	63	Pennsylvania (bituminous).....	57	Iowa.....	76	Missouri.....	74
North Dakota.....	84	Pennsylvania (anthracite).....	76	Pennsylvania (anthracite).....	59	Texas.....	70	Illinois.....	74
Pennsylvania (anthracite).....	85	Illinois.....	78	Illinois.....	67	Virginia.....	81	Maryland.....	79
Alabama.....	95	Pennsylvania (bituminous).....	79	Kentucky.....	83	Pennsylvania (anthracite).....	88	Tennessee.....	88
Iowa.....	100	Pennsylvania (anthracite).....	82	Kansas.....	83	North Dakota.....	88	North Dakota.....	88
United States (1.078).....	100	Tennessee.....	96	Tennessee.....	92	Ohio.....	99	Virginia.....	92
Missouri.....	101	Alabama.....	96	United States (0.347).....	100	United States (0.340).....	100	United States (2.137).....	100
Georgia and North Carolina.....	110	United States (0.372).....	100	West Virginia.....	110	Wyoming.....	113	Ohio.....	100
Kentucky.....	114	Ohio.....	101	Ohio.....	136	Michigan.....	113	Ohio.....	102
Maryland.....	121	Washington.....	105	Oklahoma.....	136	Colorado.....	115	Kentucky.....	103
Virginia.....	132	Illinois.....	105	Colorado.....	158	Missouri.....	115	Indiana.....	111
Ohio.....	135	Indiana.....	112	Alaska, California, Idaho, Nevada, and Oregon.....	166	Missouri.....	116	Alabama.....	125
West Virginia.....	132	Kentucky.....	116	Indiana.....	167	West Virginia.....	116	Alabama.....	137
Arkansas.....	160	Indiana.....	116	Nevada, and Oregon.....	166	Alabama.....	127	Montana.....	144
Colorado.....	174	North Dakota.....	116	Washington.....	202	North Dakota.....	140	West Virginia.....	144
Montana.....	175	New Mexico.....	122	Arkansas.....	249	Pennsylvania (anthracite).....	145	Colorado.....	158
Washington.....	177	Michigan.....	124	Alabama.....	258	Indiana.....	145	Arkansas.....	177
Wyoming.....	181	Montana.....	131	Alabama.....	648	Utah.....	155	Washington.....	182
New Mexico.....	192	Wyoming.....	131	New Mexico.....	1,330	New Mexico.....	150	Washington.....	288
Utah.....	222	Colorado.....	151	Utah.....	2,104	Oklahoma.....	186	Utah.....	367
		West Virginia.....	151	Georgia and North Carolina.....	9,080	Washington.....	186	Utah.....	320
		Utah.....	240	Indiana.....	9,080	Arkansas.....	324	Georgia and North Carolina.....	1,527

FATALITIES AND THE PRODUCTION OF COAL, BY MONTHS

Tables 29, 30, and 31 show the production of coal, both bituminous and anthracite, by months and years; the corresponding number of fatalities for the same period; and the fatality rates per million tons of coal mined.

TABLE 29.—*Monthly production of anthracite and of bituminous coal in the United States, 1918 to 1927*¹
[Net tons—000 omitted]

	1918		1919		1920		1921		1922		1923		1924		1925		1926		1927 ²		
	Tons	Per cent	Tons	Per cent	Tons	Per cent	Tons	Per cent	Tons	Per cent	Tons	Per cent	Tons	Per cent	Tons	Per cent	Tons	Per cent	Tons	Per cent	
Bituminous:																					
January.....	42,227	7.3	42,193	9.0	49,748	8.8	41,148	9.9	38,930	9.2	51,944	9.2	52,507	10.8	51,640	9.9	53,205	9.3	56,882	10.9	
February.....	43,777	7.6	32,103	6.4	41,055	7.2	31,524	7.6	42,425	10.0	43,645	7.7	47,302	9.8	38,770	7.5	46,180	8.0	52,904	10.2	
March.....	48,113	8.3	34,293	7.0	47,850	8.4	31,054	7.5	51,936	12.3	48,446	8.6	41,288	8.5	37,416	7.2	45,744	8.0	60,137	11.0	
April.....	46,041	8.0	32,712	7.0	38,764	6.8	28,154	6.8	16,335	3.9	44,057	7.8	30,429	6.3	33,514	6.4	39,738	6.9	34,674	6.7	
May.....	50,443	8.7	38,186	8.2	39,841	7.0	34,057	8.2	21,005	5.0	47,690	8.4	32,276	6.7	35,276	6.8	38,727	6.8	33,395	6.8	
June.....	51,138	8.8	37,685	8.1	46,095	8.1	34,635	8.2	23,096	5.5	47,083	8.3	31,438	6.5	36,960	7.1	41,635	7.3	36,627	7.0	
July.....	54,971	9.5	43,425	9.3	45,988	8.1	31,047	7.5	17,602	4.2	46,707	8.3	33,346	6.9	39,362	7.6	43,102	7.5	33,637	6.5	
August.....	55,114	9.5	43,613	9.4	49,974	8.8	35,291	8.5	26,755	6.2	50,578	9.0	35,923	7.4	44,633	8.6	45,957	8.0	41,705	8.0	
September.....	51,183	8.8	48,209	10.3	50,241	8.8	35,870	8.6	42,463	10.0	47,841	8.5	42,376	8.8	46,556	8.9	48,559	8.5	41,928	8.1	
October.....	52,300	9.0	57,200	12.3	53,278	9.4	44,687	10.1	50,907	11.1	50,907	9.0	48,414	10.0	52,907	10.2	54,127	9.4	44,000	8.5	
November.....	43,895	7.6	19,006	4.1	52,576	9.1	36,805	8.2	46,900	11.1	44,242	7.9	42,102	8.7	50,497	9.7	59,213	10.3	40,628	7.8	
December.....	40,184	6.9	37,235	8.0	53,257	9.4	31,650	7.6	48,008	11.4	41,425	7.3	46,266	9.6	52,522	10.1	57,180	10.0	41,277	7.9	
Total, bituminous.....	579,386	100.0	465,860	100.0	568,667	100.0	415,922	100.0	422,268	100.0	564,565	100.0	483,087	100.0	520,053	100.0	573,367	100.0	519,804	100.0	
Anthracite:																					
January.....	7,270	7.3	7,819	8.9	7,459	8.3	7,681	8.5	6,566	12.0	8,521	9.1	7,724	8.8	7,234	11.7	172	2.4	6,561	8.1	
February.....	7,494	7.6	5,102	5.8	6,415	7.2	7,983	8.8	7,096	13.0	7,602	8.1	7,428	8.4	7,003	11.3	2,069	2.4	3,852	7.3	
March.....	9,382	9.5	5,190	5.9	7,935	8.9	7,677	8.5	9,181	16.8	9,175	9.8	7,908	9.0	6,886	11.1	8,732	10.3	6,098	7.6	
April.....	8,211	8.3	6,884	7.8	6,285	7.0	7,985	8.8	7,885	8.5	7,885	8.5	6,639	7.6	7,282	11.8	8,163	9.7	7,127	8.8	
May.....	8,980	9.0	7,525	8.4	8,037	9.0	7,752	8.6	36	.1	8,384	9.0	7,549	8.6	7,998	12.8	8,001	9.5	8,002	9.9	
June.....	8,855	9.0	7,404	8.5	8,251	9.2	8,071	8.9	86	.2	8,474	9.1	7,509	8.5	7,616	12.3	8,878	10.5	7,257	9.0	
July.....	9,134	9.2	7,974	9.1	8,105	9.3	8,251	9.1	118	.3	8,136	8.7	7,884	8.6	8,334	13.4	8,371	9.9	8,028	6.2	
August.....	9,258	9.4	8,096	9.2	8,142	9.0	7,309	8.2	164	.4	8,672	9.3	6,906	7.9	9,014	14.6	8,171	9.7	7,747	9.6	
September.....	8,038	8.1	7,494	8.5	8,691	9.2	7,385	8.2	5,075	9.3	2,853	3.1	7,408	8.4	52	.1	8,388	10.2	6,642	8.2	
October.....	8,105	8.2	8,645	9.8	8,148	9.1	7,858	8.7	8,896	16.3	8,532	9.1	7,479	8.5	69	.1	8,617	10.2	7,404	9.2	
November.....	6,803	6.9	7,870	8.9	7,527	8.4	7,110	7.9	8,695	15.9	7,575	8.1	6,604	7.5	153	.3	7,397	8.8	6,902	8.6	
December.....	7,396	7.5	8,089	9.2	8,403	9.4	6,203	6.8	7,530	16.0	7,530	8.1	7,189	8.2	226	.4	7,478	8.9	6,032	7.5	
Total, anthracite.....	98,826	100.0	88,092	100.0	89,598	100.0	90,473	100.0	54,683	100.0	93,339	100.0	87,927	100.0	61,817	100.0	84,437	100.0	80,652	100.0	

Bituminous and anthracite:	49, 497	7.3	50, 012	9.0	57, 207	9.7	48, 829	9.6	45, 496	9.5	60, 465	9.2	60, 231	10.5	58, 874	10.1	53, 377	8.1	63, 443	10.6
January	51, 271	7.6	37, 205	6.7	47, 470	7.2	39, 507	7.8	49, 521	10.4	51, 237	7.6	54, 730	9.6	45, 773	7.9	48, 249	7.3	58, 756	9.8
February	57, 495	8.5	39, 483	7.1	55, 785	8.5	38, 731	7.7	61, 117	12.8	57, 621	7.8	57, 096	8.9	43, 302	7.6	54, 476	8.3	66, 245	11.0
March	54, 252	8.0	39, 596	7.1	45, 049	6.8	36, 139	8.3	16, 362	3.4	51, 942	7.9	37, 095	8.5	43, 802	7.0	47, 901	7.3	41, 801	7.0
April	56, 323	8.7	45, 711	8.3	47, 878	7.3	41, 869	8.3	21, 041	4.4	55, 074	8.5	39, 825	7.9	43, 914	7.4	46, 798	7.1	43, 397	7.2
May	59, 993	8.8	45, 089	8.1	54, 346	8.3	42, 706	8.4	23, 132	4.9	55, 357	8.5	38, 907	6.8	47, 576	7.7	50, 513	7.7	43, 884	7.3
June	64, 105	9.5	51, 389	9.3	54, 330	8.3	38, 356	7.6	17, 720	3.7	54, 845	8.4	49, 950	7.2	47, 606	8.2	50, 473	7.8	38, 685	6.4
July	64, 372	9.5	51, 709	9.3	58, 079	8.8	42, 750	8.4	26, 919	5.6	59, 250	8.4	42, 829	7.2	53, 647	9.2	54, 128	7.9	49, 452	8.2
August	59, 221	8.7	55, 703	10.1	54, 932	8.3	43, 235	8.5	47, 363	10.0	50, 694	7.7	45, 783	7.2	53, 608	8.0	58, 047	8.7	48, 570	8.1
September	60, 405	8.9	65, 845	11.9	61, 428	9.3	52, 545	10.4	55, 629	11.7	59, 439	7.9	57, 863	8.5	52, 076	9.1	62, 744	9.6	51, 404	8.6
October	50, 698	7.5	26, 876	4.9	60, 103	9.1	43, 915	8.7	53, 595	11.7	52, 000	7.9	48, 795	8.5	52, 650	8.7	66, 610	10.1	47, 530	7.9
November	47, 580	7.0	45, 324	8.2	61, 660	9.4	37, 853	7.5	56, 831	11.9	48, 772	7.4	53, 455	9.3	52, 748	9.1	64, 658	9.8	47, 309	7.9
Grand total.....	678, 212	100.0	533, 952	100.0	658, 265	100.0	506, 395	100.0	476, 951	100.0	657, 904	100.0	571, 614	100.0	581, 870	100.0	657, 804	100.0	600, 456	100.0

¹ Monthly production estimated for bituminous coal on basis of rail shipments; for anthracite, on basis of monthly reports of Anthracite Bureau of Information.

² Subject to revision.

³ Less than one-tenth of 1 per cent.

TABLE 30.—Coal-mine fatalities, by months and years, 1918 to 1927

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bituminous:													
1918.....	160	171	148	169	168	183	214	194	198	172	125	127	2,029
1919.....	140	129	139	141	141	151	155	181	140	194	60	181	1,688
1920.....	159	121	134	127	110	169	151	162	178	159	168	143	1,781
1921.....	146	130	88	109	129	125	115	119	122	140	113	112	1,448
1922.....	111	192	145	78	87	107	86	101	118	176	333	101	1,684
1923.....	163	253	137	148	133	150	161	267	130	141	147	123	1,953
1924.....	213	135	313	213	139	108	118	139	158	140	120	139	1,906
1925.....	180	147	158	119	152	107	129	153	155	161	174	153	1,834
1926.....	322	173	146	115	133	123	134	214	134	181	182	208	2,065
1927 1.....	171	149	155	221	133	118	109	146	133	149	129	122	1,735
Anthracite:													
1918.....	55	51	48	46	43	47	62	55	32	43	32	37	551
1919.....	44	31	33	48	44	144	68	43	41	49	49	54	635
1920.....	47	39	48	35	52	50	44	42	20	35	31	48	491
1921.....	51	36	49	55	44	45	47	38	45	42	51	44	547
1922.....	50	46	51	1	1	3	6	2	24	31	38	48	300
1923.....	44	50	48	40	53	52	50	48	20	40	28	36	509
1924.....	36	51	44	34	37	55	42	37	30	39	51	40	496
1925.....	55	49	41	41	46	53	56	50	1	2	4	2	400
1926.....	3	9	40	33	47	48	61	41	46	35	44	46	453
1927 1.....	46	41	42	42	53	54	30	26	38	43	41	33	489
Bituminous and anthracite:													
1918.....	215	222	196	215	211	230	276	249	230	215	157	164	2,580
1919.....	184	160	172	189	185	295	223	224	181	243	96	171	2,323
1920.....	206	160	182	162	162	219	195	204	191	191	199	191	2,272
1921.....	197	166	137	164	173	170	162	157	167	182	164	156	1,984
1922.....	161	238	196	78	88	110	92	103	174	207	371	166	2,462
1923.....	207	303	185	188	186	202	211	315	150	181	175	159	2,402
1924.....	249	186	357	247	133	163	160	176	188	179	171	193	2,402
1925.....	325	182	199	160	198	160	185	203	163	163	178	201	2,234
1926.....	325	186	186	148	180	171	195	255	180	216	226	254	2,518
1927 1.....	217	190	197	263	186	172	139	172	171	192	170	155	2,224

1 Subject to revision.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 31.—United States: Fatality rates, per million tons mined, by months and years, 1918 to 1927

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bituminous:													
1917.....	3.54	3.14	3.80	6.21	2.89	4.02	4.08	4.58	3.10	2.94	3.63	4.25	3.83
1918.....	3.79	3.91	3.05	3.67	3.33	3.58	3.89	3.52	3.87	3.29	2.85	3.16	3.50
1919.....	3.32	4.02	4.05	4.31	3.69	4.01	3.57	4.15	2.90	3.39	3.16	3.69	3.62
1920.....	3.20	2.95	2.80	3.28	2.76	3.67	3.28	3.24	2.90	2.98	3.20	2.69	3.13
1921.....	3.55	4.12	2.83	3.87	3.79	3.61	3.70	3.37	3.40	3.13	3.07	3.54	3.48
1922.....	2.85	3.14	2.79	4.78	4.14	4.63	4.89	3.77	3.53	2.77	7.10	2.45	3.99
1923.....	3.14	5.80	2.83	3.36	2.79	3.19	3.45	5.28	2.72	2.77	3.31	2.98	3.46
1924.....	4.06	3.75	7.58	7.00	2.97	3.43	3.54	3.87	3.73	3.04	2.85	3.31	3.94
1925.....	3.49	3.79	4.22	3.55	4.31	2.90	3.28	3.43	3.33	3.04	3.45	3.79	3.53
1926.....	6.05	3.79	3.19	2.89	3.43	2.95	3.11	4.66	2.76	3.34	3.07	3.64	3.60
1927 ¹	3.01	2.82	2.58	6.37	3.76	3.22	3.24	3.50	3.17	3.39	3.18	2.96	3.34
Anthracite:													
1917.....	7.43	5.68	5.32	6.78	5.04	4.83	6.68	5.74	4.98	5.99	6.74	5.16	5.84
1918.....	7.57	6.81	5.12	5.60	4.84	5.31	6.79	5.94	3.98	5.31	4.70	5.00	5.58
1919.....	5.63	6.08	6.36	6.97	5.85	19.45	8.53	5.31	5.47	5.67	4.57	6.68	7.21
1920.....	6.30	6.08	6.05	5.57	6.06	6.06	6.43	5.18	4.26	4.30	4.12	5.71	5.48
1921.....	6.64	4.51	6.38	6.89	5.68	5.58	(²)	(²)	6.09	5.34	7.17	7.09	6.05
1922.....	7.61	6.48	5.55	(²)	(²)	(²)	(²)	(²)	4.73	3.48	4.37	5.49	5.49
1923.....	5.16	6.58	5.23	5.07	6.32	6.14	6.15	5.54	7.01	4.69	3.70	4.78	5.45
1924.....	4.66	6.87	5.56	5.12	4.90	7.32	5.54	5.36	4.05	5.21	7.72	5.76	5.64
1925.....	4.66	7.00	5.95	5.62	5.79	6.96	6.72	5.55	(²)	(²)	(²)	(²)	6.4
1926.....	7.60	(²)	4.58	4.04	5.87	5.41	7.29	5.02	4.88	4.06	(²)	6.15	5.36
1927 ¹	7.01	7.01	6.89	5.39	6.62	7.44	5.97	3.36	5.72	5.81	5.94	5.47	6.06
Bituminous and anthracite:													
1917.....	4.08	3.50	4.04	6.30	3.23	4.15	4.49	4.77	3.39	3.42	4.10	4.38	4.14
1918.....	4.34	4.33	3.41	3.96	3.56	3.83	4.31	4.33	3.88	3.56	3.10	3.45	3.80
1919.....	3.68	4.30	4.36	4.77	4.05	6.54	4.84	4.33	3.25	3.69	3.57	3.75	3.49
1920.....	3.60	3.37	3.26	3.60	3.38	4.03	3.59	3.51	3.60	3.16	3.31	3.10	3.45
1921.....	4.03	4.20	3.54	4.54	4.14	3.98	4.22	3.67	3.86	3.46	3.73	3.12	3.94
1922.....	3.54	4.81	3.21	4.77	4.18	4.75	5.19	3.83	3.66	3.72	6.67	2.92	4.16
1923.....	3.42	5.91	3.21	3.62	3.32	3.64	3.85	5.32	2.96	3.05	3.37	3.26	3.74
1924.....	4.13	3.40	7.26	6.66	3.34	4.18	3.91	4.11	3.78	3.20	3.51	3.61	4.20
1925.....	3.99	4.28	4.49	3.92	4.58	3.59	3.88	3.78	3.35	3.08	3.51	3.81	3.61
1926.....	6.09	3.77	3.41	3.09	3.85	3.39	3.79	4.71	3.16	3.44	3.39	3.93	3.83
1927 ¹	3.42	3.23	2.97	6.29	4.29	3.92	3.59	3.48	3.52	3.74	3.58	3.28	3.70

¹ Subject to revision.

² Strike.

TABLE 33.—Percentage of bituminous coal mined by various methods, by States and years, 1922 to 1926—Continued

State and year	Percentage coal mined by—				State and year	Percentage coal mined by—			
	Hand	Ma- chine	Shot off solid	Not re- port- ed ¹		Hand	Ma- chine	Shot off solid	Not re- port- ed ¹
Texas:					West Virginia:				
1922	68.3	4.3	25.7	1.7	1922	19.1	76.7	3.3	0.9
1923	58.1	3.8	31.3	6.8	1923	16.6	78.7	3.9	.8
1924	51.8	9.4	29.1	9.7	1924	15.9	82.0	1.8	.3
1925	52.7	13.5	20.9	12.9	1925	14.3	82.4	3.1	.2
1926	42.1	4.7	27.9	25.3	1926	14.8	82.4	2.6	.2
Utah:					Wyoming:				
1922	19.5	76.5	4.0	-----	1922	15.1	57.8	25.6	1.5
1923	24.9	68.3	6.8	-----	1923	13.2	50.1	36.5	.2
1924	16.3	74.8	8.9	-----	1924	10.9	55.1	34.0	-----
1925	11.3	74.1	14.6	-----	1925	12.1	61.7	25.6	.6
1926	10.4	72.1	17.5	-----	1926	10.2	58.3	30.6	.9
Virginia:					Total (bituminous):				
1922	4.9	71.9	22.6	.6	1922	18.3	63.2	14.2	4.3
1923	4.4	73.5	21.4	.7	1923	17.6	66.9	12.5	3.0
1924	2.1	79.7	18.0	.2	1924	16.3	69.5	11.0	3.2
1925	2.5	81.8	15.7	-----	1925	15.6	70.6	10.2	3.6
1926	1.4	82.4	16.1	.1	1926	15.8	71.7	9.1	3.4
Washington:									
1922	45.7	12.8	40.0	1.5					
1923	54.9	8.6	35.1	1.4					
1924	52.9	10.4	36.7	-----					
1925	55.9	5.5	38.0	.6					
1926	62.8	8.5	28.2	.5					

¹ Includes coal mined from steam-shovel pits.

METHOD OF CALCULATING NUMBER OF MAN-HOURS

To obtain information showing the exact number of hours during which the coal-mine employees in the United States are present or at work underground is impracticable, if not impossible, because there is no standard workday for all occupations at many mines and also because many tonnage men are irregular in observing standard working hours. For example, in mines where eight hours constitute a standard workday the miners and other tonnage men may be in the mines less or more than eight hours, while individuals in other occupations may work more than eight hours regularly. Moreover, it is the usual although not invariable practice in American mines for the men to go to and from their working places on their own time, not on company time, so that the hours of the employees' presence in the mines exceed their hours of work. In any study of the frequency of accidents it is necessary to consider the number of hours during which the men were exposed to risk, and in this connection it must be borne in mind that the time consumed in going to and from their working places is time of exposure to underground hazards, although not necessarily to the chief hazards of their occupations.

These considerations indicate the difficulty attending any effort to obtain data as to exact working time in the coal mines. An approximation has therefore been used in calculating the fatality rates per million man hours as shown in this bulletin.

The method adopted for calculating the number of man-hours of exposure is as follows: Yearly reports from producing mines to the Federal Bureau of Mines show the average number of men employed, the number of full days or shifts the mines were in operation, and the number of hours constituting a standard day or shift. The reports showing the average number of employees are classified and tabulated under the supervision of F. G. Tryon of the bureau. The tabulations show the number of men employed at 8-hour mines, at 9-hour mines, at 10-hour mines, and at mines where the standard shift is on some other basis or not stated. In the last-named group the number of employees is small, and in Tables 34, 35, and 36 a shift of nine hours is assumed. The product of the average number of employees by the number of hours constituting a standard shift is accepted as indicating the approximate number of man-hours per day. The products thus obtained for the 8, 9, and 10 hour and miscellaneous groups are combined for each State, and the State total is multiplied by the average number of days of operation for all mines within the State. The resulting figure is used to show the number of man-hours of work or presence for all mines within the State during the year. This figure is admittedly not perfect, but it is probably the best approximation that can be obtained to indicate the number of man-hours of exposure for the coal-mining industry. The figure thus obtained is used for calculating the death rates per million man-hours as presented in Table 34. The number of man-hours of exposure as thus calculated is shown in Table 35 for bituminous and anthracite groups of mines for the years 1914 to 1926, inclusive. Table 36 shows the average number of employees at mines classified according to the number of hours constituting a standard shift during the years 1921 to 1926, inclusive.

TABLE 34.—Men employed, hours worked, and fatality rates at coal mines during the year ended December 31, 1926

State	Men employed	Average days worked	Total hours worked (all employees)		Fatalities	
			Per day	Per year	Total	Per million hours worked
1	2	3	4	5	6	7
Alabama.....	27,345	266	240,784	64,048,544	139	2.17
Alaska.....	131	221	1,056	233,376	1	4.28
Arkansas.....	3,589	135	28,882	3,899,070	7	1.80
California, Idaho, Arizona, and Oregon.....	92	103	768	79,104	-----	-----
Colorado.....	12,815	202	102,787	20,762,974	53	2.55
Georgia and North Carolina.....	282	274	2,256	618,144	3	4.85
Illinois.....	75,870	172	607,773	104,536,956	166	1.59
Indiana.....	23,404	173	187,383	32,417,259	78	2.41
Iowa.....	8,869	183	71,399	13,066,017	16	1.22
Kansas.....	8,172	158	66,416	10,493,728	17	1.62
Kentucky.....	60,578	230	490,887	112,904,010	178	1.58
Maryland.....	3,681	235	29,781	6,998,535	12	1.71
Michigan.....	1,573	171	12,584	2,151,864	1	.46
Missouri.....	5,270	174	42,666	7,423,884	9	1.21
Montana.....	2,419	162	19,542	3,165,804	5	1.58
New Mexico.....	3,167	251	25,353	6,363,603	13	2.04
North Dakota.....	1,288	162	10,901	1,765,962	1	.57
Ohio.....	38,547	159	310,209	49,323,231	80	1.62
Oklahoma.....	5,400	183	43,816	8,018,328	124	15.46
Pennsylvania (bituminous).....	155,999	224	1,252,695	280,603,680	420	1.50
South Dakota.....	52	127	468	59,436	-----	-----
Tennessee.....	7,948	234	64,167	15,015,078	50	3.33
Texas.....	1,650	195	14,178	2,764,710	-----	-----
Utah.....	3,545	186	28,397	5,281,842	20	3.79
Virginia.....	13,764	263	110,381	29,030,203	59	2.03
Washington.....	3,609	198	28,872	5,716,656	15	2.62
West Virginia.....	118,726	247	957,049	236,391,103	576	2.44
Wyoming.....	5,862	181	46,911	8,490,891	22	2.59
Total (bituminous).....	593,647	215	4,798,361	1,031,647,615	2,065	2.00
Pennsylvania (anthracite).....	165,386	244	1,323,088	322,833,472	453	1.40
Total ¹	759,033	221	6,121,449	1,352,840,229	2,518	1.86

¹ Totals in column 5 obtained by calculating averages for United States and not by adding corresponding figures for each State.

TABLE 35.—Men employed, hours worked, and fatality rates at bituminous and anthracite coal mines for the years ended December 31, 1914 to 1926

Year	Men employed	Average days worked	Total hours worked (all employees)		Fatalities	
			Per day	Per year	Total	Per million hours worked
1	2	3	4	5	6	7
1914:						
Bituminous.....	583, 506	195	5, 042, 006	982, 529, 145	1, 859	1. 89
Anthracite.....	179, 679	245	1, 617, 111	396, 192, 195	595	1. 50
Total.....	763, 185	207	6, 659, 117	1, 378, 437, 219	2, 454	1. 78
1915:						
Bituminous.....	557, 456	203	4, 819, 064	977, 467, 939	1, 683	1. 72
Anthracite.....	176, 552	230	1, 588, 968	365, 462, 640	586	1. 60
Total.....	734, 008	209	6, 408, 032	1, 339, 278, 688	2, 269	1. 69
1916:						
Bituminous.....	561, 102	230	4, 863, 068	1, 117, 387, 840	1, 671	1. 50
Anthracite.....	159, 869	253	1, 318, 919	333, 686, 507	555	1. 66
Total.....	720, 971	235	6, 181, 987	1, 452, 788, 095	2, 226	1. 53
1917:						
Bituminous.....	603, 143	243	5, 044, 949	1, 225, 922, 607	2, 114	1. 72
Anthracite.....	154, 174	285	1, 233, 392	351, 516, 720	582	1. 66
Total.....	757, 317	251	6, 278, 341	1, 575, 863, 591	2, 696	1. 71
1918:						
Bituminous.....	615, 305	249	5, 024, 015	1, 250, 979, 735	2, 029	1. 62
Anthracite.....	147, 121	293	1, 176, 968	344, 851, 624	551	1. 60
Total.....	762, 426	258	6, 200, 983	1, 599, 853, 614	2, 580	1. 61
1919:						
Bituminous.....	621, 998	195	5, 027, 331	980, 329, 545	1, 688	1. 72
Anthracite.....	154, 571	266	1, 236, 568	328, 927, 088	635	1. 93
Total.....	776, 569	209	6, 263, 899	1, 309, 154, 891	2, 323	1. 77
1920:						
Bituminous.....	639, 547	220	5, 148, 808	1, 132, 737, 760	1, 781	1. 57
Anthracite.....	145, 074	271	1, 160, 592	314, 520, 432	491	1. 56
Total.....	784, 621	230	6, 309, 400	1, 451, 162, 000	2, 272	1. 57
1921:						
Bituminous.....	663, 754	149	5, 346, 773	796, 669, 177	1, 448	1. 82
Anthracite.....	159, 499	271	1, 275, 992	345, 793, 832	547	1. 58
Total.....	823, 253	173	6, 622, 765	1, 145, 738, 345	1, 995	1. 74
1922:						
Bituminous.....	687, 958	142	5, 550, 728	788, 203, 376	1, 684	2. 14
Anthracite.....	156, 849	151	1, 254, 792	189, 473, 592	300	1. 58
Total.....	844, 807	144	6, 805, 520	979, 994, 880	1, 984	2. 02
1923:						
Bituminous.....	704, 793	179	5, 692, 358	1, 018, 932, 082	1, 953	1. 92
Anthracite.....	157, 743	268	1, 261, 944	338, 200, 992	509	1. 51
Total.....	862, 536	195	6, 954, 302	1, 356, 088, 890	2, 462	1. 82
1924:						
Bituminous.....	619, 604	171	5, 008, 858	856, 514, 718	1, 906	2. 23
Anthracite.....	160, 009	274	1, 280, 072	350, 739, 728	496	1. 41
Total.....	779, 613	192	6, 288, 930	1, 207, 474, 560	2, 402	1. 99
1925:						
Bituminous.....	588, 493	195	4, 760, 910	928, 377, 450	1, 834	1. 98
Anthracite.....	160, 312	182	1, 282, 496	233, 414, 272	400	1. 71
Total.....	748, 805	192	6, 043, 406	1, 160, 333, 952	2, 234	1. 93
1926:						
Bituminous.....	593, 647	215	4, 798, 361	1, 031, 647, 615	2, 065	2. 00
Anthracite.....	165, 386	244	1, 323, 088	322, 833, 472	453	1. 40
Total.....	759, 033	221	6, 121, 449	1, 352, 840, 229	2, 518	1. 86

NOTE.—Totals in column 5 are obtained by calculating averages for United States and not by adding.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 36.—Number of hours to the working day in and about the coal mines in the United States, by States, for the years 1921 to 1926

Year	8-hour day		9-hour day		10-hour day		Men employed other than 8, 9, or 10 hours per day ¹	Total number of men employed
	Number of mines	Men employed	Number of mines	Men employed	Number of mines	Men employed		
Alabama:								
1921	215	22,479	21	1,431	7	554	1,345	25,809
1922	140	13,192	70	10,646	23	2,724	1,607	28,169
1923	143	12,989	74	12,478	21	3,061	1,507	30,035
1924	112	9,209	83	14,390	28	4,017	340	27,956
1925	78	7,230	71	13,511	29	3,458	2,898	27,097
1926	94	7,756	84	16,143	23	2,435	1,011	27,345
Alaska:								
1921	2	150					251	401
1922	11	412					18	430
1923	8	181					18	199
1924	6	163					4	167
1925	6	140					17	157
1926	4	123					8	131
Arkansas:								
1921	76	3,613	1	3				3,616
1922	97	3,930	1	40	1	55	10	4,035
1923	87	3,551	1	40	3	153	10	3,754
1924	79	3,107	2	62	2	120	61	3,350
1925	81	3,274	1	50	4	261	53	3,638
1926	97	3,504			2	85		3,589
California, Idaho, Arizona, and Oregon:								
1921	3	138					3	141
1922	3	60						60
1923	5	93						93
1924	4	60					23	83
1925	4	38	1	4				42
1926	3	60					32	92
Colorado:								
1921	144	7,983	37	6,438			108	14,529
1922	180	13,187					319	13,506
1923	169	12,934	2	175			231	13,340
1924	159	12,434	3	290			230	12,954
1925	155	12,808	3	180			215	13,203
1926	148	12,548					267	12,815
Georgia and North Carolina:								
1921	2	196						196
1922	3	277						277
1923	3	297					20	317
1924	4	263						263
1925	3	277						277
1926	3	282						282
Illinois:								
1921	497	94,590	2	7			834	95,431
1922	477	95,338	3	22			976	96,336
1923	455	98,809			1	16	889	99,714
1924	396	88,950	2	13			400	89,363
1925	371	77,132	1	5			686	77,823
1926	339	75,057	1	5			808	75,870
Indiana:								
1921	256	32,578	2	27			82	32,687
1922	253	32,645	1	5			558	33,208
1923	264	35,116	1	2			290	35,408
1924	213	27,347	2	42			169	27,558
1925	177	22,588	2	28			116	22,732
1926	179	23,253	2	30			121	23,404
Iowa:								
1921	134	11,307			1	4	75	11,386
1922	132	12,744					113	12,857
1923	131	11,353					95	11,448
1924	179	11,617	1	6			478	12,101
1925	154	9,946					221	10,167
1926	123	8,422					447	8,869
Kansas:								
1921	130	8,109					98	8,207
1922	122	7,308					51	7,359
1923	209	9,697	1	5			59	9,761
1924	174	8,297					264	8,561
1925	135	7,088	1	8			704	7,800
1926	157	7,132	3	30			1,010	8,172

¹ Includes employees in mines where the established working day was changed during year, or where the working day was irregular, or which failed to answer the inquiry.

² Includes outside employees working 9 or 10 hours a day at certain mines where the established time for underground work is 8 hours.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 36.—Number of hours to the working day in and about the coal mines in the United States, by States, for the years 1921 to 1926—Continued

Year	8-hour day		9-hour day		10-hour day		Men employed other than 8, 9, or 10 hours per day	Total number of men employed
	Number of mines	Men employed	Number of mines	Men employed	Number of mines	Men employed		
Kentucky:								
1921	602	45,449	43	4,481	17	514	77	50,521
1922	760	54,782	59	4,755	24	653	734	60,924
1923	666	53,428	65	5,239	18	855	1,289	60,811
1924	543	² 49,022	50	5,372	21	963	409	55,766
1925	576	² 51,682	32	4,389	16	798	155	57,024
1926	554	54,803	43	5,041	10	488	246	60,578
Maryland:								
1921	82	4,644			1	6	18	4,668
1922	76	3,671			1	28	56	3,755
1923	94	3,646			1	26	53	3,725
1924	74	3,599	1	27			150	3,776
1925	71	3,508	1	26			46	3,580
1926	66	3,348	1	36			297	3,681
Michigan:								
1921	14	2,212						2,212
1922	12	2,142					24	2,166
1923	12	1,939					38	1,977
1924	9	1,551						1,551
1925	10	1,579						1,579
1926	9	1,573						1,573
Missouri:								
1921	148	8,272	6	201	1	27	55	8,555
1922	138	8,478	4	64			208	8,750
1923	129	6,744	2	61			147	6,952
1924	111	² 5,802	2	97	1	10	68	5,977
1925	100	4,480	5	124	1	17	493	5,114
1926	115	4,764	7	191			315	5,270
Montana:								
1921	47	4,154			1	3	21	4,178
1922	35	3,572					63	3,635
1923	32	3,445					66	3,511
1924	33	3,006			1	38	152	3,196
1925	32	2,541			1	69	70	2,680
1926	31	2,300			1	71	48	2,419
New Mexico:								
1921	37	4,548	1	20			9	4,577
1922	34	² 3,969	1	16			16	4,001
1923	35	4,072					23	4,095
1924	35	² 4,185					21	4,206
1925	28	² 3,272					172	3,444
1926	29	3,150					17	3,167
North Dakota:								
1921	41	939	1	9	4	49	67	1,064
1922	44	1,071			4	152	425	1,648
1923	52	1,218	3	40	3	92	271	1,621
1924	48	848	2	23	6	142	285	1,298
1925	56	870			7	136	301	1,307
1926	53	851	1	9	7	160	268	1,288
Ohio:								
1921	692	50,854	6	174	4	204	553	51,785
1922	796	52,777	11	179	10	717	521	54,194
1923	773	53,555	6	120	8	372	508	54,555
1924	572	43,010	12	131	8	522	566	44,229
1925	462	38,225	9	290	7	393	750	39,658
1926	466	37,261	7	136	9	547	603	38,547
Oklahoma:								
1921	124	8,697	2	67	2	80	10	8,854
1922	118	7,597	3	116	3	96	19	7,828
1923	107	6,873	4	183	2	70	4	7,130
1924	84	5,804	4	212	2	87	41	6,144
1925	90	5,198	4	272	3	146	15	5,631
1926	107	4,907	5	367	2	123	3	5,400
Pennsylvania (bituminous):								
1921	2,115	181,572	92	8,244	9	399	428	190,643
1922	2,551	² 182,403	83	4,218	15	580	1,637	188,838
1923	2,463	187,681	95	4,881	11	368	2,051	194,981
1924	1,862	163,162	78	4,836	11	404	920	169,322
1925	1,759	² 151,764	67	4,103	6	114	817	156,798
1926	1,746	151,421	62	3,393	3	125	1,060	155,999
South Dakota:								
1921							43	43
1922							32	32
1923							34	34
1924							40	40
1925							49	49
1926							52	52

² Includes outside employees working 9 or 10 hours a day at certain mines where the established time for underground work is 8 hours.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 36.—Number of hours to the working day in and about the coal mines in the United States, by States, for the years 1921 to 1926—Continued

Year	8-hour day		9-hour day		10-hour day		Men employed other than 8, 9, or 10 hours per day	Total number of men employed
	Number of mines	Men employed	Number of mines	Men employed	Number of mines	Men employed		
Tennessee:								
1921	139	9,977	3	354			16	10,347
1922	172	10,919	2	530				11,449
1923	175	10,624			5	548	72	11,244
1924	133	8,860	2	465			40	9,365
1925	102	7,417	2	262	1	248	387	8,314
1926	82	7,365	4	523			60	7,948
Texas:								
1921	14	1,571	16	723	5	545	53	2,892
1922	15	1,267	12	833	4	465	276	2,841
1923	15	885	17	695	5	454	418	2,452
1924	26	1,073	8	421	2	39	662	2,195
1925	15	839	13	501	1	222	546	2,108
1926	18	878	10	486	1	206	80	1,650
Utah:								
1921	33	4,412	1	6			4	4,422
1922	37	4,710	1	10			1	4,721
1923	35	4,375					6	4,381
1924	37	4,318					12	4,330
1925	41	4,441						4,441
1926	34	3,508					37	3,545
Virginia:								
1921	96	11,428	5	241	4	253		11,922
1922	153	² 13,028	6	253	3	67	51	13,399
1923	140	12,883	5	229	5	869	139	14,120
1924	105	² 12,431	3	121	3	113	14	12,679
1925	106	13,431	4	225	1	10	11	13,677
1926	106	13,495	1	72			197	13,764
Washington:								
1921	51	4,334						4,334
1922	47	4,481						4,481
1923	54	4,298					8	4,306
1924	55	3,841					17	3,858
1925	52	3,704					22	3,726
1926	51	3,609						3,609
West Virginia:								
1921	1,253	97,750	26	2,731	12	789	580	101,850
1922	1,528	104,047	46	³ 5,147	12	619	201	110,014
1923	1,542	110,599	48	4,972	17	1,146	583	117,300
1924	1,136	95,996	37	4,734	13	995	478	102,203
1925	1,088	² 102,134	51	7,485	13	423	147	110,189
1926	1,127	112,073	31	5,595	9	588	470	118,726
Wyoming:								
1921	63	8,484						8,484
1922	61	9,043					2	9,045
1923	61	7,524					5	7,529
1924	61	7,073					40	7,113
1925	55	6,216	1	2			20	6,238
1926	57	5,847					15	5,862
Total bituminous:								
1921	7,010	630,440	265	25,157	68	3,427	4,730	663,754
1922	7,995	647,050	303	26,834	100	6,156	7,918	687,958
1923	7,859	658,809	324	29,120	100	8,030	8,834	704,793
1924	6,250	575,028	292	31,242	98	7,450	5,884	619,604
1925	5,807	541,822	269	31,465	90	6,295	8,911	588,493
1926	5,798	549,290	262	32,057	67	4,828	7,472	593,647
Pennsylvania (anthracite):⁴								
1921		159,499						159,499
1922		156,849						156,849
1923		157,743						157,743
1924		160,009						160,009
1925		160,312						160,312
1926		165,386						165,386
Total, United States:								
1921		789,939		25,157		3,427	4,730	823,253
1922		803,899		26,834		6,156	7,918	844,807
1923		816,552		29,120		8,030	8,834	862,536
1924		735,037		31,242		7,450	5,884	779,613
1925		702,134		31,465		6,295	8,911	748,805
1926		714,676		32,057		4,828	7,472	759,033

² Includes outside employees working 9 or 10 hours a day at certain mines where the established time for underground work is 8 hours.

³ Includes 816 men working 8 hours prior to September.

⁴ Employees not segregated. Prior to May, 1916, operations were conducted on basis of a 9-hour day. Since then the 8-hour day is standard. Number of mines not given.

TABLE 37.—Fatalities, by causes, in bituminous coal mines for the years ended December 31, 1912 to 1927

Cause of accident	1912	1913	1914	1915	1916	1917	1918	1919
Falls of roof and coal.....	943	1,007	903	818	850	965	1,052	878
Underground haulage.....	292	339	304	267	326	424	440	309
Explosions of gas or coal dust:								
Ordinary disaster.....	39	24	44	35	48	68	62	68
Major disaster.....	216	440	261	235	135	251	41	81
Explosives.....	70	63	56	76	60	55	85	57
Electricity.....	75	79	86	85	81	76	77	64
Mining machines.....	7	20	19	11	20	18	17	26
Other causes underground.....	41	67	41	26	33	51	65	54
All causes underground.....	1,683	2,039	1,714	1,553	1,553	1,908	1,839	1,537
All shaft accidents.....	39	32	41	30	34	44	41	39
All accidents on surface.....	96	96	104	100	84	162	149	112
All accidents.....	1,818	2,167	1,859	1,683	1,671	2,114	2,029	1,688

Cause of accident	1920	1921	1922	1923	1924	1925	1926	1927
Falls of roof and coal.....	937	782	780	948	846	910	994	920
Underground haulage.....	342	271	283	340	296	305	381	300
Explosions of gas or coal dust:								
Ordinary disaster.....	77	46	29	44	42	58	46	39
Major disaster.....	47	16	269	286	444	244	327	148
Explosives.....	82	74	55	66	46	49	46	48
Electricity.....	70	76	71	70	72	80	94	94
Mining machines.....	36	17	21	22	30	35	26	27
Other causes underground.....	36	58	38	49	29	46	39	49
All causes underground.....	1,627	1,340	1,546	1,825	1,805	1,727	1,953	1,625
All shaft accidents.....	34	25	36	31	17	30	27	22
All accidents on surface.....	120	83	102	97	84	77	85	88
All accidents.....	1,781	1,448	1,684	1,953	1,906	1,834	2,065	1,735

TABLE 38.—Fatality rates, by causes, per million man-hours worked in bituminous coal mines for the years ended December 31, 1911 to 1926¹

Cause of accident	1911	1912	1913	1914	1915	1916	1917	1918
Falls or roof and coal.....	0.985	0.889	0.881	0.919	0.837	0.761	0.787	0.841
Underground haulage.....	.284	.275	.296	.309	.273	.292	.346	.352
Explosions of gas or coal dust:								
Ordinary disaster.....	.014	.037	.021	.045	.036	.043	.055	.049
Major disaster.....	.310	.204	.385	.266	.240	.121	.205	.033
Explosives.....	.071	.066	.055	.057	.078	.054	.045	.068
Electricity.....	.090	.071	.069	.087	.087	.072	.062	.061
Mining machines.....	.009	.006	.017	.019	.011	.018	.014	.014
Other causes underground.....	.038	.039	.059	.042	.027	.029	.042	.052
All causes underground.....	1.801	1.587	1.783	1.744	1.589	1.390	1.556	1.470
All shaft accidents.....	.030	.037	.028	.042	.031	.030	.036	.033
All accidents on surface.....	.084	.090	.084	.106	.102	.075	.132	.119
All accidents.....	1.915	1.714	1.895	1.892	1.722	1.495	1.724	1.622

Cause of accident	1919	1920	1921	1922	1923	1924	1925	1926
Falls of roof and coal.....	0.896	0.827	0.982	0.989	0.930	0.988	0.980	0.964
Underground haulage.....	.315	.302	.340	.359	.334	.345	.328	.369
Explosions of gas or coal dust:								
Ordinary disaster.....	.069	.068	.058	.037	.043	.049	.062	.045
Major disaster.....	.083	.041	.020	.341	.281	.518	.263	.317
Explosives.....	.058	.072	.093	.070	.065	.054	.053	.045
Electricity.....	.065	.062	.095	.090	.069	.084	.086	.091
Mining machines.....	.027	.032	.021	.027	.021	.035	.038	.025
Other causes underground.....	.055	.032	.073	.048	.048	.034	.050	.037
All causes underground.....	1.568	1.436	1.682	1.961	1.791	2.107	1.860	1.893
All shaft accidents.....	.040	.030	.031	.046	.031	.020	.032	.026
All accidents on surface.....	.114	.106	.104	.129	.095	.098	.083	.083
All accidents.....	1.722	1.572	1.817	2.136	1.917	2.225	1.975	2.002

¹ Based on total man-hours, underground and surface.

TABLE 39.—*Fatality rates, by causes, per million tons of bituminous coal produced, for the years ended December 31, 1912 to 1927*

Cause of accident	1912	1913	1914	1915	1916	1917	1918	1919
Falls of roof and coal.....	2.095	2.104	2.136	1.848	1.691	1.749	1.816	1.885
Underground haulage.....	.649	.708	.719	.603	.649	.768	.759	.663
Explosions of gas or coal dust:								
Ordinary disaster.....	.087	.050	.104	.079	.095	.123	.107	.146
Major disaster.....	.480	.920	.618	.531	.269	.455	.071	.174
Explosives.....	.155	.132	.133	.172	.119	.100	.147	.122
Electricity.....	.167	.165	.203	.192	.161	.138	.133	.137
Mining machines.....	.015	.042	.045	.025	.040	.033	.029	.056
Other causes underground.....	.091	.140	.097	.058	.066	.092	.112	.116
All causes underground.....	3.739	4.261	4.055	3.508	3.090	3.458	3.174	3.299
All shaft accidents.....	.087	.067	.097	.068	.068	.080	.071	.084
All accidents on surface.....	.213	.201	.246	.226	.167	.293	.257	.240
All accidents.....	4.039	4.529	4.398	3.802	3.325	3.831	3.502	3.623

Cause of accident	1920	1921	1922	1923	1924	1925	1926	1927 ¹
Falls of roof and coal.....	1.648	1.880	1.847	1.679	1.749	1.750	1.734	1.770
Underground haulage.....	.602	.652	.670	.602	.612	.587	.665	.577
Explosions of gas or coal dust:								
Ordinary disaster.....	.135	.111	.069	.078	.087	.112	.080	.075
Major disaster.....	.083	.038	.637	.507	.918	.469	.570	.285
Explosives.....	.144	.178	.130	.117	.095	.094	.080	.092
Electricity.....	.123	.133	.168	.124	.149	.154	.164	.181
Mining machines.....	.063	.041	.050	.039	.062	.067	.045	.052
Other causes underground.....	.063	.139	.090	.087	.060	.088	.068	.094
All causes underground.....	2.861	3.222	3.661	3.233	3.732	3.321	3.406	3.126
All shaft accidents.....	.060	.060	.085	.055	.035	.058	.047	.043
All accidents on surface.....	.211	.199	.242	.171	.174	.148	.149	.169
All accidents.....	3.132	3.481	3.988	3.459	3.941	3.527	3.602	3.338

¹ Rates based on a production of coal subject to revision.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 40.—Index numbers showing comparison of yearly fatality rates per million man hours worked in bituminous coal mines, with average rate for the 5-year period 1911–1915

[Average rate 1911–1915=index number 100]

Cause of accident	Number killed, 1911–1915	Rate, 1911–1915 ¹	1911	1912	1913	1914	1915	1916	1917
Falls of roof and coal.....	4,678	0.902	109	99	98	102	93	84	87
Underground haulage.....	1,492	.288	99	95	103	107	95	101	120
Explosions of gas or coal dust:									
Ordinary disaster.....	156	.030	47	123	70	150	120	143	183
Major disaster.....	1,469	.283	110	37	136	94	85	43	72
Explosives.....	337	.065	109	102	85	88	120	83	69
Electricity.....	417	.081	111	88	85	107	107	89	77
Mining machines.....	66	.013	69	46	131	146	85	138	108
Other causes underground.....	214	.041	93	95	144	102	66	71	102
All causes underground.....	8,829	1.703	106	93	105	102	93	82	91
All shaft accidents.....	173	.033	91	112	85	127	94	91	109
All accidents on surface.....	482	.093	90	97	90	114	110	81	142
All accidents.....	9,484	1.829	105	94	104	103	94	82	94

Cause of accident	1918	1919	1920	1921	1922	1923	1924	1925	1926
Falls of roof and coal.....	93	99	92	109	110	103	110	109	107
Underground haulage.....	122	109	105	118	125	116	120	114	128
Explosions of gas or coal dust:									
Ordinary disaster.....	163	230	227	193	123	143	163	207	150
Major disaster.....	12	29	14	7	120	99	183	93	112
Explosives.....	105	89	111	143	108	100	83	82	69
Electricity.....	75	80	77	117	111	85	104	106	112
Mining machines.....	108	208	246	162	208	162	260	292	192
Other causes underground.....	127	134	78	178	117	117	83	122	90
All causes underground.....	86	92	84	99	115	105	124	109	111
All shaft accidents.....	100	121	90	94	139	94	61	97	79
All accidents on surface.....	128	123	114	112	139	102	105	89	89
All accidents.....	89	94	86	99	117	105	122	108	109

¹ Figures in this column are based on 5,185,993,900 total man-hours worked underground and on the surface in 1911 to 1915, inclusive.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 41.—Index numbers, showing comparison of yearly fatality rates per million tons of coal produced in bituminous coal mines, with average rate for the 5-year period 1911–1915

[Average rate 1911–1915=index number 100]

Cause of accident	Number killed, 1911–1915	Rate, 1911–1915 ¹	Yearly fatality rates per million tons of coal produced						
			1911	1912	1913	1914	1915	1916	1917
Falls of roof and coal.....	4,678	2.126	117	99	99	100	87	80	82
Underground haulage.....	1,492	.678	105	96	104	106	89	96	113
Explosions of gas or coal dust:									
Ordinary disaster.....	156	.071	49	123	70	146	111	134	173
Major disaster.....	1,469	.668	117	72	138	93	79	40	68
Explosives.....	337	.153	116	101	86	87	112	78	65
Electricity.....	417	.190	119	88	87	107	101	85	73
Mining machines.....	66	.030	73	50	140	150	83	133	110
Other causes underground.....	214	.097	99	94	144	100	60	68	95
All causes underground.....	8,829	4.013	113	93	106	101	87	77	86
All shaft accidents.....	173	.079	96	110	85	123	86	86	101
All accidents on surface.....	482	.219	97	97	92	112	103	76	134
All accidents.....	9,484	4.311	112	94	105	102	88	77	89

Cause of accident	Yearly fatality rates per million tons of coal produced									
	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927
Falls of roof and coal.....	85	89	78	88	87	79	82	82	82	82
Underground haulage.....	112	98	89	96	99	89	90	87	98	98
Explosions of gas or coal dust:										
Ordinary disaster.....	151	206	190	156	97	110	123	158	113	113
Major disaster.....	11	26	12	6	95	76	137	70	85	85
Explosives.....	96	80	94	116	85	76	62	61	52	52
Electricity.....	70	72	65	96	88	65	78	81	86	86
Mining machines.....	97	187	210	137	167	130	207	223	150	150
Other causes underground.....	115	120	65	143	93	90	62	91	70	70
All causes underground.....	79	82	71	80	91	80	93	83	85	85
All shaft accidents.....	90	106	76	76	108	70	44	73	59	59
All accidents on surface.....	117	110	96	91	111	78	79	68	68	68
All accidents.....	81	84	73	81	93	80	91	82	84	84

¹ Rates in this column are based on 2,199,863,640 tons of bituminous coal mined.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 42.—Coal-mine fatality rates for the United States, 1870 to 1927¹

[Includes underground and surface accidents]

Year	Bituminous coal mines			Anthracite coal mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1870				5.93		13.47	5.93		13.47
1871				5.60		10.86	5.60		10.86
1872				4.98		9.20	4.98		9.20
1873				5.46		10.06	5.46		10.06
1874				4.33		9.31	3.87		9.26
1875				3.37		10.50	3.06		9.51
Average				4.58		9.94	4.30		9.72
1876				3.22		9.96	2.83		9.20
1877				2.90		7.56	2.77		7.28
1878				2.92		8.62	2.62		6.38
1879				3.81		8.67	3.30		6.82
1880				2.75		7.05	2.21		5.16
Average				3.12		8.31	2.72		6.68
1881				3.59	4.87	8.55	2.93		6.04
1882				3.54	4.87	8.29	2.75		5.72
1883				3.53	4.56	8.40	3.34		6.58
1884				3.28	5.12	8.94	2.80		6.17
1885				3.58	5.26	9.36	2.58		5.91
Average				3.50	4.94	8.72	2.85		6.09
1886				2.70	4.13	7.12	2.25		5.23
1887				2.95	4.25	7.46	2.20		4.86
1888				2.98	4.10	7.81	2.55		5.61
1889				3.11	4.81	8.45	2.36		5.22
1890	2.15	2.85	3.56	3.00	4.50	8.13	2.52	3.50	5.01
Average				2.96	4.36	7.82	2.39		5.19
1891	2.86	3.85	4.94	3.39	5.01	8.45	3.08	4.30	6.06
1892	3.05	4.18	5.06	3.24	4.91	7.97	3.12	4.42	5.98
1893	2.26	3.32	4.07	3.42	5.21	8.43	2.70	4.03	5.39
1894	2.26	3.96	4.65	3.38	5.34	8.57	2.67	4.50	5.91
1895	3.09	4.78	5.46	2.95	4.52	7.26	3.04	4.68	6.00
Average	2.69	4.02	4.84	3.27	4.99	8.12	2.91	4.38	5.87
1896	2.51	3.92	4.45	3.36	5.79	9.22	2.85	4.62	5.85
1897	2.38	3.64	3.99	2.82	5.64	8.04	2.55	4.27	5.08
1898	2.64	3.75	4.06	2.82	5.57	7.70	2.71	4.28	4.97
1899	3.05	3.91	4.25	3.30	5.72	7.63	3.14	4.40	5.08
1900	3.74	4.79	5.32	2.85	5.15	7.16	3.44	4.87	5.72
Average	2.90	4.06	4.46	3.03	5.58	7.94	2.95	4.50	5.34
1901	3.16	4.21	4.74	3.53	5.40	7.60	3.27	4.54	5.40
1902	3.93	5.13	5.58	2.03	5.25	7.25	3.38	5.15	5.81
1903	3.47	4.63	5.07	3.44	5.01	6.94	3.46	4.72	5.47
1904	3.35	4.98	5.26	3.82	5.73	8.13	3.48	5.17	5.88
1905	3.53	5.02	5.14	3.89	5.43	8.29	3.63	5.14	5.78
Average	3.49	4.81	5.17	3.36	5.38	7.69	3.45	4.95	5.67
1906	3.38	4.76	4.72	3.43	5.28	7.81	3.39	4.87	5.27
1907	4.99	6.40	6.46	4.23	5.77	8.27	4.81	6.25	6.78
1908	3.50	5.44	5.42	3.89	5.84	8.14	3.60	5.54	5.97
1909	4.15	5.58	5.46	3.40	4.79	6.99	3.96	5.35	5.73
1910	4.00	5.53	5.32	3.55	4.65	7.11	3.89	5.30	5.62
Average	4.01	5.57	5.50	3.70	5.25	7.67	3.94	5.48	5.89
1911	3.53	5.02	4.82	4.02	4.90	7.73	3.65	4.97	5.35
1912	3.31	4.46	4.04	3.45	4.48	7.12	3.35	4.46	4.53
1913	3.79	4.90	4.53	3.52	4.10	6.75	3.73	4.70	4.89
1914	3.19	4.90	4.40	3.31	4.05	6.55	3.22	4.66	4.78
1915	3.02	4.47	3.80	3.32	4.33	6.58	3.09	4.44	4.27
Average	3.37	4.75	4.31	3.52	4.37	6.95	3.40	4.65	4.76

¹ Prior to 1910 certain States did not maintain records of accidents. The above rates are based exclusively on tonnage and men employed in States for which accident records are available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 42.—Coal-mine fatality rates for the United States, 1870 to 1927—Contd.

Year	Bituminous coal mines			Anthracite coal mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1916.....	2.98	3.88	3.33	3.47	4.11	6.34	3.09	3.93	3.77
1917.....	3.50	4.33	3.83	3.77	3.98	5.84	3.56	4.25	4.14
1918.....	3.30	3.97	3.50	3.75	3.83	5.58	3.38	3.94	3.80
1919.....	2.71	4.16	3.62	4.11	4.64	7.21	2.99	4.28	4.19
1920.....	2.78	3.79	3.13	3.38	3.74	5.48	2.90	3.78	3.45
Average.....	3.05	4.03	3.48	3.70	4.06	6.07	3.18	4.03	3.86
1921.....	2.18	4.38	3.48	3.43	3.80	6.05	2.42	4.20	3.94
1922.....	2.45	5.16	3.99	1.91	3.81	5.49	2.35	4.90	4.16
1923.....	2.77	4.65	3.46	3.23	3.62	5.45	2.85	4.39	3.74
1924.....	3.08	5.39	3.94	3.10	3.39	5.64	3.08	4.80	4.20
1925.....	3.12	4.79	3.53	2.50	4.12	6.47	2.98	4.65	3.84
Average.....	2.70	4.87	3.67	2.83	3.71	5.80	2.73	4.58	3.96
1926.....	3.48	4.86	3.60	2.74	3.37	5.36	3.32	4.50	3.83
1927 ²	2.91	.....	3.34	3.05	.....	6.06	2.94	.....	3.70

² Subject to revision.

TABLE 43.—Accident rates in different branches of mineral industries in 1926, compared on a 300-day basis (length of shift not considered)

Branch of mineral industry	Average days active	Men employed		Man shifts	Killed	Injured	Number killed or injured per thousand 300-day workers	
		Actual number	Equivalent in 300-day workers (calculated)				Killed	Injured
Coal mines.....	221	759,033	559,426	167,827,732	2,518	(¹)	4.50	.....
All metal mines.....	291	127,823	123,870	37,160,978	430	30,350	3.47	245.01
Copper mines.....	321	32,723	35,040	10,511,974	121	10,102	3.45	288.30
Gold, silver, and miscellaneous metal mines.....	292	33,940	32,982	9,894,645	108	9,878	3.27	299.50
Iron mines.....	276	33,158	30,479	9,143,849	129	4,082	4.23	133.93
Lead and zinc mines (Mississippi Valley).....	265	14,479	12,771	3,831,191	39	3,885	3.05	304.20
Nonmetallic mineral mines.....	279	13,523	12,598	3,779,319	33	2,403	2.62	190.74
All quarries (including outside works).....	271	91,146	82,361	24,708,400	154	13,201	1.87	160.28
Cement rock quarries.....	319	22,996	24,427	7,328,157	37	2,094	1.51	85.72
Granite quarries.....	254	10,612	8,967	2,690,144	20	1,660	2.23	185.12
Limestone quarries.....	253	39,039	32,947	9,884,060	69	6,611	2.09	200.66
Marble quarries.....	297	5,457	5,400	1,620,023	9	782	1.67	144.81
Sandstone and bluestone quarries.....	236	4,918	3,872	1,161,530	4	626	1.03	161.67
Slate quarries.....	267	4,304	3,831	1,149,334	8	700	2.09	182.72
Traprock quarries.....	229	3,820	2,917	875,152	7	728	2.40	249.57
All quarries (excluding outside works).....	253	50,620	42,708	12,812,387	110	8,006	2.58	187.46
All quarries (outside works only).....	294	40,526	39,653	11,896,013	44	5,195	1.11	131.01
Metallurgical plants.....	341	57,726	65,687	19,706,098	48	7,279	.73	110.81
Ore-dressing plants.....	313	16,685	17,385	5,215,376	13	2,294	.75	131.95
Smelters.....	357	24,399	29,049	8,714,596	20	3,181	.69	109.50
Auxiliary works.....	347	16,642	19,253	5,776,126	15	1,804	.78	93.70
All coke ovens.....	315	23,115	24,288	7,286,605	51	1,922	2.10	79.13
Beehive coke ovens.....	220	6,605	4,847	1,454,243	6	645	1.24	133.07
By-product coke ovens.....	353	16,510	19,441	5,832,362	45	1,277	2.31	65.69
Total, 1926.....	242	1,058,843	855,632	256,689,813	3,201	52,752	3.74	178.09
Total, 1925.....	222	1,049,579	777,896	233,368,875	2,824	58,704	3.63	197.21

¹ Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 44.—United States: Production of coal during the years ended December 31, 1917 to 1926

[Net tons]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years
Alabama.....	20,068,074	19,184,962	15,536,721	16,224,999	12,568,899	18,324,740	20,457,649	19,130,184	20,004,395	21,000,962	182,570,685
Alaska.....	53,955	75,606	60,674	61,111	76,817	79,275	119,826	99,063	82,868	87,300	737,937,353
Arkansas.....	2,143,579	2,227,369	1,429,020	2,103,956	1,227,777	1,110,046	1,236,892	1,451,903	1,220,639	1,469,017	15,666,838
California, Idaho, Arizona, and Oregon.....	34,750	19,728	25,293	23,470	38,845	26,853	20,666	10,953	12,625	19,332	237,655
Colorado.....	12,483,356	12,407,571	10,823,420	12,278,225	9,122,760	10,019,587	10,346,218	10,444,098	10,310,551	10,637,223	108,373,191
Georgia and North Carolina.....	119,028	68,136	60,326	61,696	57,253	139,206	111,639	132,041	131,327	117,808	737,998,460
Illinois.....	86,199,387	89,291,105	60,862,008	88,724,833	69,642,763	58,462,736	79,310,075	68,323,281	66,904,359	69,366,323	737,058,130
Indiana.....	26,539,329	30,078,694	20,912,288	29,350,385	20,319,509	19,132,889	26,229,099	21,480,213	21,224,966	23,136,000	239,036,518
Iowa.....	8,965,830	8,192,195	5,624,652	7,513,916	4,581,392	4,335,161	5,710,735	5,408,450	4,14,843	4,623,487	38,652,191
Kansas.....	7,184,975	7,561,947	5,224,724	5,326,408	3,466,641	2,955,170	4,443,149	4,247,733	3,524,251	4,216,460	48,451,178
Kentucky.....	27,807,971	31,612,617	30,036,061	33,690,762	31,588,270	42,134,175	44,777,317	46,147,204	55,068,670	62,524,462	466,757,569
Maryland.....	4,745,924	4,497,297	3,021,656	4,065,239	1,827,740	1,222,707	2,255,526	2,133,703	2,634,572	3,078,363	28,973,147
Michigan.....	1,374,805	1,464,818	966,545	1,489,765	1,141,715	1,529,350	1,172,075	831,020	808,253	656,707	10,575,473
Missouri.....	5,670,549	5,667,730	3,979,798	5,369,565	3,551,621	2,924,750	3,406,151	2,480,800	2,694,213	3,008,465	38,730,694
Montana.....	4,226,689	4,552,505	3,236,369	4,413,506	2,733,968	2,572,221	3,147,678	2,506,365	3,043,686	2,797,760	33,510,697
New Mexico.....	4,000,527	4,023,259	3,138,756	3,653,440	2,453,452	3,147,173	2,915,173	2,786,063	2,566,851	2,817,923	31,922,627
North Dakota.....	750,548	719,733	840,959	948,625	864,503	1,327,664	1,385,400	1,200,527	1,324,620	1,872,486	954,139,165
Ohio.....	40,748,734	45,812,943	35,876,682	45,878,191	31,942,776	26,653,791	40,646,443	30,473,007	28,094,112	2,842,673	324,869,492
Oklahoma.....	4,386,844	4,813,447	3,802,113	4,849,288	3,362,623	2,802,511	2,855,038	2,323,615	2,323,840	2,842,673	24,869,492
Pennsylvania (bituminous).....	172,448,142	178,550,741	150,758,154	170,607,547	116,013,942	113,148,308	171,879,913	130,653,733	136,928,019	155,041,638	1,494,106,477
South Dakota.....	8,042	7,942	14,417	12,777	7,553	7,522	10,379	12,043	14,447	14,428	56,109,757
Tennessee.....	6,194,221	6,831,048	5,213,205	6,062,428	4,400,326	4,876,774	6,040,259	4,556,655	5,434,911	5,788,741	40,107,577
Texas.....	2,355,815	2,135,135	1,680,656	1,615,015	1,972,839	1,106,007	1,187,329	1,147,011	1,008,376	1,051,198	10,493,349
Utah.....	4,125,230	5,139,825	4,031,323	6,005,139	4,078,784	4,932,008	4,720,217	4,488,157	5,600,342	4,373,553	47,941,878
Virginia.....	10,087,091	10,289,808	9,326,580	11,278,000	7,452,378	10,491,174	11,761,643	10,633,494	12,639,443	15,153,368	108,453,893
Washington.....	4,009,902	4,082,212	2,990,447	3,757,033	2,428,722	2,381,165	2,526,352	2,653,097	2,537,450	2,566,608	30,555,068
West Virginia.....	86,441,667	89,935,839	79,036,553	89,970,707	72,786,936	80,488,182	107,899,541	101,062,897	122,350,610	143,509,340	974,113,091
Wyoming.....	8,575,619	9,438,688	7,219,738	9,630,271	7,200,666	5,971,724	7,575,031	6,468,468	6,568,232	6,512,288	75,439,745
Total (bituminous).....	551,790,593	579,385,820	465,860,058	568,068,243	415,921,950	422,268,039	564,564,662	483,686,538	520,032,741	573,366,938	5,145,564,090
Pennsylvania (anthracite).....	99,611,811	98,826,084	88,092,201	89,598,269	90,473,451	94,683,022	93,359,009	87,526,862	61,817,149	84,487,452	848,805,210
Total.....	651,402,374	678,211,904	553,952,259	658,264,332	506,395,401	476,951,121	657,103,671	571,613,400	581,869,870	657,804,437	5,994,369,389

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 45.—United States: Average number of days the coal mines were operated during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	273	278	239	247	166	215	232	220	246	266	238
Alaska.....	(1)	254	280	240	244	147	220	287	243	221	227
Arkansas.....	187	204	136	176	112	81	97	134	112	135	138
California, Idaho, Arizona, and Oregon.....	240	277	152	294	149	250	174	206	174	103	193
Colorado.....	263	255	225	255	164	191	174	178	192	202	210
Georgia and North Carolina.....	269	212	242	202	219	208	252	266	246	274	248
Illinois.....	243	238	160	213	152	120	158	148	161	172	175
Indiana.....	221	227	148	192	128	110	136	136	159	173	161
Iowa.....	251	245	176	250	148	131	181	161	153	168	190
Kansas.....	216	234	182	204	137	125	139	151	169	158	175
Kentucky.....	214	230	189	182	152	140	152	174	206	230	184
Maryland.....	254	261	179	207	120	101	178	173	209	235	196
Michigan.....	254	237	179	261	196	162	222	178	186	171	208
Missouri.....	240	235	175	233	166	113	155	135	166	174	184
Montana.....	268	264	164	250	143	140	179	173	171	162	199
New Mexico.....	321	301	273	302	150	216	216	204	202	251	242
North Dakota.....	210	223	216	218	182	175	182	165	153	162	190
Ohio.....	211	229	164	188	134	100	150	143	151	159	161
Oklahoma.....	211	228	184	217	141	114	133	124	153	183	171
Pennsylvania (bituminous).....	261	269	218	244	151	154	213	180	200	224	211
Pennsylvania (anthracite).....	154	145	164	133	129	138	122	138	143	127	139
South Dakota.....	241	265	201	234	154	163	183	159	211	234	204
Tennessee.....	263	262	227	242	139	185	160	166	150	195	210
Texas.....	219	259	239	252	151	151	160	182	179	186	202
Utah.....	273	277	247	264	166	198	212	226	254	263	237
Virginia.....	271	275	217	260	159	194	213	198	193	198	222
Washington.....	225	238	200	198	149	143	169	182	225	247	197
West Virginia.....	246	268	221	264	167	128	192	176	178	181	201
Wyoming.....	243	249	185	220	149	142	179	171	195	215	195
Total (bituminous).....	285	293	266	271	271	151	268	274	182	244	250
Pennsylvania (anthracite).....	251	258	209	230	173	144	195	192	192	221	206

1 Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 46. United States: Number of men employed underground during the years ended December 31, 1917 to 1927¹

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years	1927 ¹
Alabama.....	22,925	20,584	20,660	20,355	21,173	23,143	24,634	23,108	22,639	23,024	222,245	20,000
Alaska.....	(3)	170	103	105	183	262	297	100	91	79	1,214	64
Arizona.....	3,135	3,107	3,096	3,324	3,163	3,359	2,970	2,543	2,849	2,856	30,647	3,121
California, Idaho, Arizona and Oregon.....	88	35	106	64	83	45	69	56	29	72	1,666	10,250
Colorado.....	11,205	8,691	8,691	11,005	11,906	11,069	11,217	11,001	11,194	10,854	109,743	10,200
Georgia and North Carolina.....	75,085	75,013	75,013	76,993	85,500	86,296	89,004	80,757	70,344	68,288	782,649	63,000
Illinois.....	22,684	23,070	23,316	26,922	28,932	28,893	31,005	23,927	19,371	20,041	251,050	19,613
Indiana.....	12,672	11,773	10,373	10,727	10,412	11,846	10,506	11,059	9,337	8,192	107,428	1,250
Iowa.....	8,816	8,652	8,370	7,589	6,991	6,112	8,628	7,432	6,612	6,831	76,136	6,000
Kansas.....	28,162	30,323	33,550	40,036	41,733	50,390	50,457	46,567	48,039	51,664	422,907	50,000
Kentucky.....	4,606	3,377	4,422	4,690	3,942	3,290	3,174	3,229	3,127	3,207	38,030	3,600
Maryland.....	5,164	5,207	4,851	4,997	1,988	1,678	1,793	1,406	1,440	1,444	18,184	1,100
Michigan.....	7,244	7,244	7,244	6,865	6,971	7,218	5,552	4,717	3,901	4,102	61,885	4,800
Missouri.....	3,388	3,244	3,318	3,494	3,400	3,068	2,964	3,675	2,229	2,902	29,855	1,989
Montana.....	3,191	2,971	2,748	2,643	3,855	3,222	3,140	3,267	2,986	2,868	31,557	3,100
New Mexico.....	38,569	39,883	41,536	42,065	44,658	45,000	46,346	38,447	34,828	33,853	405,925	1,043
North Dakota.....	7,017	7,567	6,806	6,872	7,495	6,294	6,033	5,064	4,608	4,268	61,967	4,395
Oklahoma.....	143,687	140,502	143,538	143,878	164,223	159,551	166,558	147,085	137,463	133,059	1,482,385	137,500
Pennsylvania (bituminous).....	34	8,121	8,276	9,227	8,501	9,32	9,321	7,962	7,055	6,750	83,800	7,250
South Dakota.....	8,053	3,135	3,018	2,573	2,508	2,533	2,134	1,882	1,793	1,414	25,021	1,600
Tennessee.....	3,683	3,391	3,063	3,553	3,508	2,635	2,442	3,392	3,606	2,943	32,401	2,892
Texas.....	2,569	3,063	2,709	3,553	3,807	10,829	11,651	10,386	11,263	11,567	102,050	14,000
Utah.....	8,607	8,783	9,471	10,533	9,486	9,004	3,600	3,174	2,973	2,860	33,224	2,639
Virginia.....	4,072	3,836	3,801	3,806	3,486	3,004	3,600	85,547	92,358	99,052	846,751	126,000
West Virginia.....	69,147	69,047	74,350	82,892	84,732	90,814	97,883	85,547	82,358	84,952	846,751	126,000
Wyoming.....	6,024	5,932	5,815	6,332	7,020	9,643	6,223	6,057	5,311	4,903	61,260	5,300
Total (bituminous).....	498,185	496,232	508,801	529,812	567,289	582,409	600,305	551,904	506,541	510,824	5,332,322	511,408
Pennsylvania (anthracite).....	109,989	101,971	107,829	101,023	116,817	114,279	114,721	119,363	120,568	126,231	1,132,491	126,600
Total.....	608,174	597,923	616,630	630,835	684,106	696,688	715,026	651,267	627,109	637,055	6,464,813	632,008

¹ Figures for 1927 estimated.

² Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 47.—United States: Number of men employed on the surface during the years ended December 31, 1917 to 1927¹

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years	1927 ²
Alabama.....	5,461	5,637	6,214	5,185	4,636	5,026	5,401	4,848	4,458	4,321	51,187	4,325
Alaska.....	(²)	69	63	102	218	168	78	67	66	52	883	44
Arkansas.....	863	871	718	612	453	676	784	807	789	733	7,306	679
California, Idaho, Arizona, and Oregon.....	33	20	38	31	58	15	24	27	13	20	279	20
Colorado.....	2,946	3,163	2,898	2,706	2,623	2,437	2,162	1,953	2,009	1,952	24,882	2,003
Georgia and North Carolina.....	2,76	70	72	61	66	91	100	96	98	152	94,047	7,000
Illinois.....	9,005	10,695	10,007	10,091	9,922	10,040	10,620	8,606	7,479	7,582	94,047	7,000
Indiana.....	3,864	6,397	4,671	4,233	3,755	4,315	4,403	3,631	3,361	3,363	41,993	2,179
Iowa.....	1,594	1,554	1,493	1,148	974	1,011	4,042	1,042	830	677	11,265	2,396
Kansas.....	1,804	2,013	1,753	1,395	1,216	947	1,133	1,188	1,188	1,341	13,979	1,150
Kentucky.....	6,764	9,019	10,068	9,416	8,788	10,528	10,354	9,159	8,985	8,914	92,035	11,000
Louisiana.....	1,223	1,191	1,072	918	726	529	551	547	453	474	7,584	500
Marvland.....	252	351	253	227	244	192	184	145	139	129	2,116	150
Michigan.....	1,988	1,946	2,079	1,973	1,584	1,532	1,400	1,260	1,213	1,168	16,143	675
Minnesota.....	811	1,212	805	780	718	537	547	521	451	417	6,799	261
Montana.....	935	1,226	827	798	722	779	548	959	458	507	7,637	800
New Mexico.....	202	226	314	357	280	512	481	441	439	430	3,691	883
North Dakota.....	6,940	8,557	8,288	8,795	7,087	8,288	8,209	5,782	4,832	4,695	71,483	3,400
Ohio.....	1,478	1,394	1,452	1,366	1,429	1,204	1,100	1,080	1,023	1,132	12,658	3,094
Oklahoma.....	30,281	33,804	30,712	30,094	26,421	29,387	28,413	22,237	19,336	20,040	270,725	19,300
Pennsylvania (bituminous).....	2,368	2,496	2,547	2,377	1,786	1,916	1,759	1,403	1,259	1,198	18,858	1,535
South Dakota.....	692	545	626	377	294	306	318	313	315	236	4,022	310
Tennessee.....	916	1,095	1,148	945	931	1,062	939	938	835	602	9,441	975
Texas.....	2,561	2,216	2,115	3,457	2,115	2,542	2,469	2,293	2,414	2,197	24,379	3,000
Utah.....	1,240	1,273	1,235	1,028	848	877	846	684	751	749	9,531	701
Virginia.....	19,267	20,483	20,555	20,057	17,098	19,200	19,417	16,656	17,831	18,774	189,138	20,000
West Virginia.....	1,334	1,622	1,471	1,447	1,464	1,402	1,306	1,056	927	950	12,988	1,100
Wyoming.....	104,958	119,053	113,197	109,735	96,465	105,549	104,488	87,700	81,952	82,823	1,005,920	85,510
Total (bituminous).....	44,185	45,450	46,742	44,051	42,682	42,570	43,022	40,646	39,744	39,155	428,247	39,700
Pennsylvania (anthracite).....	149,143	164,503	159,939	153,786	139,147	148,119	147,510	128,346	121,696	121,978	1,434,167	125,210

¹ Figures for 1927 estimated.² Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 48.—United States: Number of men employed underground and on the surface during the years ended December 31, 1917 to 1927¹

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years	1927 ¹
Alabama.....	28,386	28,221	26,874	25,540	25,809	28,169	30,085	27,956	27,097	27,345	273,432	24,325
Alaska.....	(²)	3,259	106	207	401	430	199	107	187	351	2,047	108
Arizona.....	3,998	3,978	3,814	3,966	3,016	4,035	3,754	3,360	3,688	3,569	37,738	3,800
California, Idaho, Arizona, and Oregon.....	14,231	14,483	11,529	13,711	14,529	13,506	13,340	12,984	13,205	12,842	134,001	12,253
Georgia and North Carolina.....	84,281	85,045	85,040	87,094	95,431	98,336	99,714	89,563	77,523	75,870	876,096	70,000
Illinois.....	20,528	19,376	26,857	31,135	32,987	33,295	35,408	27,598	22,732	23,869	293,043	21,732
Indiana.....	14,266	13,825	12,866	11,995	11,389	12,357	11,448	12,101	10,807	8,872	105,095	7,046
Iowa.....	10,080	9,342	9,226	8,954	8,507	6,339	9,711	5,701	5,000	6,172	100,145	7,100
Kansas.....	34,326	30,342	45,598	49,452	50,583	60,339	60,511	55,766	57,024	69,572	514,142	61,000
Kentucky.....	3,919	2,538	5,394	5,045	5,298	5,724	6,511	5,776	5,550	5,693	51,000	4,250
Maryland.....	2,406	2,558	3,145	3,045	3,298	3,196	3,725	3,776	3,550	3,673	35,000	1,250
Michigan.....	4,068	4,509	4,114	5,398	2,522	2,766	1,877	1,557	1,179	1,573	20,000	1,450
Missouri.....	4,139	4,559	4,173	3,938	5,178	3,635	6,892	3,071	5,174	2,710	78,000	5,475
Montana.....	4,149	4,095	3,425	3,704	4,177	3,685	3,011	3,104	5,634	3,419	35,000	2,600
New Mexico.....	4,201	4,095	3,475	3,719	4,074	3,635	3,011	3,208	2,444	2,147	39,054	3,600
North Dakota.....	45,821	48,928	1,072	3,710	1,021	1,043	4,095	1,208	3,307	1,288	12,056	1,000
Ohio.....	45,509	48,430	49,324	50,837	51,784	44,943	54,555	44,228	39,386	38,527	477,005	30,000
Oklahoma.....	8,489	8,404	5,458	5,847	5,784	4,894	6,142	6,142	6,036	5,400	74,325	3,800
Pennsylvania (bituminous).....	173,968	174,303	174,550	173,977	190,043	183,838	194,961	169,322	156,798	155,909	1,756,375	156,000
South Dakota.....	84	10,624	6	6	10,347	13,448	11,944	9,265	44	7,948	102,858	8,765
Tennessee.....	10,421	10,694	11,523	11,355	10,347	11,449	11,944	9,265	8,336	7,048	102,858	8,765
Texas.....	4,375	3,931	3,544	2,850	2,892	2,892	2,452	2,105	2,406	1,650	26,943	1,000
Utah.....	3,483	4,760	3,544	4,504	4,922	2,731	2,452	2,105	2,406	1,650	26,943	1,000
Virginia.....	1,108	1,004	1,086	1,004	1,022	3,721	14,300	12,670	13,677	13,764	127,229	17,000
Washington.....	3,312	5,039	3,036	14,094	11,922	13,389	14,300	12,670	13,677	13,764	127,229	17,000
West Virginia.....	89,422	89,509	94,103	102,890	101,830	116,014	117,800	102,208	110,159	118,726	1,035,589	140,000
Wyoming.....	7,358	7,554	7,289	7,779	8,484	9,045	7,929	7,113	6,238	5,862	74,248	6,400
Total (bituminous).....	603,143	615,305	621,098	630,547	663,754	687,958	704,703	619,804	588,493	593,647	6,338,342	596,018
Pennsylvania (anthracite).....	184,174	147,121	134,571	145,074	158,469	156,840	157,743	160,009	160,312	165,386	1,560,738	160,300
Total.....	787,317	762,426	756,669	784,621	823,253	844,807	862,556	779,813	748,805	759,033	7,898,980	757,218

² Not available.

¹ Figures for 1927 estimated.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 49.—United States: Number of 300-day workers employed underground during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years
Alabama.....	20,839	19,092	16,436	16,734	11,740	16,585	19,058	16,931	18,563	20,421	176,399
Alaska.....	(1)	144	96	84	149	128	89	96	74	58	1,918
Arkansas.....	1,955	2,109	1,401	1,966	1,185	911	963	1,134	1,066	1,288	13,978
California, Idaho, Arizona, and Oregon.....	71	32	56	62	41	38	47	29	17	25	418
Colorado.....	9,895	9,640	6,707	9,357	6,493	7,060	6,457	6,538	7,150	7,315	76,631
Georgia and North Carolina.....	184	120	117	134	95	129	182	148	147	119	1,375
Illinois.....	60,761	59,610	39,916	54,704	43,234	34,451	46,977	39,910	37,817	39,169	456,549
Indiana.....	16,689	18,164	12,486	17,266	12,317	10,603	14,012	10,817	10,236	11,533	134,153
Iowa.....	10,613	9,607	5,368	8,956	5,122	5,155	6,336	5,948	4,773	5,001	67,879
Kansas.....	6,341	6,736	4,960	5,160	3,202	2,664	3,990	3,736	3,720	3,588	44,097
Kentucky.....	20,086	23,220	22,357	24,291	21,145	23,542	25,573	26,937	33,022	39,588	259,761
Maryland.....	3,978	3,807	2,636	3,200	1,573	1,086	1,862	1,862	2,174	2,515	24,711
Michigan.....	1,825	1,744	1,102	1,678	1,287	1,065	1,326	1,836	894	823	12,580
Missouri.....	6,138	5,977	4,227	5,330	3,848	2,724	2,875	2,121	2,157	2,385	37,782
Montana.....	2,977	2,942	2,149	2,857	1,645	1,447	1,772	1,542	1,271	1,082	19,684
New Mexico.....	3,418	2,982	2,655	2,956	1,922	2,323	2,555	2,217	2,008	2,227	25,263
North Dakota.....	527	459	545	547	502	661	691	470	444	464	5,310
Ohio.....	27,052	29,006	22,551	26,338	19,912	15,264	23,107	18,334	17,554	17,897	217,615
Oklahoma.....	4,943	5,369	4,297	4,978	3,479	2,519	2,678	2,100	2,350	2,599	35,312
Pennsylvania (bituminous).....	125,154	126,144	104,308	117,194	82,724	81,657	118,047	88,492	91,795	101,703	1,037,176
South Dakota.....	17	10	23	16	18	15	14	18	23	22	222
Tennessee.....	6,466	7,240	6,015	7,200	4,382	5,180	5,782	4,233	4,954	5,275	56,725
Texas.....	3,229	2,957	2,282	2,078	1,205	1,564	1,265	1,039	895	919	17,433
Utah.....	1,877	2,649	2,162	2,987	1,761	2,466	1,830	2,056	2,153	1,821	21,762
Virginia.....	7,824	8,108	7,796	9,281	5,427	7,154	8,241	7,835	9,517	10,125	81,308
Washington.....	3,680	3,510	2,753	3,437	1,847	2,335	2,460	2,137	1,917	1,885	25,961
West Virginia.....	51,850	54,700	49,605	54,818	42,193	43,256	55,184	51,796	63,193	82,249	554,844
Wyoming.....	4,945	5,301	4,281	5,570	3,908	3,256	3,984	3,546	3,154	2,954	40,899
Total (bituminous) ²	403,353	412,258	331,539	389,431	282,638	276,211	357,704	303,507	329,831	365,750	3,452,222
Pennsylvania (anthracite).....	104,396	99,385	95,514	91,357	105,340	57,404	102,312	109,172	72,976	102,561	940,417
Total ²	509,677	513,655	430,542	480,788	394,324	334,038	464,765	417,599	402,181	469,525	4,417,094

² Totals are obtained by calculating averages for United States and not by adding.¹ Not available.

TABLE 50.—United States: Number of 300-day workers employed on the surface during the years ended December 31, 1917 to 1928

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years
Alabama.....	4,964	5,229	4,944	4,263	2,571	3,602	4,178	3,552	3,655	3,832	40,790
Alaska.....	(1)	59	59	81	177	82	57	64	53	38	670
Arkansas.....	538	591	325	359	170	182	254	360	295	337	3,406
California, Idaho, Arizona, and Oregon.....	26	19	17	31	29	12	14	14	7		3,179
Colorado.....	2,583	2,694	2,176	2,301	1,430	1,555	1,951	1,161	1,285	1,322	17,734
Georgia and North Carolina.....	68	50	58	59	48	63	84	85	80		55,500
Illinois.....	7,287	8,470	5,825	7,170	5,017	4,008	5,900	4,253	4,021	4,349	55,500
Indiana.....	2,845	4,846	2,304	2,714	1,598	1,583	1,900	1,641	1,776	1,940	23,237
Iowa.....	1,341	1,268	2,874	956	1,470	1,440	1,568	560	424	413	7,317
Kansas.....	1,341	1,064	1,064	948	557	394	524	568	669	704	8,336
Kentucky.....	4,824	6,906	6,335	5,713	4,453	4,918	5,248	5,231	6,117	6,830	56,725
Maryland.....	1,036	1,036	6,580	6,635	2,900	1,75	5,326	3,15	3,15	372	9,083
Michigan.....	1,213	277	150	198	104	175	136	86	87	71	9,485
Missouri.....	1,589	1,522	1,215	1,532	1,60	1,08	725	567	671	673	9,952
Montana.....	1,24	1,065	521	651	341	251	327	300	257	223	2,662
New Mexico.....	1,002	1,128	753	802	360	561	395	637	308	424	6,370
North Dakota.....	1,172	226	226	280	187	298	292	242	224	222	5,305
Ohio.....	4,868	6,359	4,521	5,507	3,157	2,756	4,093	2,757	2,456	2,482	32,636
Oklahoma.....	1,041	1,061	4,802	5,989	670	458	4,488	448	522	680	27,258
Pennsylvania (bituminous).....	26,375	30,349	22,272	24,513	13,309	15,049	20,136	13,379	12,913	14,991	198,286
South Dakota.....	1,901	2,205	1,708	1,659	914	1,041	1,072	746	884	935	13,065
Tennessee.....	1,607	473	1,473	1,659	136	180	186	173	157	153	2,856
Texas.....	669	947	916	793	470	742	499	569	498	272	6,475
Utah.....	2,328	2,045	1,741	3,040	1,171	1,675	1,747	1,730	2,040	1,923	6,445
Virginia.....	1,121	1,165	891	891	449	568	607	480	484	404	17,128
Washington.....	14,446	16,227	13,581	13,264	8,512	9,145	10,947	10,085	13,359	15,449	123,015
West Virginia.....	1,095	1,449	1,083	1,273	815	597	836	618	590	372	8,894
Wyoming.....											
Total (bituminous) ²	84,979	98,902	73,760	80,659	48,062	50,957	62,961	50,042	53,364	59,378	661,388
Pennsylvania (anthracite).....	41,938	44,428	41,404	39,836	38,489	21,384	38,369	37,175	24,056	31,813	358,892
Total ²	124,989	141,318	111,675	120,495	80,205	71,018	95,881	82,297	78,046	89,901	995,825

² Totals are obtained by calculating averages for United States, and not by adding.

¹ Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 51.—United States: Number of 300-day workers employed underground and on the surface during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years
Alabama.....	25,803	24,321	21,380	20,997	14,311	20,187	23,236	20,483	22,218	24,253	217,588
Alaska.....	(1)	2,703	1,155	20,165	14,326	210	1,146	1,160	1,127	46	7,588
Arkansas.....	2,493	2,700	1,726	2,325	1,355	1,094	1,217	1,494	1,361	1,834	17,897
California, Idaho, Arizona, and Oregon.....	97	51	73	93	70	50	64	43	24	32	17,897
Colorado.....	12,478	12,334	8,882	11,658	7,923	8,615	7,718	7,609	8,445	8,258	94,389
Georgia and North Carolina.....	252	170	175	193	143	192	266	233	227	209	2,109
Illinois.....	68,048	68,080	45,241	61,874	48,251	38,459	52,577	44,163	41,838	43,549	512,049
Indiana.....	19,534	23,010	14,790	19,980	13,915	12,186	16,002	12,438	12,012	13,503	157,900
Iowa.....	11,948	10,875	7,242	9,912	5,601	5,595	6,904	6,508	5,197	5,414	57,196
Kansas.....	7,682	8,303	6,024	6,108	3,759	3,038	4,514	4,304	4,389	4,292	45,433
Kentucky.....	24,910	30,126	28,692	30,004	25,598	28,460	30,821	32,258	39,190	46,415	316,486
Maryland.....	5,014	4,843	3,216	3,835	1,863	1,264	2,206	2,177	2,489	2,887	29,704
Michigan.....	2,038	2,021	1,252	1,876	1,447	1,462	1,462	2,688	2,828	3,064	17,734
Missouri.....	7,727	7,469	5,442	6,862	4,722	3,302	3,600	2,930	1,528	1,307	24,346
Montana.....	3,701	4,907	2,670	3,508	1,986	1,698	2,030	1,842	1,528	1,307	14,734
New Mexico.....	4,430	4,110	3,408	3,758	2,282	2,884	2,950	2,854	2,316	2,651	31,633
North Dakota.....	689	631	771	807	689	959	983	2,712	668	696	4,613
Ohio.....	31,920	35,965	27,072	31,845	23,069	18,020	27,200	21,091	19,990	20,379	255,510
Oklahoma.....	5,984	6,430	5,189	5,967	4,149	2,977	3,166	2,548	2,872	3,288	42,570
Pennsylvania (bituminous).....	151,529	156,493	126,580	141,707	96,033	96,706	138,183	101,871	104,708	116,694	1,220,504
South Dakota.....	17	10	25	21	18	15	14	18	23	22	183
Tennessee.....	8,367	9,445	7,726	8,859	5,296	6,221	6,854	4,979	5,838	6,202	69,790
Texas.....	3,836	3,432	2,755	2,382	1,341	1,753	1,454	1,212	1,052	1,072	20,280
Utah.....	2,546	3,896	3,078	3,780	2,231	3,208	2,625	2,625	2,651	2,193	28,277
Virginia.....	10,152	10,153	9,537	12,321	6,598	8,829	9,988	9,565	11,557	12,045	109,748
Washington.....	4,801	4,675	3,648	4,321	2,296	2,903	3,061	2,597	2,401	2,370	28,086
West Virginia.....	66,296	70,927	63,186	68,082	50,705	52,401	66,131	61,881	82,532	97,698	673,859
Wyoming.....	6,040	6,750	5,364	6,843	4,723	3,853	4,820	4,164	3,704	3,532	48,798
Total (bituminous).....	488,332	511,160	405,299	470,090	330,700	326,268	419,965	373,549	383,195	425,610	4,113,610
Pennsylvania (anthracite).....	146,334	143,813	136,918	131,193	143,829	78,788	140,681	146,347	97,032	134,374	1,299,309
Total.....	634,666	654,973	542,217	601,283	474,529	405,056	560,646	499,896	480,227	559,926	5,412,919

1 Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 52.—United States: Number of days of labor performed underground during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years
Alabama.....	6,251,775	5,727,715	4,680,942	5,020,896	3,522,138	4,975,466	5,717,423	5,079,298	5,568,734	6,126,171	52,920,008
Alaska.....	(1)	43,245	28,870	23,163	44,581	38,451	36,655	28,655	22,102	17,425	87,157
Arkansas.....	586,506	632,784	420,292	589,830	335,504	273,240	288,810	340,312	319,640	386,569	4,190,457
California, Idaho, Arizona, and Oregon.....	21,210	9,687	16,657	18,640	12,382	11,240	14,208	8,757	5,043	7,439	125,957
Colorado.....	2,908,579	2,692,139	2,011,770	2,807,098	1,947,804	2,118,028	1,940,219	1,901,594	2,147,904	2,191,620	22,680,825
Georgia and North Carolina.....	35,182	36,089	35,155	28,446	28,446	38,607	44,659	1,901,382	44,097	35,670	22,412,376
Illinois.....	18,228,152	17,852,923	11,974,914	16,411,423	12,970,255	10,333,290	14,008,215	11,973,012	11,345,202	11,750,611	136,964,963
Indiana.....	3,006,656	3,449,389	3,745,735	5,179,083	3,698,033	3,180,796	4,208,605	3,243,176	3,070,805	3,468,837	40,243,675
Iowa.....	3,183,793	2,882,247	1,910,381	2,989,729	1,536,566	1,546,547	1,900,698	1,791,274	1,431,693	1,506,180	20,563,340
Kansas.....	1,902,373	2,020,814	1,487,913	1,947,959	960,546	7,799,210	7,577,430	1,791,430	1,106,072	1,076,305	13,228,240
Kentucky.....	6,025,626	6,965,896	6,707,035	7,287,200	6,343,481	7,062,683	7,671,468	8,081,107	9,906,732	11,876,389	77,423,127
Maryland.....	1,193,408	1,142,237	790,945	900,163	471,971	323,792	868,492	595,011	632,206	747,846	7,713,846
Michigan.....	547,422	523,023	330,552	505,451	386,122	319,488	397,076	258,787	298,204	245,035	3,773,857
Minnesota.....	1,841,429	1,793,095	1,268,267	1,938,932	1,134,228	817,096	852,490	656,415	643,494	715,494	11,534,888
Missouri.....	893,108	882,575	644,588	857,217	493,526	434,139	551,006	624,315	331,185	327,459	5,004,888
Montana.....	1,025,544	894,554	796,560	886,705	576,610	696,839	706,476	664,946	192,308	647,068	7,505,810
New Mexico.....	1,058,100	137,660	163,004	164,180	150,608	198,322	207,514	441,153	133,075	130,082	1,506,348
North Dakota.....	8,115,671	8,881,614	6,765,175	7,901,374	5,973,523	4,579,350	6,382,670	5,300,152	5,206,355	5,366,115	63,984,379
Ohio.....	1,482,779	1,610,722	1,289,207	1,493,492	1,043,699	753,800	806,237	5,300,152	5,706,355	5,730,696	10,463,844
Oklahoma.....	37,546,106	37,842,966	31,252,434	35,158,307	24,817,222	24,496,900	35,414,195	26,547,668	27,585,012	30,510,903	10,463,844
Pennsylvania (bituminous).....	3,043	7,052	4,965	4,965	3,547	4,420	4,137	6,519	6,093	6,093	61,557,479
South Dakota.....	1,939,632	2,172,124	1,805,387	2,160,048	1,314,490	1,554,052	1,734,454	1,299,835	1,486,213	1,587,692	17,017,317
Tennessee.....	908,856	887,102	684,540	623,384	361,528	469,377	373,672	1,299,835	308,742	275,490	6,920,008
Texas.....	563,066	794,815	648,537	893,992	328,260	739,809	949,024	3,111,639	308,742	546,260	6,520,008
Utah.....	2,347,262	2,432,569	2,338,905	2,781,182	1,628,136	2,146,125	2,472,359	2,350,528	2,855,208	3,037,420	24,302,503
Virginia.....	1,104,039	1,033,041	825,913	1,031,085	354,022	700,306	577,847	1,539,801	2,173,283	2,565,621	24,302,503
Washington.....	15,555,002	16,409,989	14,881,544	16,445,377	12,657,950	12,976,871	16,585,157	15,538,867	20,737,483	24,674,706	166,453,488
West Virginia.....	1,483,494	1,590,201	1,284,242	1,670,923	1,172,448	976,680	1,196,192	1,068,868	946,185	886,209	12,266,491
Wyoming.....	121,005,863	123,677,284	99,461,615	116,529,366	84,791,463	82,863,166	107,311,185	91,021,188	98,949,498	109,725,052	1,035,666,561
Total (bituminous) 2.....	31,318,796	29,815,515	28,654,124	27,407,124	31,602,172	17,221,380	30,698,619	32,751,487	21,892,822	30,768,347	282,123,263
Pennsylvania (anthracite).....	152,903,042	154,096,435	129,162,535	144,236,367	118,297,091	100,211,422	139,429,422	128,279,912	120,654,263	140,857,480	1,325,127,969

1 Not available. 2 Totals are obtained by calculating averages for United States, and not by adding.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 53.—United States: Number of days of labor performed on the surface during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years
Alabama	1,489,242	1,568,552	1,483,124	1,278,838	771,205	1,080,530	1,253,544	1,065,609	1,086,577	1,149,722	12,236,943
Alaska	(1)	17,553	17,658	24,444	53,107	24,675	17,170	19,199	16,030	11,470	201,306
Arkansas	161,453	177,391	97,469	107,625	50,915	54,990	76,238	107,995	88,522	99,211	1,201,809
California, Idaho, Arizona, and Oregon	7,808	5,573	5,245	9,265	8,652	3,746	4,940	4,222	2,260	2,066	53,777
Colorado	774,960	808,118	652,791	690,232	429,132	406,314	375,269	348,241	385,480	396,504	3,927,041
Georgia and North Carolina	20,458	14,865	17,457	17,842	14,442	18,888	25,188	25,513	24,143	41,717	5,220,513
Illinois	2,186,117	2,540,957	1,597,470	2,150,944	1,504,998	1,202,438	1,679,910	1,275,923	1,202,189	1,304,666	16,649,622
Indiana	853,589	3,800,496	2,621,331	814,412	479,568	475,027	596,951	492,466	532,792	582,090	6,971,789
Iowa	400,486	380,416	319,144	286,731	143,739	131,990	170,419	168,120	127,296	123,977	2,195,483
Kansas	402,225	470,168	319,144	284,544	167,075	118,037	157,202	170,280	200,532	211,290	2,500,497
Kentucky	1,447,246	2,071,863	1,900,556	1,713,879	1,335,790	1,475,433	1,574,321	1,596,369	1,852,978	2,049,125	17,017,560
Maryland	310,803	310,806	173,857	190,374	86,923	53,423	97,908	94,630	94,501	111,504	1,524,729
Michigan	64,045	83,181	45,182	59,306	47,873	31,075	40,810	25,864	25,898	22,069	445,303
Minnesota	476,661	456,485	364,436	459,533	262,272	173,424	217,487	169,980	201,208	203,729	2,985,215
Missouri	217,004	319,593	156,391	195,277	102,414	75,254	98,107	90,063	77,124	67,582	1,398,809
Montana	300,497	338,431	225,758	240,677	107,993	168,479	118,418	191,119	92,379	127,315	1,911,066
New Mexico	51,593	51,680	67,773	77,839	56,162	89,385	87,556	72,610	67,304	69,703	691,605
North Dakota	1,460,308	1,907,802	1,556,479	1,652,147	947,120	826,769	1,271,518	827,161	730,676	744,650	11,680,950
Ohio	312,319	318,174	267,581	296,614	200,868	137,377	146,528	134,349	156,524	206,799	2,177,133
Oklaoma	7,912,577	9,104,803	6,681,517	7,353,930	3,992,740	4,514,807	6,040,903	4,013,801	3,873,776	4,497,213	57,985,867
Pennsylvania (bituminous)	570,359	661,335	512,302	497,698	274,230	312,349	321,656	223,760	265,219	280,604	3,919,512
South Dakota	182,039	142,575	141,990	91,339	40,912	56,659	56,577	51,839	47,157	45,980	857,067
Texas	200,745	283,955	274,832	237,907	140,880	222,615	170,574	170,574	149,532	111,740	1,942,558
Utah	698,423	613,402	522,316	912,055	351,140	502,482	323,934	198,945	611,954	576,918	5,831,569
Virginia	336,201	349,458	268,345	297,261	134,781	170,427	180,422	138,111	145,212	148,130	2,138,348
Washington	4,333,726	4,868,072	4,074,147	3,979,189	2,553,635	2,743,585	3,284,037	3,025,406	4,007,561	4,634,661	37,504,019
West Virginia	328,516	434,811	324,862	381,842	244,510	179,158	250,831	185,479	165,157	173,338	2,668,504
Total (bituminous) ²	25,493,563	29,670,746	22,128,115	24,197,773	14,418,415	15,017,150	18,678,390	15,012,628	16,009,125	17,790,453	198,416,358
Pennsylvania (anthracite)	12,581,458	13,328,439	12,421,169	11,950,802	11,546,641	6,415,126	11,510,544	11,152,677	7,216,877	9,543,879	107,667,612
Total ²	37,496,638	42,395,549	33,502,488	36,148,575	24,061,600	21,305,400	28,764,316	24,689,068	23,413,969	26,970,252	298,747,855

²Totals are obtained by calculating averages for United States, and not by adding.¹ Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 54.—United States: Number of days of labor performed underground and on the surface during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years
Alabama.....	7,741,017	7,296,267	6,414,066	6,299,294	4,293,363	6,055,996	6,970,967	6,144,837	6,665,311	7,275,893	65,156,951
Alaska.....	(1)	60,798	46,528	49,607	97,688	43,805	43,805	47,854	38,132	28,895	276,463
Arkansas.....	747,959	810,175	517,761	697,455	406,419	328,230	365,048	448,307	408,162	485,770	5,215,286
California, Idaho, Arizona, and Oregon.....	29,018	15,260	21,902	27,905	21,034	14,986	19,143	12,979	7,302	9,505	179,034
Colorado.....	3,743,539	3,700,277	2,664,361	3,497,330	2,376,996	2,584,342	2,315,488	2,309,835	2,533,384	2,591,124	28,316,876
Georgia and North Carolina.....	75,640	50,964	52,612	57,912	42,888	57,495	79,847	69,895	68,240	77,396	632,889
Illinois.....	20,414,269	20,423,880	13,572,384	18,562,367	14,475,253	11,537,704	15,773,125	13,248,935	12,551,391	13,055,277	153,614,585
Indiana.....	3,860,245	6,903,152	4,436,866	5,994,095	4,174,601	3,655,783	4,900,556	3,737,642	3,608,597	4,050,927	47,217,464
Iowa.....	3,384,279	2,490,963	2,127,690	2,973,460	1,680,305	1,678,537	2,071,077	1,952,414	1,589,232	1,624,166	22,558,823
Kansas.....	2,304,598	2,462,682	1,807,057	1,832,503	1,127,621	917,247	1,354,322	1,291,202	1,316,604	1,287,595	15,729,731
Kentucky.....	7,472,872	9,037,719	8,607,591	9,001,139	7,679,271	8,538,116	9,246,289	9,677,476	11,759,710	13,925,514	94,945,697
Maryland.....	1,504,209	1,453,043	964,802	1,150,537	558,894	379,215	661,900	653,244	746,810	865,921	8,938,575
Michigan.....	611,474	606,204	375,734	562,757	433,995	350,563	438,486	276,651	294,192	269,104	4,219,160
Minnesota.....	2,318,083	2,249,580	1,632,703	2,058,465	1,416,500	990,510	1,079,977	806,325	848,299	919,223	14,319,665
Montana.....	1,110,172	1,202,168	800,979	1,052,494	595,940	509,403	629,713	552,478	485,309	392,041	7,303,697
Missouri.....	1,326,041	1,232,985	1,022,318	1,127,382	694,603	865,318	884,894	856,065	694,687	795,283	9,489,576
New Mexico.....	209,693	189,340	231,377	242,019	206,768	287,707	295,070	213,714	200,380	208,785	2,284,853
New York.....	9,575,979	10,789,416	8,121,654	9,553,521	6,920,643	5,406,119	8,159,908	6,327,313	5,997,011	6,113,765	76,965,329
Ohio.....	1,795,098	1,928,896	1,556,788	1,790,106	1,244,567	868,177	949,765	764,269	861,584	986,495	12,770,774
Oklahoma.....	45,458,683	46,947,769	37,973,951	42,512,237	28,809,962	29,011,707	41,455,008	30,561,269	31,412,388	35,008,116	369,151,090
Pennsylvania (bituminous).....	5,238	3,043	7,544	6,231	5,547	4,420	4,157	5,519	7,005	6,593	55,297
Pennsylvania (anthracite).....	2,510,011	2,833,459	2,317,689	2,657,746	1,588,720	1,866,431	2,056,110	1,493,595	1,751,432	1,861,636	20,836,829
South Dakota.....	1,150,895	1,029,677	826,530	714,723	402,438	526,036	436,249	363,538	315,579	321,470	6,087,135
Texas.....	763,751	1,078,770	923,369	1,133,899	669,140	962,424	698,802	787,406	795,300	658,000	8,470,861
Utah.....	3,045,685	3,045,971	2,861,221	3,696,237	1,979,336	2,648,607	2,996,333	3,467,162	3,614,347	3,713,351	30,224,372
Virginia.....	1,440,240	1,402,489	1,094,258	1,298,347	688,843	870,793	918,319	778,992	720,442	713,547	9,926,484
Washington.....	19,888,728	21,278,061	18,955,691	20,424,666	15,211,585	15,720,456	19,839,194	18,564,213	24,765,546	29,309,367	203,957,507
West Virginia.....	1,812,010	2,025,012	1,609,104	2,052,765	1,416,968	1,155,838	1,446,023	1,249,342	1,111,342	1,059,547	14,937,046
Wyoming.....	146,499,426	153,348,030	121,889,730	141,027,139	99,209,878	97,880,316	125,989,575	106,064,816	114,958,533	127,515,506	1,234,082,949
Total (bituminous).....	43,900,254	43,143,954	41,075,293	39,357,803	43,148,813	23,636,506	42,204,163	43,904,164	29,109,699	40,312,226	389,792,875
Pennsylvania (anthracite).....	190,399,680	196,491,984	162,665,023	180,384,942	142,358,691	121,516,822	168,193,738	149,968,980	144,068,232	167,827,732	1,623,875,824
Total.....											

1 Not available.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 56.—United States: Number of men killed by surface accidents during the years ended December 31, 1917 to 1927

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years	1927
Alabama.....	8	3	5	4	2	1	7	5	2	4	41	2
Alaska.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....
California, Idaho, Arizona, and Oregon.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado.....	4	2	3	4	3	3	3	3	4	4	33	1
Georgia and North Carolina.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois.....	18	1	2	4	3	4	2	2	9	3	48	5
Indiana.....	1	5	2	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iowa.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Kansas.....	1	3	2	1	1	1	1	.....	.....	.....	.....	.....
Kentucky.....	11	8	12	7	9	5	2	7	3	5	10	5
Maryland.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Michigan.....	2	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Missouri.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Montana.....	2	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Mexico.....	.....	2	5	2	.....	.....	.....	.....	.....	.....	.....	.....
North Dakota.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio.....	4	13	7	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oklahoma.....	1	1	.....	6	7	1	1	1	2	5	69	7
Pennsylvania (bituminous).....	38	43	27	34	23	38	31	21	10	19	284	22
South Dakota.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Utah.....	5	4	3	5	2	2	2	.....	.....	.....	.....	.....
Virginia.....	4	2	2	1	.....	.....	.....	.....	.....	.....	.....	.....
Washington.....	3	2	.....	2	.....	.....	.....	.....	.....	.....	.....	.....
West Virginia.....	55	51	34	32	28	33	35	36	28	37	369	35
Wyoming.....	1	2	.....	13	1	1	.....	.....	.....	.....	.....	.....
Total (bituminous).....	162	149	112	120	83	102	97	84	77	85	1,071	88
Pennsylvania (anthracite).....	99	98	76	75	37	36	61	54	50	33	619	34
Total.....	261	247	188	195	120	138	158	138	127	118	1,690	122

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 57.—United States: Number of men killed by underground and surface accidents during the years ended December 31, 1917 to 1927

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Total, 10 years	1927
Alabama.....	108	110	93	76	80	183	89	77	161	139	1,116	93
Alaska.....	17	13	10	9	17	6	4	9	13	7	105	1
Arkansas.....	188	71	91	70	52	75	66	44	56	53	766	53
California, Idaho, Arizona, and Oregon.....	1	2				1	1	1	1	3	61	2
Colorado.....	233	238	169	207	200	125	170	173	120	166	1,801	104
Illinois.....	76	100	83	88	64	49	70	48	103	78	1,759	39
Indiana.....	36	31	17	25	22	19	21	15	19	16	221	15
Iowa.....	30	32	25	26	14	9	19	7	11	17	190	9
Kansas.....	142	77	84	123	128	125	129	146	194	178	1,326	194
Kentucky.....	21	17	5	7	7	3	5	9	12	12	98	5
Maryland.....	4	12	3	6	3	3	5	3	5	1	45	3
Michigan.....	11	13	10	11	12	6	16	6	11	9	105	8
Missouri.....	23	17	11	14	13	10	11	15	6	5	125	13
Montana.....	16	31	25	33	13	21	141	18	18	13	327	18
New Mexico.....	3	4	4	4	4	4	2	3	3	1	30	2
North Dakota.....	108	149	142	136	109	96	130	98	95	80	1,143	61
Ohio.....	37	31	36	41	20	20	8	12	13	124	342	30
Oklahoma.....	495	491	399	427	286	436	402	349	309	420	4,014	356
Pennsylvania (bituminous).....	28	14	27	21	12	28	18	22	26	50	246	17
South Dakota.....	1	7	3	5	2	4	1	2	2	2	25	2
Texas.....	22	19	27	35	15	22	23	199	24	20	406	26
Utah.....	63	43	40	27	18	30	43	45	48	59	416	44
Virginia.....	30	33	19	18	7	22	20	26	33	15	223	22
Washington.....	384	437	332	324	320	364	434	514	479	576	4,164	587
West Virginia.....	37	41	33	40	20	23	126	69	17	22	446	22
Wyoming.....	2,114	2,029	1,688	1,731	1,448	1,684	1,953	1,906	1,834	2,065	18,502	1,735
Total (bituminous).....	582	551	635	491	547	300	509	496	400	453	4,964	489
Pennsylvania (anthracite).....	2,696	2,580	2,323	2,272	1,995	1,984	2,462	2,402	2,234	2,518	23,466	2,224

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 58.—United States: Number of men killed by underground accidents (including shaft accidents) per thousand 300-day workers employed underground during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama	4.80	5.61	5.35	4.30	6.64	10.97	4.30	4.25	8.57	6.61	6.09
Alaska	8.70	6.16	6.42	4.07	14.35	6.59	4.15	7.94	11.26	17.24	1.09
Arkansas	18.60	7.15	13.12	7.05	24.39	10.20	9.74	6.27	7.26	4.66	7.23
California, Idaho, Arizona, and Oregon	3.54	8.33	4.18	3.71	4.56	7.75	3.58	6.76	1.360	6.70	2.40
Colorado	3.20	5.23	6.49	5.10	5.20	3.53	3.85	4.28	2.94	16.81	42.91
Georgia and North Carolina	4.49	3.12	2.67	2.68	4.30	4.59	4.85	4.44	10.06	4.16	3.84
Illinois	3.20	4.31	4.64	4.84	4.06	3.00	3.51	1.87	3.98	6.66	5.57
Indiana	4.57	4.31	4.64	4.84	4.06	3.00	3.51	1.87	3.98	2.80	3.15
Iowa	6.52	2.97	3.22	4.78	5.63	5.10	4.97	5.16	5.78	4.74	4.08
Kansas	5.03	4.47	3.22	4.78	5.63	5.10	4.97	5.16	5.78	4.37	4.88
Kentucky	1.10	5.73	2.72	2.98	2.33	2.82	2.66	4.83	5.06	4.77	3.78
Maryland	1.79	2.18	2.37	1.88	3.12	2.20	3.77	3.59	5.50	1.22	3.18
Michigan	7.05	4.76	4.65	4.90	6.21	6.91	6.21	9.73	4.72	3.77	2.75
Missouri	4.68	9.73	7.53	10.49	6.76	9.04	5.04	7.22	8.47	4.62	5.99
Montana	3.84	4.59	5.50	5.48	7.97	4.54	5.28	4.26	6.76	2.16	12.55
New Mexico	7.28	5.59	8.38	8.04	5.12	5.90	5.28	5.02	5.01	4.19	4.33
North Dakota	3.65	3.55	3.57	3.35	5.46	7.54	2.99	5.24	4.68	47.33	4.94
Ohio	4.18	1.93	4.49	2.92	3.18	4.87	3.14	3.71	3.26	3.94	6.43
Oklahoma	31	2.37	1.31	1.92	2.74	5.02	3.11	4.96	5.23	9.30	3.60
Pennsylvania (bituminous)	9.06	5.66	11.10	10.04	7.38	2.56	3.70	3.70	2.23	5.23	4.25
Pennsylvania (anthracite)	7.54	5.06	4.87	2.80	3.32	8.11	11.48	96.70	9.73	10.98	1.28
Tennessee	7.34	8.83	5.09	4.66	3.25	4.19	4.98	5.74	5.04	7.88	17.46
Texas	6.35	7.06	5.33	5.33	6.92	8.57	7.72	11.70	15.65	5.83	7.06
Utah	7.28	7.36	7.71	6.46	7.10	7.65	7.23	9.23	6.52	6.55	7.82
Virginia	4.84	4.56	4.75	4.27	4.83	6.78	31.63	18.46	5.39	7.11	10.44
Washington	4.63	4.56	5.85	4.55	4.84	5.73	5.19	6.04	4.33	5.41	5.05
West Virginia	4.78	4.54	4.96	4.32	4.75	4.60	4.38	4.03	4.80	4.10	4.62
Wyoming	4.78	4.54	4.96	4.32	4.75	5.53	4.96	5.42	5.24	5.11	4.93
Total (bituminous)											
Total (anthracite)											
Total											

¹ Mine explosion at Coal Glen, N. C.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 59.—United States: Number of men killed by surface accidents per thousand 900-day workers employed on the surface during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	1.61	0.57	1.01	0.94	0.78	0.28	1.68	1.41	0.55	1.04	1.01
Alaska.....			3.08	2.79					3.39	3.02	1.17
Arkansas.....	1.55	.74	1.38	1.74	2.10	1.93	2.40	2.58	3.11	3.03	1.86
California, Idaho, Arizona, and Oregon.....	2.47	20.00	.37	.56	.60	1.00	.36	.47	2.24	7.19	2.72
Colorado.....	1.35	1.95	.87	1.05	1.80	2.97	1.01			4.84	1.86
Georgia and North Carolina.....	1.50	1.79	1.05	1.05	1.80	2.54	1.91				1.20
Illinois.....	1.73	1.91	1.88	1.23	2.02	1.02	.38	1.32	.49	.73	1.22
Indiana.....	2.28	1.10	1.89	1.23	2.02				3.17		3.39
Iowa.....	9.39	7.22		5.05							3.37
Kansas.....											3.37
Kentucky.....											3.37
Maryland.....											3.37
Michigan.....											3.37
Missouri.....											3.37
Montana.....	2.76	2.82	1.92	.65	2.93						1.50
New Mexico.....		1.77	6.63	2.49							1.57
North Dakota.....			4.42								3.04
Ohio.....	.82	2.04	1.55	1.09	2.22	3.36	3.42	4.13	3.25		3.04
Oklahoma.....	1.96	.94	1.11	1.43	1.43	2.18	1.95	2.18	3.87	2.01	1.77
Pennsylvania (bituminous).....	1.44	1.42	1.21	1.39	1.73	2.53	1.54	2.27	3.83	1.95	1.24
South Dakota.....								1.57	.77	1.27	1.47
Tennessee.....	.53					1.92		1.34		1.07	.38
Texas.....					7.35						3.35
Utah.....	7.47	4.22	3.28	6.31	4.26	2.70	4.01		6.02		4.02
Virginia.....	1.72	.98	1.13	.33			1.14				1.57
Washington.....	2.68	1.72	3.39	.22	2.23	3.32	1.06	2.17	6.20		2.81
West Virginia.....	3.81	3.14	2.50	2.41	3.29	3.61	3.20	3.57	2.10	2.39	2.65
Wyoming.....	.91	1.38		10.21	1.23	1.68				1.73	2.14
Total (bituminous).....	1.91	1.51	1.32	1.49	1.73	2.04	1.56	1.68	1.44	1.43	1.62
Pennsylvania (anthracite).....	2.36	2.21	1.84	1.84	.96	1.68	1.39	1.45	2.08	1.64	1.72
Total.....	2.09	1.75	1.67	1.62	1.50	1.94	1.65	1.68	1.63	1.31	1.70

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 60.—United States: Number of men killed by underground and surface accidents per thousand 800-day workers employed underground and on the surface during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	4.19	4.52	4.85	3.62	5.59	9.07	3.83	3.76	7.25	5.73	5.14
Alaska.....	6.82	4.81	5.79	3.87	12.55	5.48	3.29	6.02	9.55	10.42	6.04
Arkansas.....	15.07	5.76	10.25	6.00	6.56	8.71	8.55	5.73	6.63	4.82	1.68
California, Idaho, Arizona, and Oregon.....	3.17	11.76	3.74	3.35	4.14	3.25	3.23	4.26	1,283.48	11.63	1,283.92
Colorado.....	3.42	3.60	3.61	4.40	4.60	4.02	4.37	3.92	2.87	3.81	3.52
Illinois.....	3.89	4.35	5.61	4.30	4.60	4.02	4.37	3.85	8.57	5.78	4.82
Indiana.....	3.01	2.85	2.35	2.52	3.93	3.40	3.04	2.30	3.66	2.96	2.94
Iowa.....	3.01	3.85	4.15	4.26	3.72	2.94	4.21	1.63	2.51	3.96	3.62
Kansas.....	5.70	2.56	2.93	4.10	5.00	4.39	4.19	4.53	4.95	3.83	4.19
Kentucky.....	4.19	3.51	1.55	1.83	3.76	3.37	2.27	4.13	4.82	4.16	3.29
Maryland.....	1.96	5.94	2.40	3.20	2.07	2.57	3.42	3.25	5.10	1.11	3.20
Michigan.....	1.42	1.73	1.84	1.60	2.54	1.82	4.44	2.23	3.89	2.94	2.20
Missouri.....	6.21	4.24	4.12	3.99	5.70	5.89	5.24	8.14	3.93	3.83	5.13
New Mexico.....	3.62	7.54	7.34	8.78	6.55	7.28	47.80	5.61	7.77	4.90	10.34
North Dakota.....	4.29	7.54	5.19	3.72	5.81	4.17	4.44	4.21	8.98	1.44	3.94
Ohio.....	3.38	4.14	5.25	4.27	4.72	5.33	4.78	4.65	4.75	3.93	4.46
Oklahoma.....	6.18	4.82	6.04	6.87	4.82	6.72	2.53	4.71	4.53	37.71	8.03
Pennsylvania (bituminous).....	3.27	3.14	3.15	3.01	2.98	4.51	2.91	3.43	2.95	3.60	3.26
South Dakota.....	3.35	1.48	3.49	2.37	2.27	4.50	2.63	4.42	4.45	8.06	3.52
Tennessee.....	2.04	2.04	1.09	2.10	1.49	2.28	69	4.42	1.90	1.23	1.23
Texas.....	8.64	5.28	8.77	9.26	6.72	6.86	9.88	75.81	9.05	9.12	14.38
Utah.....	6.21	4.24	4.19	2.19	2.73	3.40	4.31	4.70	4.15	4.90	4.13
Virginia.....	6.25	7.06	5.21	4.16	3.05	7.58	6.53	10.01	13.74	6.31	6.74
Washington.....	5.79	6.16	5.25	4.76	6.31	6.95	6.56	8.31	5.80	6.12	6.12
West Virginia.....	6.13	6.07	6.15	7.16	6.14	5.97	26.14	16.57	4.59	6.23	8.96
Wyoming.....	4.33	3.97	4.16	3.79	4.38	5.16	4.65	5.39	4.79	4.86	4.50
Total (bituminous).....	3.98	3.83	4.64	3.74	3.80	3.81	3.62	3.39	4.12	3.37	3.82
Pennsylvania (anthracite).....	4.25	3.94	4.28	3.78	4.20	4.90	4.39	4.80	4.65	4.50	4.34
Total.....	4.25	3.94	4.28	3.78	4.20	4.90	4.39	4.80	4.65	4.50	4.34

¹ Mine explosion at Coal Glen, N. C.

COAL-MINE FATALITIES IN THE UNITED STATES.

TABLE 61.—United States: Number of man shifts worked underground (including shaft) per fatality underground during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	62,518	53,530	56,033	69,728	45,156	27,338	69,725	70,545	35,023	45,379	49,228
Alaska.....	34,500	48,676	46,699	73,729	20,912	45,540	72,203	37,812	26,637	45,379	275,157
Arkansas.....	16,134	41,915	22,861	42,532	12,382	29,417	30,797	47,844	41,306	64,427	41,520
California, Idaho, Oregon, and Arizona.....	55,182	36,099	71,705	80,844	65,839	85,415	83,838	44,382	882	17,840	6,989
Colorado.....	84,782	75,455	46,244	58,860	57,735	66,266	61,818	67,908	102,209	72,090	78,132
Georgia and North Carolina.....	93,641	96,075	112,375	111,947	69,844	85,919	90,508	118,953	29,814	45,050	53,876
Illinois.....	45,997	69,683	64,692	61,918	73,888	99,901	66,507	160,132	75,365	107,156	95,156
Indiana.....	45,997	100,954	93,153	62,821	53,307	58,856	60,409	101,461	101,461	63,312	73,496
Kansas.....	59,670	67,190	158,189	137,166	67,424	108,597	112,798	58,137	51,868	68,650	61,995
Kentucky.....	167,402	137,930	126,827	100,690	128,707	106,496	82,068	62,068	59,301	62,868	77,228
Maryland.....	42,532	63,041	64,459	61,230	41,127	43,415	53,906	106,058	53,659	247,035	94,346
Michigan.....	64,097	30,847	39,828	28,003	44,355	33,183	30,828	30,828	63,531	79,499	108,985
Minnesota.....	52,700	65,306	50,112	60,780	37,652	66,107	48,328	41,559	35,430	51,382	50,041
Montana.....	41,188	53,691	35,811	54,727	58,564	50,882	207,514	70,552	44,359	139,082	23,907
New Mexico.....	82,158	84,471	84,119	89,461	94,362	39,779	100,405	57,268	59,845	6,339	31,813
Ohio.....	71,839	155,152	66,866	102,859	109,541	59,772	96,359	60,468	92,102	76,087	83,422
Oklahoma.....	968,856	126,729	228,180	124,677	361,526	117,344	379,672	134,211	134,211	32,266	70,611
Pennsylvania (bituminous).....	33,118	52,988	27,022	29,866	40,635	36,990	26,144	3,100	30,751	27,313	17,840
South Dakota.....	39,784	59,331	61,550	107,084	90,455	71,538	60,302	3,100	59,484	30,751	60,229
Tennessee.....	40,890	33,969	58,994	64,443	92,344	35,018	38,837	25,234	19,174	37,708	38,365
Texas.....	47,280	42,513	49,938	56,320	43,349	39,205	41,492	32,508	46,027	45,779	43,861
Utah.....	41,208	40,774	38,916	46,415	41,873	44,395	9,486	15,418	55,658	42,200	28,734
Virginia.....	61,991	65,786	63,110	70,337	62,118	52,379	57,819	49,701	56,317	55,415	59,415
Washington.....	64,842	65,818	51,260	65,882	61,965	65,253	68,513	74,098	62,551	73,268	64,931
West Virginia.....	62,794	66,051	60,498	69,445	63,092	54,286	60,516	55,336	57,264	58,691	60,853
Wyoming.....											
Total (bituminous).....	61,991	65,786	63,110	70,337	62,118	52,379	57,819	49,701	56,317	55,415	59,415
Pennsylvania (anthracite).....	64,842	65,818	51,260	65,882	61,965	65,253	68,513	74,098	62,551	73,268	64,931
Total.....	62,794	66,051	60,498	69,445	63,092	54,286	60,516	55,336	57,264	58,691	60,853

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 62.—United States: Number of man shifts worked on the surface per fatality on the surface during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	186,155	522,851	296,625	319,710	385,603	1,080,530	179,078	213,122	548,289	287,431	298,462
Alaska.....	.....	.....	97,469	107,625	.....	.....	.....	.....	88,522	99,211	255,452
Arkansas.....	193,740	404,059	217,597	172,558	143,044	155,438	125,050	116,080	96,370	99,126	161,425
California, Idaho, Nevada, Arizona, and Oregon.....	14,865	.....	.....	.....	.....	.....	.....	.....	41,717	41,717	110,257
Colorado.....	853,589	2,540,957	798,735	537,736	501,666	300,612	839,955	637,962	134,021	434,869	346,867
Georgia and North Carolina.....	200,243	380,416	345,566	286,731	.....	475,027	298,476	.....	582,090	582,090	580,982
Illinois.....	402,225	156,723	159,572	284,544	167,075	131,990	.....	.....	61,989	61,989	313,640
Iowa.....	131,568	258,983	158,380	244,840	148,421	118,037	157,202	228,053	617,659	409,825	250,050
Kansas.....	310,803	.....	.....	.....	.....	295,087	787,161	.....	94,501	.....	246,631
Kentucky.....	32,023	41,591	59,306	459,533	.....	.....	.....	.....	.....	.....	762,365
Maryland.....	.....	106,531	156,391	459,533	102,414	.....	.....	.....	.....	.....	89,061
Michigan.....	108,502	169,216	156,391	120,339	102,414	.....	.....	.....	.....	.....	2,985,215
Minnesota.....	.....	45,152	67,773	.....	.....	.....	.....	.....	.....	.....	199,830
Montana.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	191,107
New Mexico.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
North Dakota.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ohio.....	365,077	146,754	193,783	275,358	135,303	89,385	87,556	72,610	22,435	98,801	98,801
Oklahoma.....	312,519	318,174	296,614	296,614	200,868	137,795	153,480	137,860	104,382	148,630	169,289
Pennsylvania (bituminous).....	208,226	211,740	247,464	216,292	173,897	137,377	194,868	134,349	78,262	206,799	241,904
South Dakota.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee.....	570,359	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Texas.....	40,149	70,989	91,611	47,581	40,912	156,175	.....	223,760	.....	280,604	783,902
Utah.....	174,606	306,701	261,158	912,055	70,440	111,308	74,889	.....	49,844	.....	857,067
Virginia.....	112,067	174,729	53,609	133,631	134,781	261,967	261,967	.....	.....	.....	74,714
Washington.....	78,795	95,452	119,828	124,850	91,201	85,214	180,422	138,111	48,404	.....	530,143
West Virginia.....	328,516	217,406	29,372	29,372	244,510	83,139	93,830	84,039	143,127	125,261	106,917
Wyoming.....	.....	.....	.....	.....	.....	179,158	.....	.....	.....	.....	101,637
Total (bituminous).....	157,368	199,133	197,572	201,648	173,716	147,227	192,561	178,722	207,911	209,299	185,263
Pennsylvania (anthracite).....	127,085	136,004	163,436	159,344	312,071	178,198	188,697	206,531	144,338	289,208	173,938
Total.....	143,665	171,642	178,205	185,377	200,513	154,387	182,053	178,906	184,362	228,561	176,774

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 63.—United States: Number of man shifts worked underground and on the surface per fatality underground and on the surface during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	71, 676	66, 330	68, 968	82, 885	53, 667	33, 093	78, 325	79, 803	41, 390	52, 345	58, 384
Alaska.....	43, 998	62, 321	51, 776	77, 495	23, 907	54, 705	91, 262	49, 812	31, 397	69, 396	476, 463
Arkansas.....	19, 912	52, 117	26, 281	49, 962	45, 711	34, 458	35, 083	52, 496	45, 239	48, 889	36, 967
California, Idaho, Arizona, and Oregon.....	75, 640	25, 482	80, 310	89, 673	72, 376	92, 302	92, 783	69, 895	1, 288	25, 799	10, 375
Colorado.....	87, 615	85, 815	53, 456	68, 115	65, 228	74, 608	68, 579	76, 583	104, 595	78, 646	85, 294
Georgia and North Carolina.....	77, 108	69, 032	127, 805	118, 938	76, 378	88, 344	98, 623	77, 868	34, 986	51, 935	62, 210
Illinois.....	99, 563	105, 247	72, 292	70, 481	80, 544	101, 916	82, 065	130, 161	82, 065	101, 510	102, 076
Indiana.....	76, 820	77, 843	102, 471	73, 180	59, 994	68, 305	71, 677	184, 457	119, 691	75, 741	82, 788
Kansas.....	52, 626	117, 373	192, 960	164, 362	79, 842	126, 405	132, 380	66, 284	60, 617	71, 603	71, 603
Kentucky.....	71, 629	85, 473	125, 245	93, 793	144, 665	116, 854	87, 697	72, 583	62, 234	72, 160	91, 210
Maryland.....	152, 869	50, 517	125, 245	118, 042	165, 085	50, 940	87, 499	92, 217	58, 838	269, 104	93, 759
Michigan.....	210, 735	173, 045	163, 270	187, 133	118, 042	165, 085	87, 499	134, 388	77, 118	102, 136	136, 378
Missouri.....	48, 268	70, 716	72, 816	75, 178	45, 842	50, 940	57, 247	36, 832	76, 385	78, 408	58, 430
Montana.....	82, 878	39, 774	40, 893	34, 163	52, 662	41, 206	6, 276	53, 504	38, 594	61, 176	29, 020
New Mexico.....	69, 898	72, 412	57, 195	80, 673	51, 692	71, 927	147, 535	71, 238	33, 397	208, 785	76, 162
North Dakota.....	88, 666	62, 222	43, 244	70, 246	63, 492	56, 314	62, 769	64, 564	63, 126	76, 422	67, 336
Ohio.....	48, 516	95, 617	95, 173	43, 861	62, 228	44, 659	118, 721	63, 692	66, 276	7, 956	37, 341
Oklahoma.....	91, 836	95, 617	95, 173	99, 560	100, 734	66, 541	103, 122	87, 568	101, 658	83, 353	91, 966
Pennsylvania (bituminous).....	89, 643	202, 390	85, 840	126, 559	132, 393	66, 658	114, 228	678, 307	67, 363	37, 233	85, 109
South Dakota.....	1, 180, 895	147, 097	275, 510	142, 945	201, 219	131, 509	436, 249	157, 790	157, 790	243, 485	243, 485
Tennessee.....	34, 716	56, 777	34, 199	32, 397	44, 609	43, 747	30, 383	3, 957	33, 138	32, 900	20, 864
Texas.....	48, 344	70, 837	71, 631	136, 898	109, 663	88, 287	69, 682	63, 766	72, 233	61, 260	72, 655
Utah.....	48, 008	42, 500	57, 593	72, 130	98, 406	39, 582	45, 916	29, 961	21, 832	47, 583	44, 513
Virginia.....	48, 008	42, 500	57, 593	72, 130	98, 406	39, 582	45, 916	29, 961	21, 832	47, 583	44, 513
Washington.....	51, 794	48, 691	57, 095	63, 039	47, 536	43, 188	36, 117	51, 703	50, 884	48, 981	50, 884
West Virginia.....	48, 973	49, 391	48, 761	41, 893	48, 861	50, 254	11, 476	18, 106	65, 373	48, 161	33, 493
Wyoming.....	69, 300	75, 032	72, 032	79, 184	68, 515	58, 124	64, 511	55, 548	62, 682	61, 751	66, 700
Pennsylvania (anthracite).....	75, 430	78, 301	64, 686	80, 158	78, 883	78, 788	82, 916	88, 516	72, 774	88, 989	88, 989
Total.....	70, 623	76, 100	70, 024	79, 395	71, 358	61, 248	68, 316	62, 435	64, 489	66, 651	69, 201

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 64.—United States: Number of men killed per million tons of coal mined, based on underground accidents (including shaft accidents) during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	4.98	5.58	5.66	4.42	6.21	9.93	4.01	3.76	7.95	6.43	5.89
Alaska.....	7.93	5.84	6.30	3.80	13.85	5.41	3.08	6.20	9.84	11.45	1.25
California, Idaho, Arizona, and Oregon.....	14.74	5.66	8.52	5.38	25.74	7.19	6.09	3.93	5.04	4.11	6.45
Georgia and North Carolina.....	8.40	14.68	2.74	2.29	2.83	7.18	2.12	7.57	403.57	16.98	4.20
Illinois.....	2.49	2.65	3.10	3.00	3.15	2.07	2.23	2.50	1.66	2.35	59.09
Indiana.....	3.79	3.66	3.02	3.07	4.86	2.51	3.68	2.23	4.85	3.32	2.38
Iowa.....	4.04	3.83	4.40	4.22	3.75	2.71	4.05	2.74	4.03	3.03	3.12
Kansas.....	4.71	2.18	2.40	3.25	3.77	2.75	2.84	1.65	2.43	3.85	3.57
Kentucky.....	4.21	3.78	1.65	1.72	3.83	2.45	2.84	3.08	3.47	2.75	3.09
Maryland.....	1.45	6.83	3.01	3.36	2.63	2.45	2.19	4.22	4.08	3.90	3.25
Michigan.....	1.94	2.29	2.51	1.86	3.38	3.23	4.27	3.61	6.19	1.46	3.67
Missouri.....	4.97	3.09	3.09	3.17	4.39	3.89	3.49	2.42	4.08	2.99	2.68
Montana.....	4.00	7.21	6.37	8.42	5.30	6.67	48.37	1.94	1.97	1.79	3.51
New Mexico.....	3.79	3.57	3.76	3.16	4.62	2.26	72	5.74	6.65	4.61	10.06
Ohio.....	2.55	2.97	3.76	2.83	3.19	3.34	3.01	1.67	2.26	2.69	2.13
Oklahoma.....	8.21	6.23	9.47	8.25	5.65	6.78	2.77	3.02	3.14	2.69	3.03
Pennsylvania (bituminous).....	2.65	2.51	2.47	2.30	2.27	3.52	2.16	2.51	2.18	2.62	2.50
Pennsylvania (anthracite).....	4.36	2.05	5.18	3.15	2.69	5.33	2.98	4.61	4.77	8.46	4.30
Tennessee.....	4.42	3.10	1.78	3.10	1.03	3.62	84	84	1.98	1.66	1.66
Texas.....	4.12	2.92	5.18	5.00	3.19	4.01	4.45	44.34	4.48	4.57	8.04
Utah.....	5.85	3.98	4.07	2.28	2.40	2.86	3.49	4.21	3.75	4.17	3.73
Virginia.....	6.73	7.59	4.68	4.26	2.47	7.75	6.49	9.42	11.82	5.86	6.64
Washington.....	3.81	4.29	3.77	3.25	4.01	4.11	3.70	4.70	3.69	3.76	3.90
West Virginia.....	4.20	4.13	4.57	3.74	3.89	3.68	16.63	10.21	2.59	3.22	5.66
Wyoming.....	3.54	3.24	3.38	2.92	3.28	3.75	3.29	3.79	3.38	3.45	3.89
Total (bituminous).....	4.85	4.98	6.35	4.64	5.64	4.83	4.80	5.03	5.66	4.97	5.12
Total (anthracite).....	3.74	3.44	3.85	3.16	3.70	3.87	3.50	3.96	3.62	3.65	3.63

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 65.—United States: Number of men killed per million tons of coal mined, based on all accidents, during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	5.38	5.73	5.99	4.66	6.36	9.99	4.35	4.03	8.05	6.62	6.11
Alaska.....	7.93	5.84	7.00	4.28	13.85	5.41	3.08	6.20	10.66	11.45	1.25
California, Idaho, Arizona, and Oregon.....	15.06	5.72	8.81	5.70	5.70	7.49	6.38	4.21	5.43	4.98	7.07
Colorado.....	8.40	20.35	2.78	2.33	2.77	2.14	2.14	7.57	1,403.57	25.47	61.09
Georgia and North Carolina.....	2.70	2.67	3.00	3.00	2.87	2.77	2.14	2.53	1.70	2.39	2.14
Illinois.....	2.86	3.26	3.02	3.20	4.86	4.38	3.68	2.74	4.85	3.36	3.14
Indiana.....	4.02	3.78	4.04	4.30	4.04	3.05	3.08	2.91	4.03	3.46	3.68
Iowa.....	4.18	4.23	4.78	3.45	4.04	3.97	4.28	1.63	2.43	3.85	3.80
Kansas.....	5.11	2.44	2.80	3.45	4.05	2.97	2.88	3.23	3.52	3.83	3.20
Kentucky.....	4.42	3.78	1.65	1.72	3.83	2.45	2.19	4.22	4.45	3.90	3.31
Maryland.....	2.91	8.19	3.01	4.03	2.63	3.23	4.27	3.63	6.19	2.90	3.71
Michigan.....	2.91	2.29	3.17	2.05	3.38	2.05	4.70	2.42	4.08	1.79	3.71
Missouri.....	1.94	3.40	3.40	3.17	4.76	3.89	4.70	3.63	1.97	1.79	3.71
Montana.....	5.44	2.75	3.40	3.16	4.76	6.87	1.44	5.74	7.04	4.52	16.37
New Mexico.....	4.00	7.71	4.76	8.96	5.30	3.01	48.37	2.50	4.53	1.79	6.72
North Dakota.....	3.79	3.10	4.76	3.16	4.62	3.01	1.44	5.74	7.04	4.52	16.37
Ohio.....	2.65	3.25	3.96	2.96	3.41	3.56	3.21	3.22	3.33	2.87	3.23
Oklahoma.....	8.43	6.44	9.47	8.43	5.95	7.14	2.77	5.15	5.59	43.52	9.94
Pennsylvania (bituminous).....	2.87	2.75	2.65	2.50	2.47	3.55	2.34	2.67	2.26	2.74	2.69
South Dakota.....	4.52	2.05	5.18	3.15	2.69	5.74	2.98	4.83	4.77	8.94	4.39
Texas.....	4.42	3.10	1.79	3.10	2.06	3.62	2.08	4.83	1.08	8.94	4.39
Utah.....	5.33	3.70	5.83	5.82	3.68	3.62	3.06	4.83	5.12	5.73	5.73
Virginia.....	6.25	4.18	4.92	2.37	2.40	4.11	4.87	44.34	3.75	4.97	6.59
Washington.....	7.48	8.08	6.35	4.70	2.88	8.82	3.66	4.21	3.75	4.17	5.84
West Virginia.....	4.44	4.86	4.20	3.60	4.40	4.52	6.83	5.06	13.00	5.80	7.30
Wyoming.....	4.31	4.34	4.57	5.09	4.03	3.85	16.63	10.21	3.91	4.01	4.27
Total (bituminous).....	3.83	3.50	3.62	3.13	3.48	3.99	3.46	3.94	3.53	3.60	3.60
Pennsylvania (anthracite).....	5.84	5.88	7.21	5.48	6.05	5.49	5.45	5.64	6.47	5.36	5.85
Total.....	4.14	3.80	4.19	3.45	3.94	4.16	3.74	4.20	3.84	3.83	3.91

1 Mine explosion at Coal Glen, N. C.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 66.—United States: Production per death, based on underground accidents (including shaft accidents), during the years ended December 31, 1917 to 1926

[Net tons]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average 10 Years
Alabama.....	200, 681	179, 269	176, 554	226, 307	161, 140	100, 685	249, 484	265, 697	125, 814	155, 563	169, 833
Alaska.....	126, 093	171, 336	158, 780	292, 950	72, 222	185, 008	324, 223	161, 278	101, 670	243, 170	797, 095
Arkansas.....	67, 844	179, 820	117, 312	186, 084	186, 179	139, 161	164, 226	254, 734	198, 280	217, 086	147, 949
California, Idaho, Arizona, and Oregon.....	119, 028	68, 136	364, 447	437, 068	353, 314	483, 204	472, 084	132, 041	2, 478	58, 904	16, 923
Colorado.....	400, 927	376, 756	258, 176	333, 529	317, 492	398, 602	385, 722	397, 551	602, 787	425, 564	420, 455
Illinois.....	353, 858	322, 933	288, 176	325, 580	205, 972	240, 842	271, 940	364, 563	206, 068	301, 117	320, 018
Georgia and North Carolina.....	263, 701	273, 073	330, 864	325, 580	205, 972	240, 842	271, 940	364, 563	248, 150	330, 392	280, 293
Iowa.....	247, 758	290, 757	227, 162	237, 056	266, 665	369, 396	246, 842	606, 819	411, 296	259, 793	277, 508
Kansas.....	212, 275	458, 154	417, 168	307, 679	265, 448	351, 118	352, 577	324, 800	288, 318	363, 725	323, 618
Kentucky.....	237, 296	264, 547	604, 337	580, 748	261, 106	407, 569	457, 185	237, 078	244, 961	256, 529	308, 054
Maryland.....	687, 403	146, 482	332, 182	297, 953	380, 572	309, 797	234, 415	277, 007	161, 647	686, 707	372, 377
Michigan.....	514, 504	435, 979	397, 980	536, 957	295, 968	489, 458	212, 697	413, 480	244, 929	334, 277	372, 603
Missouri.....	201, 271	323, 750	323, 637	315, 276	227, 830	257, 222	286, 153	193, 691	507, 281	559, 552	284, 831
Montana.....	250, 033	138, 732	156, 938	118, 821	188, 729	149, 865	20, 675	174, 129	150, 403	216, 743	99, 440
New Mexico.....	263, 516	280, 320	316, 208	316, 208	216, 226	442, 521	385, 400	600, 264	441, 540	370, 244	468, 397
North Dakota.....	391, 815	336, 860	265, 753	352, 909	313, 164	299, 487	332, 348	331, 228	318, 569	371, 633	329, 739
Oklahoma.....	121, 857	160, 448	105, 614	121, 232	176, 980	147, 501	360, 630	211, 783	211, 440	23, 111	103, 303
Pennsylvania (bituminous).....	377, 348	398, 551	405, 264	434, 117	441, 118	284, 292	463, 288	398, 274	457, 953	381, 650	400, 539
South Dakota.....	229, 416	487, 932	163, 082	317, 258	371, 694	187, 568	335, 570	216, 979	209, 770	118, 138	232, 687
Tennessee.....	355, 815	323, 019	560, 219	323, 003	972, 839	276, 502	1, 187, 329	22, 554	504, 188	601, 056	601, 056
Texas.....	242, 661	342, 455	192, 972	200, 173	313, 753	249, 600	224, 772	22, 554	223, 350	218, 690	124, 321
Utah.....	170, 968	250, 971	245, 443	437, 639	416, 243	349, 706	286, 869	237, 633	266, 655	239, 549	267, 787
Virginia.....	148, 515	131, 684	213, 603	234, 818	404, 787	129, 058	154, 021	106, 147	84, 596	172, 438	150, 513
Washington.....	232, 994	265, 223	265, 223	308, 119	249, 271	243, 167	270, 426	212, 984	271, 355	256, 683	256, 683
West Virginia.....	238, 212	242, 018	218, 780	267, 508	257, 167	271, 442	60, 119	97, 934	385, 484	310, 109	176, 662
Wyoming.....	282, 680	308, 184	295, 596	342, 364	304, 705	266, 920	304, 184	264, 021	295, 989	289, 579	295, 196
Total (bituminous).....	206, 236	218, 159	157, 589	215, 380	177, 399	207, 133	208, 346	198, 930	176, 620	201, 042	195, 352
Pennsylvania (anthracite).....	267, 516	290, 703	259, 462	316, 931	270, 078	258, 370	285, 548	252, 479	276, 160	274, 085	275, 274

TABLE 67.—United States: Production per death, based on all accidents, during the years ended December 31, 1917 to 1926
 [Net tons]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	185,816	174,409	167,062	214,396	157,111	100,135	229,861	248,444	124,251	151,086	163,594
Alaska.....	126,083	171,336	142,902	233,733	72,222	185,008	324,223	161,278	93,849	87,300	797,095
Arkansas.....	66,401	174,755	113,444	175,403	175,438	133,595	156,761	237,866	184,117	200,702	141,479
California, Idaho, Arizona, and Oregon.....	119,028	34,068	360,134	428,023	348,014	139,206	466,530	132,041	2,478	39,269	16,368
Colorado.....	349,202	306,786	251,955	333,529	317,492	390,467	374,701	447,304	557,578	417,873	409,249
Illinois.....	249,051	264,264	330,864	312,557	205,972	228,166	271,940	364,563	248,150	297,256	314,959
Indiana.....	239,499	236,311	208,989	227,939	247,617	328,352	233,850	606,819	411,296	289,093	271,415
Iowa.....	195,831	410,553	357,572	290,169	246,783	337,073	347,111	309,227	283,859	353,508	262,903
Kansas.....	225,996	264,547	604,337	580,748	261,106	407,569	457,185	237,078	224,548	256,529	301,767
Kentucky.....	343,701	122,068	332,182	248,294	380,572	309,797	234,415	277,007	161,647	686,707	242,113
Maryland.....	183,769	296,618	397,980	488,142	295,968	487,458	212,697	413,480	244,929	334,277	369,055
Michigan.....	250,033	129,782	135,550	111,619	210,304	257,222	286,153	193,691	507,281	559,552	268,881
Montana.....	263,516	435,979	294,215	315,276	210,304	149,865	20,675	174,129	142,047	216,763	96,399
New Mexico.....	377,303	307,469	252,653	337,340	216,226	331,891	692,700	400,176	220,770	370,244	359,104
North Dakota.....	118,563	155,272	105,614	118,275	168,131	140,126	360,630	194,135	178,911	22,925	100,585
Ohio.....	348,380	363,647	377,840	399,550	405,643	259,514	427,562	374,309	443,133	364,385	372,200
Oklahoma.....	221,222	487,932	193,082	317,258	371,694	174,171	335,570	207,116	209,770	115,775	227,958
Pennsylvania (bituminous).....	2,355,815	323,019	560,219	323,003	486,420	276,502	1,187,329	504,188	595,431	218,690	577,014
South Dakota.....	187,510	270,360	171,530	171,577	271,919	226,909	205,227	22,554	195,431	218,690	116,359
Tennessee.....	160,113	239,298	283,171	421,430	416,243	349,706	273,527	237,633	266,655	239,549	260,706
Utah.....	133,663	123,703	157,392	208,727	346,960	117,326	146,320	102,064	76,906	172,438	137,014
Virginia.....	225,109	205,803	288,062	277,087	227,459	221,121	248,617	197,788	255,493	249,148	233,937
West Virginia.....	231,773	230,212	218,760	196,536	248,299	259,640	60,119	97,934	385,484	296,013	169,136
Wyoming.....	261,017	285,552	275,983	319,296	287,239	250,753	289,076	253,770	283,562	277,660	278,109
Total (bituminous).....	171,154	179,358	138,728	182,481	165,399	182,277	183,377	177,272	154,543	186,396	170,992
Pennsylvania (anthracite).....	241,618	262,873	238,464	289,729	253,832	240,399	267,223	237,974	260,461	261,241	255,449

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 68.—United States: Annual production of coal per man, based on underground employees only, during the years ended December 31, 1917 to 1926

[Net tons]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	875	932	752	800	594	792	830	828	884	912	821
Alaska.....	684	717	589	582	420	303	990	997	911	1,105	697
Arkansas.....	395	564	462	627	388	330	437	571	428	515	515
California, Idaho, Arizona, and Oregon.....	1,106	1,096	239	367	468	598	291	303	435	269	368
Colorado.....	581	401	1,156	1,116	767	905	926	949	921	980	988
Georgia and North Carolina.....	1,148	1,186	811	450	440	748	890	791	734	906	899
Illinois.....	1,171	1,279	826	1,152	814	678	890	846	951	1,016	942
Indiana.....	708	696	517	1,090	702	662	846	898	1,096	1,157	952
Iowa.....	815	874	639	726	435	366	544	494	505	565	558
Kansas.....	987	815	689	781	496	461	515	572	684	647	656
Kentucky.....	1,011	1,043	845	891	757	836	887	970	1,146	1,218	962
Maryland.....	638	683	683	878	464	379	720	661	862	960	778
Michigan.....	738	664	538	773	580	471	654	591	561	476	600
Missouri.....	1,266	741	550	782	509	405	613	1,086	1,365	1,397	1,126
Montana.....	1,254	1,354	975	1,289	790	830	822	853	856	1,059	999
New Mexico.....	1,277	1,196	1,076	1,253	636	977	822	1,401	1,526	1,597	1,288
North Dakota.....	1,057	1,149	1,109	1,260	1,116	1,169	1,215	1,401	1,526	1,597	1,288
Ohio.....	625	682	868	1,091	715	587	875	793	805	823	872
Oklahoma.....	1,200	1,271	543	705	453	423	478	460	505	666	555
Pennsylvania (bituminous).....	237	378	1,048	1,186	706	710	1,032	888	996	1,126	1,006
South Dakota.....	769	853	335	345	176	242	305	301	295	277	285
Tennessee.....	640	667	581	722	521	512	637	572	773	858	669
Texas.....	1,006	1,076	1,710	628	374	436	556	609	562	772	577
Utah.....	1,172	1,171	985	1,687	1,168	1,376	1,371	1,323	1,301	1,486	1,438
Virginia.....	985	1,064	787	1,078	763	966	1,009	1,030	1,222	1,222	1,053
Washington.....	1,250	1,303	897	947	697	716	846	836	853	904	867
West Virginia.....	1,424	1,591	1,063	1,085	859	892	1,102	1,188	1,325	1,436	1,150
Wyoming.....	1,108	1,168	1,242	1,521	1,026	781	1,217	1,116	1,234	1,328	1,231
Total (bituminous).....	906	972	916	1,073	733	725	940	909	1,027	1,122	965
Pennsylvania (anthracite).....	1,071	1,134	817	886	774	479	814	737	513	669	750
Total.....	1,071	1,134	898	1,043	740	685	920	878	928	1,083	927

TABLE 69.—United States: Annual production of coal per man, based on all employees, during the years ended December 31, 1917 to 1926
 [Net tons]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	707										
Alaska.....		732	578	638	487	651	681	684	738	768	668
Arkansas.....	536	560	366	295	192	184	602	597	528	666	380
California, Idaho, Arizona, and Oregon.....	287	359	375	530	340	275	345	433	335	407	415
Colorado.....	877	857	176	247	275	448	216	204	301	210	257
Georgia and North Carolina.....	424	284	873	896	628	742	776	806	781	830	805
Illinois.....	1,025	1,039	716	312	292	503	352	502	474	418	392
Indiana.....	1,000	1,010	687	942	729	607	795	765	860	914	841
Iowa.....	628	615	455	656	398	337	741	779	934	991	816
Kansas.....	673	709	526	660	422	402	455	496	464	522	505
Kentucky.....	796	804	659	660	422	692	455	580	580	540	554
Maryland.....	802	808	560	722	625	692	736	810	966	1,089	790
Michigan.....	571	573	474	733	392	326	614	565	753	836	648
Missouri.....	587	591	427	692	516	429	593	536	512	437	537
Montana.....	1,019	994	785	608	415	334	490	415	527	571	497
New Mexico.....	1,970	982	838	985	654	708	897	909	1,136	1,137	890
North Dakota.....	963	946	784	855	617	787	712	662	742	890	804
Ohio.....	895	946	723	902	813	806	855	925	1,013	1,064	894
Oklahoma.....	516	570	450	588	617	497	743	689	707	723	742
Pennsylvania (bituminous).....	991	1,024	864	981	380	358	405	379	413	526	461
South Dakota.....	237	378	313	272	176	242	305	301	873	981	852
Tennessee.....	594	639	452	587	431	426	537	587	295	277	276
Texas.....	538	574	461	547	481	389	587	523	656	728	546
Utah.....	1,184	1,235	1,201	1,333	922	1,057	1,077	1,037	478	661	1,229
Virginia.....	903	935	805	812	922	783	833	843	1,056	1,234	852
Washington.....	755	799	594	752	560	576	680	688	836	1,027	683
West Virginia.....	978	1,005	715	874	715	732	920	995	1,111	1,209	940
Wyoming.....	1,165	1,249	991	1,238	849	660	1,006	950	1,051	1,111	1,016
Total (bituminous).....	915	942	749	889	627	614	801	781	884	966	812
Pennsylvania (anthracite).....	646	672	570	618	567	249	592	550	386	511	544
Total.....	860	890	713	839	615	565	763	733	777	867	759

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 70.—United States: Daily production of coal per man, based on underground employees only, during the years ended December 31, 1917 to 1926

State	[Net tons]										Average, 10 years
	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	
Alabama.....	3.2	3.3	3.2	3.2	3.6	3.7	3.6	3.8	3.6	3.4	3.4
Alaska.....	.....	.....	2.1	2.4	1.7	4.0	4.5	3.5	3.7	3.0	3.0
Arkansas.....	3.7	3.5	3.4	3.6	3.5	3.3	4.5	4.3	3.8	3.7	3.7
California, Idaho, Arizona, and Oregon.....	1.6	2.0	1.5	1.3	3.1	2.4	1.4	1.9	3.5	2.6	2.7
Colorado.....	4.2	4.3	5.1	4.4	4.7	4.7	5.3	5.3	4.8	4.8	4.7
Georgia and North Carolina.....	2.2	1.9	1.5	1.5	2.0	3.6	2.0	3.0	3.0	3.3	3.4
Illinois.....	4.7	5.0	5.4	5.4	5.2	5.7	5.6	5.7	5.9	5.9	5.4
Indiana.....	5.3	5.6	5.1	5.7	5.5	6.0	6.2	6.6	6.0	6.7	6.0
Iowa.....	2.8	2.8	2.9	2.9	2.8	2.8	3.0	3.1	3.3	3.1	3.1
Kansas.....	3.8	3.7	3.5	3.8	3.6	3.7	3.7	3.8	3.1	3.1	3.8
Kentucky.....	4.6	4.5	4.5	4.9	3.0	3.0	3.8	5.6	4.6	4.3	4.1
Maryland.....	4.0	3.9	3.8	4.2	3.0	3.8	4.1	3.8	4.0	4.1	4.0
Michigan.....	2.1	2.8	3.0	3.0	3.0	2.8	2.0	3.3	2.9	2.8	2.9
Missouri.....	3.1	3.2	3.1	3.4	3.0	2.6	3.0	3.0	3.2	2.9	2.9
Montana.....	4.7	5.1	5.1	5.4	5.1	3.0	3.8	6.3	3.9	3.7	3.7
New Mexico.....	3.0	4.5	3.9	4.2	4.2	4.5	3.8	4.2	4.2	4.2	4.2
North Dakota.....	5.0	5.2	5.1	5.8	5.7	5.7	6.7	6.5	10.9	6.6	6.2
Ohio.....	3.0	3.0	3.2	3.3	3.3	3.7	3.8	5.5	3.3	3.2	3.5
Oklahoma.....	4.6	4.7	4.8	4.6	3.7	3.7	3.6	3.7	3.3	3.0	3.5
Pennsylvania (bituminous).....	1.5	2.6	2.0	3.6	4.1	4.6	3.5	4.0	5.0	5.2	4.5
South Dakota.....	3.2	2.1	2.0	3.1	1.4	1.8	3.2	3.2	2.7	2.9	2.1
Tennessee.....	3.2	2.1	2.0	3.1	3.4	3.1	3.5	3.2	2.7	3.3	3.3
Texas.....	2.3	2.1	2.3	2.6	1.4	1.8	3.5	3.7	3.7	3.7	3.8
Utah.....	7.3	7.5	7.1	7.7	7.7	7.7	8.1	7.3	7.6	8.0	7.2
Virginia.....	4.3	4.2	4.1	4.1	4.0	3.7	3.8	4.5	3.8	3.7	4.4
Washington.....	2.0	3.2	3.6	3.6	4.4	3.7	4.0	4.5	4.4	4.8	3.9
West Virginia.....	5.0	5.5	5.3	5.5	5.5	6.2	6.5	6.5	6.9	6.8	6.9
Wyoming.....	5.8	5.9	5.6	5.8	6.1	6.2	6.3	6.5	6.9	7.3	6.1
Total (bituminous).....	4.6	4.7	4.7	4.9	4.9	5.1	5.3	5.3	5.3	5.2	5.0
Pennsylvania (anthracite).....	3.5	3.3	3.1	3.3	2.9	3.2	3.0	2.7	2.8	2.7	3.0
Total.....	4.3	4.4	4.3	4.6	4.3	4.8	4.7	4.6	4.8	4.7	4.5

TABLE 71.—United States: Daily production of coal per man, based on all employees, during the years ended December 31, 1917 to 1936
 [Net tons]

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	Average, 10 years
Alabama.....	2.6	2.6	2.4	2.6	2.9	3.0	2.9	3.1	3.0	2.9	2.8
Alaska.....	.....	.....	1.3	1.2	.....	1.3	2.7	.....	2.2	3.0	2.7
Arkansas.....	2.9	2.8	2.8	3.0	3.0	3.4	3.6	3.2	3.0	3.0	3.0
California, Idaho, Arizona, and Oregon.....	1.3	1.3	1.2	1.8	1.8	1.8	1.0	1.3	1.7	2.0	1.3
Colorado.....	3.3	3.4	3.9	3.5	3.8	3.9	4.5	4.5	4.1	4.1	3.8
Georgia and North Carolina.....	1.6	1.3	1.1	1.1	1.3	2.4	1.4	1.9	1.9	1.5	1.6
Illinois.....	4.2	4.4	4.5	4.8	4.8	5.1	5.0	5.2	5.3	5.3	4.8
Indiana.....	4.5	4.5	4.7	4.9	4.9	5.2	5.5	5.7	5.9	5.7	5.1
Iowa.....	2.5	2.5	2.6	2.6	2.7	2.6	2.8	2.8	3.0	2.9	2.7
Kansas.....	3.1	3.0	2.9	3.2	3.1	3.2	3.3	3.3	3.4	3.4	3.2
Kentucky.....	3.7	3.5	3.5	4.0	4.1	4.9	4.8	4.7	4.7	4.5	4.3
Maryland.....	3.2	3.1	3.1	3.5	3.3	3.2	3.5	3.3	3.6	3.6	3.3
Michigan.....	2.3	2.4	2.7	2.6	2.6	2.7	2.7	3.0	3.2	3.2	2.6
Missouri.....	2.4	2.5	2.4	2.6	2.5	3.0	3.2	3.1	3.2	3.3	2.7
Montana.....	3.8	3.8	4.0	4.2	4.6	5.0	5.0	5.3	6.6	7.1	4.6
New Mexico.....	3.0	3.3	3.1	3.3	3.6	3.6	3.3	3.3	3.7	3.5	3.3
North Dakota.....	3.8	3.8	3.6	3.9	4.2	4.6	4.7	5.6	6.6	6.6	4.7
Ohio.....	4.3	4.2	4.4	4.8	4.6	5.0	5.0	4.8	4.7	4.6	4.6
Oklahoma.....	2.5	2.5	2.4	2.7	2.7	3.1	3.0	3.0	2.7	2.9	2.7
Pennsylvania (bituminous).....	3.8	3.8	4.0	4.1	4.0	3.9	4.1	4.3	4.4	4.4	4.0
South Dakota.....	1.5	2.6	1.9	2.1	1.4	1.8	2.5	2.2	2.1	2.2	2.0
Tennessee.....	2.5	2.4	2.2	2.5	2.8	2.6	2.9	3.1	3.1	3.1	2.7
Texas.....	2.1	2.2	2.0	2.2	2.4	2.1	2.7	3.2	3.2	3.4	2.4
Utah.....	5.4	4.8	5.0	5.3	6.1	5.2	6.8	5.7	5.9	6.7	5.6
Virginia.....	3.8	3.4	3.3	3.1	3.8	4.0	3.9	3.7	3.7	3.9	3.6
Washington.....	2.3	2.9	2.7	2.9	3.5	3.0	3.2	3.4	3.5	3.6	3.1
West Virginia.....	4.4	4.2	4.2	4.4	4.8	5.1	5.4	5.5	4.9	4.9	4.8
Wyoming.....	4.7	4.7	4.5	4.7	5.1	5.2	5.2	5.4	5.9	6.2	5.0
Total (bituminous).....	3.8	3.8	3.8	4.0	4.2	4.3	4.5	4.6	4.5	4.5	4.2
Pennsylvania (anthracite).....	2.3	2.3	2.1	2.3	2.1	2.3	2.2	2.0	2.1	2.1	2.2
Total.....	3.4	3.5	3.4	3.6	3.6	3.9	3.9	3.8	4.0	3.9	3.7

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 72.—United States: Average value of coal per ton at mines during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
Alabama.....	\$2.27	\$2.85	\$2.96	\$3.65	\$3.08	\$2.34	\$2.52	\$2.34	\$2.12	\$2.29
Alaska.....	4.02	5.45	5.66	5.83	6.46	6.08	6.30	5.62	4.89	5.26
Arkansas.....	3.18	3.67	3.70	4.56	4.37	4.14	4.01	4.06	3.96	3.77
California, Idaho, Arizona, and Oregon.....	2.22	2.69	3.41	4.47	4.66	3.87	3.94	4.19	4.75	3.67
Colorado.....	2.69	3.22	2.78	3.49	3.55	3.16	3.22	3.05	2.94	2.78
Georgia and North Carolina.....	2.53	3.61	3.73	5.38	3.95	4.55	4.11	3.75	3.83	3.53
Illinois.....	1.88	2.32	2.30	3.08	2.74	2.89	2.50	2.16	2.19	2.14
Indiana.....	1.99	2.29	2.22	3.16	2.57	2.85	2.48	2.26	2.02	1.98
Iowa.....	2.35	3.02	3.09	3.94	3.81	3.72	3.59	3.31	3.14	3.07
Kansas.....	2.31	2.91	3.05	3.87	3.85	3.66	3.21	3.03	2.88	2.84
Kentucky.....	2.17	2.77	2.46	4.11	2.69	3.02	2.54	1.88	1.72	1.74
Maryland.....	2.46	2.77	2.73	4.63	3.61	3.37	3.02	1.97	1.97	2.21
Michigan.....	3.22	3.83	3.88	4.93	4.87	5.05	4.73	4.33	4.20	4.12
Missouri.....	2.43	3.02	3.21	4.16	3.92	3.81	3.40	2.96	3.07	2.98
Montana.....	2.11	2.53	2.67	3.16	3.26	3.19	3.07	2.96	2.59	2.46
New Mexico.....	1.86	2.08	3.11	3.68	3.91	3.49	3.66	3.51	3.37	3.16
North Dakota.....	1.80	2.26	2.50	2.87	2.69	3.49	2.36	2.06	1.85	1.74
Ohio.....	2.48	2.58	2.22	3.82	2.65	2.65	2.43	2.03	1.93	1.96
Oklahoma.....	2.81	3.04	3.83	4.80	4.62	3.23	3.75	3.69	3.30	3.18
Pennsylvania (bituminous).....	2.44	2.59	2.42	3.77	2.78	3.11	2.75	2.26	2.10	2.13
South Dakota.....	2.90	2.80	3.17	3.60	3.81	2.84	2.41	2.99	2.91	2.91
Tennessee.....	2.00	2.83	2.77	4.02	3.35	2.89	2.73	2.13	1.85	1.90
Texas.....	1.77	2.03	2.69	3.75	2.64	2.32	1.82	1.50	1.55	1.60
Utah.....	2.07	2.71	2.76	3.22	3.35	3.14	2.86	2.69	2.56	2.37
Virginia.....	2.00	2.51	3.55	3.99	3.06	2.58	2.76	2.04	1.84	1.92
Washington.....	2.08	3.46	3.58	3.88	4.03	3.98	3.72	3.65	3.61	3.61
West Virginia.....	2.32	2.56	2.49	4.34	2.84	2.93	2.65	1.82	1.71	1.84
Wyoming.....	1.93	2.39	2.60	2.98	3.24	3.04	2.71	1.82	2.79	2.74
Total (bituminous).....	2.26	2.58	2.49	3.75	3.24	3.02	2.68	2.20	2.04	2.06
Pennsylvania (anthracite).....	2.85	3.40	4.14	4.85	5.00	5.01	5.43	5.43	5.30	5.62
Total.....	2.35	2.70	2.75	3.90	3.26	3.25	3.07	2.69	2.38	2.52

TABLE 73.—United States: Percentage of bituminous coal mined by machines during the years ended December 31, 1917 to 1926

State	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
Alabama.....	30.1	31.0	33.1	34.7	39.9	39.7	42.6	50.7	53.0	56.7
Alaska.....	7.2	10.9	7.9	3.2	13.0	15.5	14.6	24.6	44.0	41.9
Arkansas.....	32.7	36.9	40.3	43.8	45.8	50.4	47.3	51.0	52.7	51.8
California, Idaho, Arizona, and Oregon.....	56.6	59.0	59.0	61.9	65.5	66.6	68.3	71.6	72.6	74.6
Colorado.....	54.1	49.0	51.7	48.7	52.8	49.8	54.3	59.8	60.9	63.0
Illinois.....	11.4	10.7	11.7	20.7	15.4	13.6	20.7	18.5	19.6	23.6
Indiana.....	5	7	1.0	1.1	1.0	3.2	2.4	2.3	4.4	5.5
Iowa.....	83.6	78.5	79.8	77.6	83.9	79.1	84.2	87.2	88.2	89.9
Kentucky.....	6.1	6.7	10.3	11.2	10.2	24.8	25.5	25.5	30.8	29.9
Maryland.....	87.3	86.8	94.7	93.5	95.6	96.1	92.7	95.2	97.0	99.4
Michigan.....	19.9	22.0	22.3	26.0	29.9	29.8	29.6	29.4	33.9	30.7
Missouri.....	49.0	50.0	44.2	47.5	40.5	55.8	47.5	51.6	51.1	48.4
Montana.....	26.3	30.7	30.5	34.1	30.3	31.3	29.2	34.7	35.0	39.6
New Mexico.....	38.0	47.9	38.6	37.7	39.0	33.3	30.8	31.3	33.0	39.4
North Dakota.....	87.9	84.8	87.1	83.3	91.6	80.5	88.5	86.4	84.4	86.7
Ohio.....	36.6	39.5	47.3	48.4	56.8	49.9	56.7	58.4	57.0	56.6
Oklahoma.....	55.4	55.0	57.3	57.9	63.6	58.0	64.1	64.8	63.5	63.5
Pennsylvania.....	22.6	22.7	30.6	25.6	27.8	29.5	33.1	45.9	46.8	51.3
South Dakota.....	1	1	6	2.0	4.6	4.3	3.8	9.4	13.5	4.7
Tennessee.....	54.8	53.9	68.8	58.7	75.1	76.5	68.3	74.8	74.1	72.1
Texas.....	63.9	62.2	67.7	69.9	77.9	71.9	73.5	79.7	81.8	82.4
Utah.....	5.8	6.1	9.1	10.5	5.4	12.8	8.6	10.4	5.5	8.5
Virginia.....	64.8	67.5	70.3	77.2	77.2	76.7	78.7	82.0	82.4	82.4
Washington.....	41.9	47.3	55.2	54.4	51.8	57.8	50.1	55.1	61.7	58.3
West Virginia.....	55.5	55.9	59.2	59.8	65.6	63.2	66.9	69.5	70.6	71.7
Wyoming.....										
Total.....	55.5	55.9	59.2	59.8	65.6	63.2	66.9	69.5	70.6	71.7

TABLE 74.—United States: Number of men killed per thousand 300-day workers employed in mineral industries

	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
Coal mines.....	4.70	4.66	4.44	3.93	4.25	3.94	4.28	3.78	4.20	4.90	4.39	4.80	4.65	4.50
All metal mines.....	3.72	3.92	3.89	3.62	4.44	3.57	3.47	3.16	3.09	3.54	3.01	3.51	2.99	3.47
Copper mines.....	4.08	3.85	3.72	3.64	5.88	3.45	3.54	3.43	3.70	3.00	3.11	3.55	2.94	3.45
Gold and miscellaneous metal mines.....	3.83	4.06	4.79	4.05	4.03	4.27	4.41	4.20	3.29	5.35	3.93	4.99	3.88	3.27
Iron mines.....	3.29	3.78	2.88	3.41	3.54	3.45	3.09	2.34	3.04	3.00	2.38	2.95	2.54	4.23
Lead and zinc mines (Mississippi Valley).....	3.90	4.32	5.37	3.14	4.09	3.58	4.13	3.27	2.58	2.64	2.73	2.76	3.32	3.05
Nonmetallic mineral mines.....	3.02	3.72	2.43	3.00	2.48	1.67	1.65	2.89	1.98	2.39	2.67	1.94	1.71	2.62
All quarries (including outside works).....	2.10	2.64	1.80	2.26	1.83	2.11	1.93	2.31	2.00	1.92	1.68	1.63	1.78	1.87
Cement-rock quarries.....	2.99	3.95	1.60	2.38	2.99	2.14	2.66	2.75	1.91	2.27	1.67	2.26	1.78	1.51
Granite quarries.....	1.47	3.36	2.27	1.86	1.54	2.10	1.81	2.06	2.57	1.42	.90	1.19	.96	2.23
Limestone quarries.....	2.13	2.38	1.70	2.36	1.79	1.79	1.97	2.58	1.97	1.87	1.87	1.64	1.76	2.09
Marble quarries.....	1.81	2.72	1.00	1.16	.57	2.14	.51	.92	1.49	.43	.59	1.22	.56	1.67
Sandstone and bluestone quarries.....	1.32	1.45	.93	1.28	.99	2.38	.76	.56	1.25	1.19	.48	1.88	3.32	1.03
Slate quarries.....	3.05	2.99	2.02	2.62	1.31	3.16	1.78	1.49	1.40	3.15	2.13	.57	2.60	2.09
Trap-rock quarries.....	2.40	2.49	3.46	4.45	2.61	4.47	2.56	2.61	2.88	3.36	3.35	1.84	4.13	2.40
All quarries (excluding outside works).....	-----	-----	2.17	2.32	2.00	2.19	2.29	2.81	2.22	2.31	1.97	1.90	2.28	2.58
All quarries (outside works only).....	-----	-----	1.05	2.15	1.53	1.98	1.34	1.59	1.68	1.38	1.26	1.24	1.22	1.11
Metallurgical plants:														
Ore-dressing plants.....	.99	1.51	1.57	1.41	1.93	1.55	1.48	1.25	.50	1.09	1.62	1.24	1.00	.75
Smelters.....	1.93	1.02	1.05	.73	1.05	.92	1.09	.66	.99	.77	.64	.55	.64	.69
Auxiliary works.....	-----	-----	.89	.94	.85	.31	1.08	1.08	1.21	.94	1.08	.41	.78	
All coke ovens.....	1.97	2.12	1.21	1.32	2.14	2.06	1.92	1.64	1.23	1.59	1.76	1.16	1.16	2.10
Beehive coke ovens.....	-----	-----	.65	1.29	1.30	1.16	.92	1.09	1.76	1.66	1.68	.75	.78	1.24
By-product coke ovens.....	-----	-----	1.75	1.35	3.13	2.84	2.55	1.92	1.09	1.57	1.79	1.26	1.27	2.31

TABLE 75.—United States: Number of men injured per thousand 300-day workers employed in mineral industries

	1913	1914	1915	1916	1917	1918	1919
Coal mines ¹							
All metal mines.....	179.59	211.87	248.56	250.64	240.97	237.09	233.60
Copper mines.....	230.80	312.19	322.01	319.58	313.35	322.12	309.60
Gold and miscellaneous metal mines.....	70.37	126.90	201.49	190.77	172.51	185.18	191.29
Iron mines.....	268.31	224.07	233.51	240.17	227.64	185.45	202.55
Lead and zinc mines (Mississippi Valley).....	133.51	189.01	238.27	263.09	272.99	319.54	292.28
Nonmetallic mineral mines.....	84.86	89.75	107.78	144.70	123.58	104.69	139.27
All quarries (including outside works).....	88.81	114.92	117.30	175.62	185.14	147.07	144.20
Cement-rock quarries.....	207.99	226.20	148.25	248.83	277.73	238.65	231.58
Granite quarries.....	69.60	109.21	96.72	143.99	189.73	109.68	124.70
Limestone quarries.....	89.05	114.23	127.43	176.10	175.52	141.34	134.05
Marble quarries.....	68.67	121.31	93.80	125.20	100.20	58.02	75.26
Sandstone and bluestone quarries.....	74.36	69.08	66.56	127.86	118.89	148.04	131.96
Slate quarries.....	18.81	28.61	33.08	85.00	112.04	96.29	98.51
Trap-rock quarries.....	87.77	152.56	232.85	237.84	222.92	205.17	186.47
All quarries (excluding outside works).....			127.57	158.63	162.95	148.29	146.65
All quarries (outside works only).....			96.90	206.06	223.81	145.03	140.28
Metallurgical plants:							
Ore-dressing plants.....	122.38	94.19	109.65	135.66	121.12	139.54	122.21
Smelters.....	174.71	175.44	157.69	195.61	152.88	148.40	141.46
Auxiliary works.....				142.10	169.33	139.63	101.29
All coke ovens.....	107.73	103.06	90.78	153.49	188.59	219.64	145.66
Beehive coke ovens.....			39.84	100.37	94.43	131.11	125.96
By-product coke ovens.....			140.00	217.09	300.06	296.06	158.33

	1920	1921	1922	1923	1924	1925	1926
Coal mines ¹							
All metal mines.....	242.02	249.68	268.48	275.41	278.04	283.53	245.01
Copper mines.....	323.20	317.53	320.78	349.09	347.82	350.62	288.30
Gold and miscellaneous metal mines.....	204.82	225.46	260.29	298.87	297.80	307.42	299.50
Iron mines.....	200.49	210.91	177.44	150.23	151.01	159.43	133.93
Lead and zinc mines (Mississippi Valley).....	327.97	379.67	464.23	495.65	464.16	468.07	304.20
Nonmetallic mineral mines.....	161.88	215.47	247.51	212.37	178.74	165.40	190.74
All quarries (including outside works).....	145.51	174.54	171.93	176.04	175.03	169.67	160.28
Cement-rock quarries.....	182.49	213.50	191.08	213.71	169.13	103.55	85.72
Granite quarries.....	130.53	134.09	147.20	177.99	195.73	202.52	185.12
Limestone quarries.....	143.11	178.54	177.72	169.30	173.58	193.47	200.66
Marble quarries.....	91.98	100.87	127.76	127.88	131.89	116.04	144.81
Sandstone and bluestone quarries.....	100.56	156.22	100.63	119.42	169.09	200.31	161.67
Slate quarries.....	108.20	135.18	127.40	149.11	159.98	168.98	182.72
Trap-rock quarries.....	208.89	229.92	258.01	228.47	234.39	324.87	249.57
All quarries (excluding outside works).....	139.62	167.09	177.16	178.11	178.00	195.02	187.46
All quarries (outside works only).....	154.04	185.79	164.76	173.05	170.61	141.06	131.01
Metallurgical plants:							
Ore-dressing plants.....	156.07	151.05	179.51	172.44	156.03	130.66	131.95
Smelters.....	136.37	149.89	143.71	130.71	112.65	113.83	109.50
Auxiliary works.....	113.92	138.54	120.26	132.37	137.43	107.96	93.70
All coke ovens.....	114.13	133.62	93.77	101.18	79.54	70.51	79.13
Beehive coke ovens.....	102.54	118.52	98.28	122.48	113.54	96.89	133.07
By-product coke ovens.....	120.04	137.50	92.15	92.95	71.33	63.34	65.69

¹ Injury rates not available.

TABLE 76.—Coal-mine data for Alaska, for the year ended December 31, 1927¹

Month	Production (short tons)	Men employed			Man shifts			Accidents	
		Underground	Surface	Total	Underground	Surface	Total	Killed	Injured
January.....	9, 595	68	40	108	1, 747	1, 162	2, 909	.....	1
February.....	9, 656	72	43	115	1, 802	1, 143	2, 945	.....	2
March.....	8, 361	75	44	119	1, 655	1, 060	2, 715	.....	.....
April.....	10, 679	68	39	107	1, 847	1, 200	3, 047	.....	.....
May.....	9, 253	70	35	105	1, 675	1, 080	2, 755	.....	1
June.....	6, 384	62	36	98	1, 199	745	1, 944	.....	.....
July.....	4, 899	65	54	119	1, 608	1, 226	2, 834	.....	.....
August.....	8, 063	62	54	116	1, 785	1, 480	3, 265	.....	.....
September.....	7, 229	60	52	112	1, 642	1, 365	3, 007	.....	.....
October.....	10, 234	29	49	78	1, 944	1, 417	3, 361	.....	4
November.....	10, 602	78	41	119	2, 189	1, 165	3, 354	.....	2
December.....	8, 961	66	38	104	1, 672	888	2, 560	1	2
Total.....	103, 916	64	44	108	20, 765	13, 931	34, 696	1	12

¹ Compiled from information received from B. D. Stewart, supervising mining engineer, Anchorage, Alaska.

NATIONAL SAFETY COMPETITION

During the calendar year 1927 the United States Bureau of Mines conducted, for the third consecutive year, a safety contest among more than 250 mines and quarries. Only companies employing at least 50 men underground at mines and 25 men in the pit at quarries or open-pit mines could enter the contest. The contestants were rated according to their accident-severity rates; that is, according to the number of days the injured employees lost from accidents in proportion to total number of man-hours worked by all employees.

A bronze trophy, "Sentinels of Safety," the gift of The Explosives Engineer, was presented to the winning company of each of the five groups.

The following figures show the accident-severity rates of the winning company in each group compared with the general average:

	Winning company	Group average
Anthracite mines.....	0. 119	9. 927
Bituminous coal mines.....	. 132	15. 739
Metal mines.....	0	8. 394
Nonmetallic mines.....	0	4. 413
Quarries and open-pit mines.....	0	4. 741
Average.....	. 060	9. 421

The accident-frequency rates for the winning plants and for each of the groups were as follows. These figures indicate the total number of deaths, permanent disabilities, and lost-time injuries per million man-hours:

	Winning company	Group average
Anthracite mines.....	29.7	99.6
Bituminous coal mines.....	1.5	97.3
Metal mines.....	0	63.9
Nonmetallic mines.....	0	33.4
Quarries and open-pit mines.....	0	33.5
Average.....	2.8	72.3

The records established by the competition of 1927 show conclusively that in many instances the companies' efforts to prevent accidents to their employees are successful.

The following tables show the accident-frequency rates and the accident-severity rates for each mine and quarry that participated in the National Safety Competition of 1927. Although some of the companies did not employ enough workers during their period of operation to remain eligible for consideration in the award of the trophy their records are nevertheless included in the accompanying tables.

TABLE 77.—*Accident data for certain anthracite mines in 1927*¹

Code number of company	Order of severity rates	Average employees	Hours worked	Number of accidents				Number of days lost				Frequency rate ²	Severity rate ³
				Fatal	Perma- nent disa- bility	Tempo- rary disa- bility	Total	Fatal	Perma- nent disa- bility	Tempo- rary disa- bility	Total		
45.....	1	65	134,680			4	4				16	29,700	0.119
104.....	2	259	575,404			34	34				381	59,089	.662
124.....	3	324	710,208			50	50				763	70,402	1.074
132.....	4	258	551,088			63	63				851	114,319	1.544
147.....	5	770	1,700,764		2	187	189			600	2,869	111,127	2.040
155.....	6	220	440,080			60	60				1,111	136,339	2.525
164.....	7	113	211,065			16	16				626	75,806	2.966
169.....	8	211	483,445		1	71	72			600	1,602	148,931	3.314
172.....	9	505	1,154,424		4	108	112			1,200	2,953	4,153	3.597
183.....	10	867	1,817,372	1		140	141			6,000	8,547	77,585	4.703
188.....	11	716	1,403,360	1		143	144			6,000	7,927	102,610	5.649
190.....	12	494	1,188,392	1		57	59			300	7,006	49,647	5.895
197.....	13	1,221	2,841,470	3		282	285			18,000	4,877	100,300	8.051
198.....	14	405	929,880	1		99	100			6,000	1,637	107,541	8.213
203.....	15	381	768,377	1		84	85			6,000	1,300	110,623	9.501
206.....	16	872	1,952,672	1		148	152			18,000	22,082	77,842	11.309
210.....	17	1,011	2,166,640	4		180	187			24,000	27,879	86,309	12.867
211.....	18	930	2,091,392	3	3	269	275			18,000	27,363	131,491	13.084
213.....	19	422	872,006	2		93	95			12,000	13,151	108,944	15.081
214.....	20	434	1,041,560	2		100	104			3,000	16,661	99,850	15.996
219.....	21	159	342,168	1	1	21	23			6,000	6,773	67,218	19.794
227.....	22	701	1,563,608	5	3	235	243			30,000	39,714	155,410	25.399
241.....	23	299	604,411	4	1	45	50			24,000	25,686	82,725	42.498
Totals and averages.....				32	22	2,489	2,543			192,000	41,625	99,552	9.927
1926 totals and averages.....				20	23	2,296	2,339			120,000	35,852	178,252	7.464

¹ As the accident reports from mining companies are considered confidential by the Bureau of Mines, the identity of the mines to which this table relates is not revealed.
² Frequency rate indicates number of fatal, permanent, and other lost-time accidents per million man-hours of exposure; severity rate indicates number of days lost from accidents per thousand man-hours.

TABLE 78.—Accident data for certain bituminous mines in 1927 1

Code number of company	Order of severity rates	Average of employees	Hours worked	Number of accidents			Number of days lost				Frequency rate	Severity rate
				Fatal	Perma-nent dis-a-bility	Tempo-rary dis-a-bility	Total	Fatal	Perma-nent dis-a-bility	Tempo-rary dis-a-bility			Total
33	1	56	47,384	1	1	24	1	1	24	0	4.938	0
44	2	211	202,520	1	1	91	1	1	91	4.452	1.132	1.119
48	3	478	688,937	1	1	188	1	1	188	20.252	2.476	1.452
85	4	274	395,029	8	8	111	8	8	111	77.688	7.784	1.476
112	5	96	141,592	8	8	340	8	8	340	10.595	8.889	1.476
116	6	524	755,100	3	3	325	3	3	325	8.076	8.915	1.476
117	7	258	371,484	30	30	973	30	30	973	100.361	1.069	1.069
123	8	290	303,920	13	13	60	13	13	60	120.872	1.960	1.960
143	9	56	129,533	60	60	11	60	60	11	60.518	2.069	2.069
146	10	535	496,392	11	11	81	11	11	81	113.629	2.115	2.115
149	11	79	181,765	79	79	441	79	79	441	132.889	2.344	2.344
150	12	782	712,848	25	25	136	25	25	136	8.263	2.456	2.456
154	13	82	188,127	3	3	1,049	3	3	1,049	105.192	2.829	2.829
154	14	418	605,142	39	39	764	39	39	764	111.368	2.921	2.921
157	15	174	370,749	1	1	564	1	1	564	68.610	2.977	2.977
161	16	545	466,920	13	13	342	13	13	342	62.622	3.060	3.060
165	17	405	189,476	7	7	1,446	7	7	1,446	90.789	3.282	3.282
166	18	50	111,782	46	46	798	46	46	798	130.829	3.368	3.368
168	19	280	440,584	31	31	991	31	31	991	51.051	4.040	4.040
170	20	99	236,950	31	31	750	31	31	750	51.051	4.040	4.040
178	21	284	430,944	1	1	836	1	1	836	100.553	6.327	6.327
178	22	267	365,848	22	22	2,306	22	22	2,306	121.716	6.466	6.466
223	23	114	201,552	19	19	32	19	19	32	8.306	100.553	6.327
187	24	561	312,740	131	131	57	131	131	57	3,028	121.716	6.466
192	25	190	1,468,304	1	1	2,100	1	1	2,100	406	98.039	6.634
203	26	65	61,200	6	6	168	6	6	168	6,166	344.153	12.631
196	27	663	488,155	1	1	83	1	1	83	8,467	137.496	14.026
206	28	264	603,652	1	1	84	1	1	84	8,331	178.063	17.066
216	29	252	471,744	5	5	208	5	5	208	42,954	93.763	19.357
217	30	893	2,218,991	11	11	10	11	11	10	6,412	30.249	19.396
218	31	268	330,584	7	7	258	7	7	258	54,227	98.866	20.780
218	32	658	2,609,589	11	11	37	11	11	37	6,576	134.950	23.985
220	33	126	534,421	36	36	62	36	36	62	12,956	116.013	24.243
224	34	242	274,175	1	1	40	1	1	40	9,900	98.071	24.273
224	35	228	407,866	3	3	46	3	3	46	869	342.204	25.356
226	36	84	34,272	1	1	11	1	1	11	12,000	22.537	25.448
226	37	342	492,651	2	2	8	2	2	8	6,229	18.060	28.124
231	38	154	221,481	1	1	4	1	1	4	6,000	108.694	28.488
233	39	248	478,407	1	1	49	1	1	49	1,329	108.694	28.488

235	40	258	570,678	3	1	73	77	18,000	300	1,073	19,373	134,927	33,047
237	41	249	383,832	2	1	44	47	12,000	600	1,007	13,697	122,440	35,685
239	42	453	661,284	4	2	10	16	24,000	600	1,553	23,153	21,105	38,037
240	43	188	324,864	2	1	23	32	12,000	300	1,034	13,334	68,508	41,045
247	44	414	864,432	7	1	163	170	42,000	3,374	3,374	45,374	106,691	52,400
255	45	156	88,608	1	2	30	33	6,000	3,900	677	10,577	372,427	118,368
Totals and averages	13,713	21,936,508	42	48	2,045	2,135	252,000	50,346	43,904	345,250	97,326	15,739	
1926 totals and averages	13,348	26,436,344	34	23	1,731	1,788	204,000	36,750	42,298	283,048	67,632	10,707	

¹ As the accident reports from mining companies are considered confidential by the Bureau of Mines, the identity of the mines to which this table relates is not revealed.

**STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS IN
THE UNITED STATES**

Name	Designation	Address
ALABAMA		
Frank N. Julian.....	Superintendent of insurance, ex officio compensation commissioner.	Montgomery.
William B. Hillhouse.....	Chief mine inspector.....	Birmingham.
E. E. Echols.....	Assistant mine inspector, district No. 1.....	Tuscaloosa.
George Park.....	Assistant mine inspector, district No. 2.....	Blossburg.
George Kuffner.....	Assistant mine inspector, district No. 3.....	Jasper.
S. Y. Leith.....	Assistant mine inspector, district No. 4.....	Birmingham.
W. L. Neill.....	Assistant mine inspector, district No. 5.....	Do.
William Goodwin.....	Assistant mine inspector, district No. 6.....	Do.
W. P. Smith.....	Assistant mine inspector, district No. 7.....	Do.
Walter B. Jones.....	State geologist.....	University of Alabama, University.
ALASKA		
B. D. Stewart.....	Supervising mining engineer, U. S. Geological Survey.	Anchorage.
ARIZONA		
R. B. Sims.....	Chairman, industrial commission.....	Phoenix.
G. M. Butler.....	Director, State bureau of mines.....	Tucson.
Tom C. Foster.....	State mine inspector.....	Phoenix.
James Malley.....	Deputy mine inspector.....	Bisbee.
J. C. Anglin.....	do.....	Globe.
James E. O'Brien.....	do.....	Mayer.
ARKANSAS		
W. A. Rooksbery.....	Commissioner of labor.....	Little Rock.
Claude Speegle.....	State mine inspector.....	Fort Smith.
George C. Branner.....	State geologist.....	Little Rock.
CALIFORNIA		
Will J. French.....	Chairman industrial accident commission.....	State Building, San Francisco.
Charles R. Macdonald.....	Chief clerk, statistical department..... Assistant superintendent of safety.....	Do. Associated Realty Building, Los Angeles.
F. L. Lowell.....	Chief mining engineer.....	State Building, San Francisco.
J. Wesley Gebb.....	Mining engineer.....	Associated Realty Building, Los Angeles.
Lloyd L. Root.....	State mineralogist.....	Ferry Building, San Francisco.
COLORADO		
Thomas Annear.....	Chairman, industrial commission.....	State Capitol, Denver.
<i>Metal mines</i>		
John T. Joyce.....	Commissioner of mines, State of Colorado.....	State Capitol, Denver.
T. R. Henahan.....	Inspector, district No. 1.....	Do.
M. J. McCarthy.....	Inspector, district No. 2.....	Canon City.
R. J. Murray.....	Inspector, district No. 3.....	Salida.
.....	Inspector, district No. 4.....	.....
<i>Coal mines</i>		
James Dalrymple.....	Chief inspector of coal mines.....	Capitol Building, Denver.
George C. Dalrymple.....	Deputy inspector.....	Walsenburg.
James W. Graham.....	do.....	Lafayette.
Thomas Allen.....	do.....	Grand Junction.
Hugo H. Machin.....	do.....	3328 West Thirty-second Avenue, Denver.
Finlay McCallum.....	do.....	Aguilar.
W. M. Laurie.....	do.....	Trinidad.
Russel D. George.....	State geologist.....	University of Colorado, Boulder.
CONNECTICUT		
Frederic M. Williams.....	Chairman, board of compensation commissioners.	Room 4, County Courthouse, Waterbury.
W. E. Britton.....	Superintendent, State geological and natural history survey.	P. O. Box 1106, New Haven.
DELAWARE		
Walter O. Stack.....	President, industrial accident board.....	Ford Building, Wilmington.

State mine officials and compensation commissions in the United States—Continued

Name	Designation	Address
FLORIDA		
Herman Gunter.....	State geologist, Florida State Geological Survey	Tallahassee.
GEORGIA		
H. M. Stanley.....	Chairman, industrial commission.....	Atlanta.
S. W. McCallie.....	State geologist, State Geological Survey of Georgia.	Do.
IDAHO		
G. W. Suppiger.....	Chairman, industrial accident board.....	Boise.
Francis A. Thomson.....	Secretary, bureau of mines and geology.....	Moscow.
Stewart Campbell.....	State mine inspector, mining department.....	Boise.
ILLINOIS		
William M. Scanlon....	Chairman, industrial commission.....	303-318 City Hall Square Building, Chicago.
A. D. Lewis.....	Director, department of mines and minerals.....	1142 West Lawrence Avenue, Springfield.
Frank Rosbottom.....	Assistant director, department of mines and minerals.	Statehouse, Springfield.
M. S. Coleman.....	.....do.....	Saline County Coal Corporation, Harrisburg.
F. M. Devlin.....	.....do.....	311 North Gardner Street, West Frankfort.
S. E. Redpath.....	.....do.....	1420 East Monroe Street, Springfield.
William Hall.....	President, miners' examining board.....	921 South Spring Street, Springfield.
John Mulligan.....	Secretary, miners' examining board.....	818 East Lawrence Street, Decatur.
Robert Clem.....	Member, miners' examining board.....	509 North Park Avenue, Herrin.
.....do.....	.....do.....	.....do.....
Patrick Gillen.....	Inspector at large.....	1732 South Lincoln Avenue, Springfield.
Peter Faletti.....	Mine inspector, district No. 1.....	Dalzell.
William E. Kidd.....	Mine inspector, district No. 2.....	609 West Armstrong Avenue, Peoria.
Thomas P. Back.....	Mine inspector, district No. 3.....	229 Martin Street, Canton.
Thomas Hunter.....	Mine inspector, district No. 4.....	1033 West Washington Street, Springfield.
.....do.....	.....do.....	.....do.....
John G. Millhouse.....	Mine inspector, district No. 5.....	Box 254, Litchfield.
Henry D. Thompson.....	Mine inspector, district No. 7.....	523 Norwood Avenue, Collinsville.
James R. Richards.....	Mine inspector, district No. 8.....	214 North Twelfth Street, Belleville.
.....do.....	.....do.....	.....do.....
James Sneddon.....	Mine inspector, district No. 10.....	Box 153, Valer.
George Bagwil.....	Mine inspector, district No. 11.....	506 North Main Street, Harrisburg.
Arthur W. Plumlee.....	Mine inspector, district No. 12.....	Cambria.
W. L. Morgan.....	Economic investigator.....	217 North Third Street, Greenville.
Edward S. Smith.....	Fluorspar inspector.....	Rosiclare.
M. M. Leighton.....	Chief, State geological survey.....	Urbana.
INDIANA		
<i>Mining board</i>		
William Johnson.....	President, mining board.....	Vincennes.
John Templeton.....	Member, mining board.....	Terre Haute.
Harvey Cartwright.....	.....do.....	Do.
William Mitch.....	.....do.....	Do.
.....do.....	Secretary, mining board.....	Room 430, State Capitol, Indianapolis.
<i>Inspection force</i>		
A. C. Dally.....	Chief mine inspector.....	Room 430, State Capitol, Indianapolis.
S. J. Wilton.....	Deputy inspector.....	52 South Twentieth Street, Terre Haute.
John M. Bishop.....	.....do.....	Princeton.
John Stevely.....	.....do.....	Clinton.
Thomas Gillespie.....	.....do.....	Bicknell.
.....do.....	.....do.....	.....do.....
Samuel Artman.....	Chairman, Industrial Board of Indiana.....	432 Statehouse, Indianapolis.
W. N. Logan.....	State geologist, department of geology and natural resources.	125 Statehouse, Indianapolis.

State mine officials and compensation commissions in the United States—Continued

Name	Designation	Address
IOWA		
A. B. Funk.....	Industrial commissioner, workmen's compensation service.	Statehouse, Des Moines.
A. L. Urick.....	Commissioner of labor.....	Do.
Jacob Ritter.....	President, State board of examiners.....	Centerville
C. E. Harvey.....	Secretary, State board of examiners.....	Des Moines.
Fred Norwood.....	Member, State board of examiners.....	Do.
Dave Anderson.....	do.....	Albia.
James Mitchell, sr.....	do.....	Knoxville.
W. E. Holland.....	Inspector, district No. 1.....	Centerville.
R. T. Rhys.....	Inspector, district No. 2.....	Ottumwa.
Edward Sweeney.....	Inspector, district No. 3.....	Des Moines.
George F. Kay.....	Director, Iowa Geological Survey.....	Do.
KANSAS		
James Sherwood.....	State mine inspector.....	Pittsburg.
William Glennon.....	Deputy mine inspector.....	Do.
W. F. McGavran.....	do.....	Arma.
Ernest Shaw.....	do.....	Weir.
W. J. Miller.....	do.....	Burlingame.
<i>Mine rescue department</i>		
James Sherwood.....	Ex officio superintendent, rescue stations.....	Pittsburg.
William Hislop.....	Superintendent, rescue station.....	Do.
William Beveridge.....	Superintendent, Arma rescue station.....	Arma.
John H. Crawford.....	Labor commissioner, public service commission.....	Topeka.
R. C. Moore.....	Acting State geologist.....	University of Kansas, Lawrence.
KENTUCKY		
Joseph M. Lee.....	Chairman, workmen's compensation board.....	Frankfort.
W. H. Jones.....	Chief inspector of mines.....	Lexington.
J. E. Boettger.....	Assistant inspector of district No. 1.....	Dekoven.
John Cates.....	Assistant inspector of district No. 2.....	Central City.
Mart V. Allen.....	Assistant inspector of district No. 3.....	Lexington.
J. A. Dixon.....	Assistant inspector of district No. 4.....	Pineville.
John F. Brown.....	Assistant inspector of district No. 5.....	Hillsboro.
W. E. Wheeler.....	Assistant inspector of district No. 6.....	Hazard.
G. W. Rose.....	Assistant inspector of district No. 7.....	Prestonsburg.
D. W. Hogan.....	Assistant inspector of district No. 8.....	Pikeville.
W. R. Jillson.....	State geologist and director, Kentucky Geological Survey.....	Frankfort.
MAINE		
Donald D. Garcelon.....	Chairman, industrial accident commission.....	Augusta.
MARYLAND		
Robert H. Carr.....	Chairman, State industrial accident commission.....	Equitable Building, Baltimore.
John J. Rutledge.....	Chief mine engineer, Maryland Bureau of Mines.....	22 Light Street, Baltimore.
Frank T. Powers.....	District mine inspector.....	Frostburg.
John B. Watkins.....	do.....	Westernport.
L. C. Hutson.....	Vocational mining instructor.....	Kitzmillier.
<i>State mine examining board</i>		
G. M. Gillette.....	Representing operators.....	Frostburg.
Lawrence Dunn.....	Representing miners.....	Midland.
J. J. Rutledge.....	Representing State, chairman ex officio.....	Baltimore.
Edward B. Matthews.....	State geologist.....	Johns Hopkins University, Baltimore.
MASSACHUSETTS		
William W. Kennard.....	Chairman, industrial accident board.....	Room 272, Statehouse, Boston.
MICHIGAN		
Eugene J. Brock.....	Chairman, department of labor and industry.....	Lansing.
John Harris.....	Coal-mine inspector.....	Saginaw.
Michael Collins.....	Mine inspector for Gogebic County.....	Ironwood.
John Lion.....	Deputy mine inspector for Gogebic County.....	Do.
Nick Drogula.....	do.....	Bessemer.
William Oja.....	Mine inspector for Keweenaw County.....	Mohawk.
Alfred James.....	Mine inspector for Houghton County.....	Laurium.
Harry J. King.....	Deputy mine inspector for Houghton County.....	Do.
Daniel J. Watts.....	Mine inspector for Iron County.....	Stambaugh.
James H. Yelland.....	Mine inspector for Marquette County.....	Ishpeming.
Frank L. Larson.....	Mine inspector for Dickinson County.....	Iron Mountain.
Robert Eva, sr.....	Mine inspector for Ontonagon County.....	Greenland.
John P. Christopher.....	Mine inspector for Baraga County.....	Michigamme.
Richard A. Smith.....	State geologist.....	Lansing.

State mine officials and compensation commissions in the United States—Continued

Name	Designation	Address
MINNESOTA		
Edward Smith.....	Mine inspector for St. Louis County.....	Eveleth.
W. J. Trescott.....	Mine inspector for Itasca County.....	Coleraine.
R. J. Nowell.....	Mine inspector for Crow Wing County.....	Crosby.
F. A. Wildes.....	Superintendent of State mines.....	1860 Portland Avenue, St. Paul.
W. H. Emmons.....	Director Minnesota Geological Survey.....	University of Minnesota.
F. A. Duxbury.....	Chairman Minnesota Industrial Commission.....	612 Bremer Arcade, St. Paul.
MISSISSIPPI		
E. N. Lowe.....	Director Mississippi Geological Survey.....	University.
MISSOURI		
Alroy S. Phillips.....	Chairman workmen's compensation commission.....	Jefferson City.
F. G. Fenix.....	Chief inspector.....	Joplin.
Tolbert Henson.....	Deputy inspector.....	Perryville.
Chant Gray.....	do.....	Novinger.
Charley Lierman.....	do.....	Lexington.
John H. Boos.....	Secretary bureau of mines.....	Jefferson City.
H. A. Buehler.....	State geologist.....	Rolla.
MONTANA		
J. Burke Clements.....	Chairman State industrial board.....	Helena.
Edward Davies.....	State coal-mine inspector.....	Billings.
Ben Henry.....	State metal-mine inspector.....	Butte or Helena.
.....	State geologist.....	University of Montana, Missoula.
NEBRASKA		
Frank A. Kennedy.....	Secretary of labor and compensation commissioner. State geologist.....	State Capitol, Lincoln. University of Nebraska, Lincoln.
NEVADA		
Dan J. Sullivan.....	Chairman Nevada Industrial Commission.....	Carson City.
A. J. Stinson.....	State mine inspector.....	Do.
Charles Huber.....	Deputy mine inspector.....	Tonopah.
Alexander Baird.....	do.....	Ely.
NEW JERSEY		
Andrew F. McBride.....	Deputy commissioner of labor, department of labor.....	Statehouse, Trenton.
John Roach.....	Chief bureau of mines.....	Do.
John P. Diviny.....	State mine inspector.....	41 Madison Avenue, New- ton.
H. B. Kummel.....	State geologist.....	Trenton.
NEW MEXICO		
W. W. Risdon.....	State mine inspector.....	Box 725, Gallup.
C. G. Staley.....	State geologist.....	State Land Office, Santa Fe.
NEW YORK		
James A. Hamilton.....	State industrial commissioner.....	124 East Twenty-eighth Street, New York.
James L. Gernon.....	Director of inspections.....	Do.
M. E. Lonigan.....	Chief statistician, State department of labor.....	Albany.
W. W. Jones.....	Mine inspector, State department of labor.....	Do.
Charles B. Magan.....	Inspector of mines and tunnels, State department of labor.....	Do.
Gustav Werner.....	Tunnel inspector, State department of labor.....	Do.
.....	State geologist.....	University of the State of New York, Albany.
J. J. Daly.....	Chief division of mine, quarries, tunnels, and explosives.....	Albany.
NORTH CAROLINA		
Frank D. Grist.....	Commissioner of labor and printing.....	Raleigh.
H. J. Bryson.....	Acting State geologist.....	Do.
NORTH DAKOTA		
Joseph A. Kitchen.....	Chairman workman's compensation bureau.....	Bismarck.
A. Waddington.....	State mine inspector.....	Do.
A. G. Leonard.....	State geologist.....	University.

State mine officials and compensation commissions in the United States—Continued

Name	Designation	Address
OHIO		
H. R. Witter.....	Director department of industrial relations.....	Columbus.
O. W. Brach.....	Chief division of labor statistics.....	Do.
Thomas P. Kearns.....	Superintendent Industrial Commission of Ohio, division of safety and hygiene.	Do.
Jerome Watson.....	Chief division of mines.....	Do.
Dan C. Jones.....	Deputy inspector, district No. 1.....	Coalton.
Noah F. Andrews.....	Deputy inspector, district No. 2.....	Logan.
Andrew Ginnan.....	Deputy inspector, district No. 3.....	Jacksonville.
Elmer Sagle.....	Deputy inspector, district No. 4.....	Roseville.
E. W. Smith.....	Deputy inspector, district No. 5.....	Byesville.
Stephen Williams.....	Deputy inspector, district No. 6.....	Coshocton.
George H. Foster.....	Deputy inspector, district No. 7.....	Massillon.
Lot H. Jenkins.....	Deputy inspector, district No. 8.....	Martins Ferry.
Frank P. Corey.....	Deputy inspector, district No. 9.....	Flushing.
Richard McGee.....	Deputy inspector, district No. 10.....	Shadyside.
Andrew Mullen.....	Deputy inspector, district No. 11.....	Adena.
Thomas G. Reese.....	Deputy inspector, district No. 12.....	Salem.
Val E. Brown.....	Deputy inspector, district No. 13.....	Pomeroy.
Isaac Vaughn.....	Deputy inspector, district No. 14.....	Nelsonville.
Thomas A. Richards.....	Deputy inspector, district No. 15.....	Shawnee.
James Forgie.....	Deputy inspector, district No. 16.....	Cambridge.
Edward A. Evans.....	Deputy inspector, district No. 17.....	New Philadelphia.
P. W. Moore.....	Inspector, first aid and mine rescue.....	Columbus.
J. C. Wilson.....	Oil and gas well inspector.....	Do.
J. A. Bownocker.....	State geologist.....	Geological Survey of Ohio, Columbus.
OKLAHOMA		
L. B. Kyle.....	Chairman, industrial commission.....	State Capitol, Oklahoma.
Miller D. Hay.....	Chief mine inspector (mines, oil, and gas).....	Do.
Robert H. Brown.....	Assistant mine inspector, district No. 1.....	Colgate.
W. G. Roberts.....	Assistant mine inspector, district No. 2.....	Hartshorne.
W. P. Rutherford.....	Assistant mine inspector, district No. 3.....	Drumright.
C. N. Gould.....	Director, Oklahoma Geological Survey.....	Norman.
OREGON		
E. E. Bragg.....	Chairman, State industrial accident commission.....	Salem.
Henry M. Parks.....	Oregon Agricultural College.....	417 Oregon Building, Port- land.
PENNSYLVANIA		
Charles A. Waters.....	Chairman, industrial board.....	Harrisburg.
T. Henry Walnut.....	Chairman, workmen's compensation board.....	Do.
George H. Ashley.....	State geologist, topographic and geological sur- vey.	Do.
Walter H. Glasgow.....	Secretary of mines, department of mines.....	Do.
Frank Hall.....	Deputy secretary of mines, department of mines.....	Do.
John Reese James.....	Deputy secretary, anthracite division.....	Do.
John Ira Thomas.....	Deputy secretary, bituminous division.....	Do.
<i>Anthracite inspectors</i>		
William Reid.....	Mine inspector, first district.....	122 Park Street, Carbon- dale.
P. J. Moore.....	Mine inspector, second district.....	Carbondale.
L. M. Evans.....	Mine inspector, third district.....	Scranton.
Augustus McDade.....	Mine inspector, fourth district.....	243 North Main Street, Taylor.
S. J. Phillips.....	Mine inspector, fifth district.....	Scranton.
David T. Williams.....	Mine inspector, sixth district.....	Do.
Bert Golden.....	Mine inspector, seventh district.....	1350 Jefferson Avenue, Scrant- on.
Joseph J. Walsh.....	Mine inspector, eighth district.....	430 South Franklin Street, Wilkes-Barre.
Edwin C. Curtis.....	Mine inspector, ninth district.....	Kingston.
John B. Corgan.....	Mine inspector, tenth district.....	Do.
Thomas J. Williams.....	Mine inspector, eleventh district.....	Do.
D. T. Davis.....	Mine inspector, twelfth district.....	Wilkes-Barre.
Frank Kettle.....	Mine inspector, thirteenth district.....	153 State Street, Nanticoke.
John L. Ficton.....	Mine inspector, fourteenth district.....	15 Girard Avenue, Plym- outh.
David J. Roderick.....	Mine inspector, fifteenth district.....	Hazleton.
J. J. Stickler.....	Mine inspector, sixteenth district.....	Do.
William J. Clements.....	Mine inspector, seventeenth district.....	25 Ruddle Street, Coaldale.
Timothy A. Ryan.....	Mine inspector, eighteenth district.....	1230 West Norwegian Street, Pottsville.
Charles G. Fromme.....	Mine inspector, nineteenth district.....	1600 West Norwegian Street, Pottsville.
P. G. Fenton.....	Mine inspector, twentieth district.....	Mahanoy City.

State mine officials and compensation commissions in the United States—Continued

Name	Designation	Address
PENNSYLVANIA—CON.		
<i>Anthracite inspectors—Continued</i>		
William R. Bottomley..	Mine inspector, twenty-first district.....	216 South Jardin Street, Shenandoah.
James Quigley.....	Mine inspector, twenty-second district.....	45 North Chestnut Street, Mount Carmel.
Benjamin I. Evans.....	Mine inspector, twenty-third district.....	Do.
P. J. Friel.....	Mine inspector, twenty-fourth district.....	Shamokin.
Charles J. Price.....	Mine inspector, twenty-fifth district.....	Lykens.
<i>Bituminous inspectors</i>		
Alexander McCanch....	Mine inspector, first district.....	Monongahela.
C. B. Ross.....	Mine inspector, second district.....	Latrobe.
James D. Walker.....	Mine inspector, third district.....	Butler.
William Langan.....	Mine inspector, fourth district.....	Du Bois.
Richard Maize.....	Mine inspector, fifth district.....	Uniontown.
Thomas D. Williams....	Mine inspector, sixth district.....	Johnstown.
Patrick F. Nairn.....	Mine inspector, seventh district.....	2863 Chartiers Avenue, Pitts- burgh.
William G. Knapper....	Mine inspector, eighth district.....	Phillipsburg.
Silas S. Hall.....	Mine inspector, ninth district.....	Connellsville.
Alexander Jack.....	Mine inspector, tenth district.....	Cresson.
J. J. McDonald.....	Mine inspector, eleventh district.....	Greensburg.
T. J. Lewis.....	Mine inspector, twelfth district.....	Punxsutawney.
.....	Mine inspector, thirteenth district.....	.....
William J. McGregor..	Mine inspector, fourteenth district.....	557 Franklin Street, Free- port.
W. B. Wardrop.....	Mine inspector, fifteenth district.....	Barnesboro.
W. H. Howarth.....	Mine inspector, sixteenth district.....	Brownsville.
John Ira Pratt.....	Mine inspector, seventeenth district.....	713 Mifflin Avenue, Wil- kinsburg.
Thomas A. Mather.....	Mine inspector, eighteenth district.....	Tyrone.
James J. Stoker.....	Mine inspector, nineteenth district.....	Irwin.
F. W. Cunningham....	Mine inspector, twentieth district.....	Somerset.
C. P. Byrne.....	Mine inspector, twenty-first district.....	Charleroi.
John F. Bell.....	Mine inspector, twenty-second district.....	Dravosburg.
E. W. Wilkinson.....	Mine inspector, twenty-third district.....	109 North Main Street, Masontown.
Nicholas Evans.....	Mine inspector, twenty-fourth district.....	Johnstown.
Thomas S. Lowther....	Mine inspector, twenty-fifth district.....	Indiana.
P. J. Callaghan.....	Mine inspector, twenty-sixth district.....	Bridgetville.
Harry Phythyon.....	Mine inspector, twenty-seventh district.....	Belle Vernon.
Thomas H. Thompson..	Mine inspector, twenty-eighth district.....	Kittanning.
Patrick S. King.....	Mine inspector, twenty-ninth district.....	612 North Canal Street, Pittsburgh.
C. H. Crocker.....	Mine inspector, thirtieth district.....	Johnstown.
RHODE ISLAND		
Charles W. Brown.....	Superintendent, Natural Resources Survey of Rhode Island.	Providence.
SOUTH CAROLINA		
Stephen Taber.....	State geologist.....	Columbia.
SOUTH DAKOTA		
F. L. Perry.....	Industrial commissioner.....	Pierre.
E. P. Rothrock.....	State geologist, State geological and natural his- tory survey.	Vermilion.
TENNESSEE		
Ed. M. Gillenwaters....	Commissioner, department of labor.....	Nashville.
Harry L. Nelson.....	Superintendent, division of workmen's compen- sation.	Do.
O. P. Pile.....	Chief mine inspector.....	Do.
R. D. Feild.....	District mine inspector, eastern division.....	Knoxville.
A. J. Holden.....	District mine inspector, middle division.....	Dayton.
George B. Thom.....	District mine inspector, western division.....	Decherd.
Walter F. Pond.....	State geologist.....	Nashville.
TEXAS		
James W. Swayne.....	Chairman, industrial accident board.....	Austin.
N. M. Bullock.....	State mine inspector.....	Rockdale.
J. A. Udden.....	Director, bureau of economic geology and tech- nology.	Austin.

State mine officials and compensation commissions in the United States—Continued

Name	Designation	Address
UTAH		
O. F. McShane.....	Chairman, industrial commission.....	State Capitol, Salt Lake City.
.....	Coal mine inspector for the commission.....	Do.
John Taylor.....	State coal mine inspector.....	Do.
E. A. Hodges.....	Metal mine inspector for the commission.....	Do.
William G. Peterson.....	State geologist, Agricultural College of Utah.....	Logan.
VERMONT		
Clarence R. White.....	Commissioner of industries.....	Montpelier.
George H. Perkins.....	State geologist, University of Vermont.....	Burlington.
VIRGINIA		
John Hopkins Hall, jr.....	Commissioner, bureau of labor and industry....	Richmond.
A. G. Lucas.....	Chief State mine inspector.....	Do.
William Boncer.....	Mine inspector.....	Do.
John Gribben.....	Mine-machinery inspector.....	Newport News.
Bolling H. Handy.....	Chairman, industrial commission.....	Richmond.
.....	Director, and State geologist, Virginia Geological Survey.	
WASHINGTON		
C. Bowman.....	Chairman, industrial welfare committee of labor and industries.	Olympia.
William R. Reese.....	Chief mine inspector.....	324 Alaska Building, Seattle.
George T. Wake.....	Deputy mine inspector.....	Do.
.....	do.	
Harold E. Culver.....	Supervisor of geology.....	Pullman.
WEST VIRGINIA		
C. L. Heaberlin.....	Commission, State compensation commission...	Charleston.
R. M. Lambie.....	Chief, department of mines.....	Do.
A. B. Spencer.....	Mine inspector, district No. 1.....	Elkins.
W. H. Sandridge.....	Mine inspector, district No. 2.....	Grafton.
C. D. M. Kramer.....	Mine inspector, district No. 3.....	Weston.
Evan L. Griffith.....	Mine inspector, district No. 4.....	Clarksburg.
W. B. Riggelman.....	Mine inspector, district No. 5.....	Fairmont.
Thomas Jarrett.....	Mine inspector, district No. 6.....	Do.
H. I. Connor.....	Mine inspector, district No. 7.....	Morgantown.
A. E. Lafferty.....	Mine inspector, district No. 8.....	Moundsville.
L. W. Brown.....	Mine inspector, district No. 9.....	Wheeling.
Henry Jenkins.....	Mine inspector, district No. 10.....	Charleston.
V. E. Sullivan.....	Mine inspector, district No. 11.....	Do.
C. E. Foster.....	Mine inspector, district No. 12.....	Cabin Creek.
Zach Evans.....	Mine inspector, district No. 13.....	Handley.
J. A. Porter.....	Mine inspector, district No. 14.....	Gauley Bridge.
W. H. Thomas.....	Mine inspector, district No. 15.....	Rainelle.
Robert Lilly.....	Mine inspector, district No. 16.....	Mount Hope.
W. L. McGinnis.....	Mine inspector, district No. 17.....	Beckley.
C. C. Rumburg.....	Mine inspector, district No. 18.....	Matoaka.
Thomas Stockdale.....	Mine inspector, district No. 19.....	Bramwell.
W. D. Lee.....	Mine inspector, district No. 20.....	Maitland.
W. H. Prentice.....	Mine inspector, district No. 21.....	War.
S. T. Lambert.....	Mine inspector, district No. 22.....	Matewan.
Eli J. Mason.....	Mine inspector, district No. 23.....	Man.
J. F. White.....	Mine inspector, district No. 24.....	Logan.
Robert R. Fields.....	Mine inspector, district No. 25.....	Madison.
C. O. Morris.....	Mine rescue and safety man.....	Charleston.
Percy Gille.....	do.....	Welch.
H. P. Farley.....	do.....	Logan.
Alderson Simms.....	do.....	Wheeling.
L. S. McGee.....	do.....	Meadowbrook.
J. D. McCune.....	Inspector of sand mine, clay pits, quarries, etc.	Martinsburg.
.....	State geologist.....	
WISCONSIN		
Fred M. Wilcox.....	Chairman, industrial commission.....	Madison.
R. McA. Keown.....	Chief engineer, industrial commission.....	Do.
A. H. Findeisen.....	Mining engineer, industrial commission.....	Do.
E. F. Bean.....	Director, geological and natural history survey..	Do.
WYOMING		
William H. Edelman.....	State treasurer, workmen's compensation department.	Cheyenne.
Arthur Calverly.....	Assistant deputy and department manager.....	Do.
Lyman Fearny.....	Chief coal-mine inspector.....	Rock Springs.
David K. Wilson.....	Deputy coal-mine inspector.....	Do.
R. E. Gildroy.....	do.....	Sheridan.
John G. Marzel.....	State geologist, Geological Survey of Wyoming..	Cheyenne.

MINING OFFICIALS OF SOME FOREIGN COUNTRIES

Country and designation	Address	Publication
<i>Australia</i>		
Minister for mines.....	Sydney, New South Wales....	Annual report of department of mines.
Chief inspector of coal mines.....	.....do.....	Do.
Government geologist.....	.....do.....	Do.
Director of mines and chief warden, department of lands and mines.	Darwin, North Australia.....	
Government resident.....	Alice Springs, Central Australia, via Adelaide, South Australia.	
Secretary for mines.....	Brisbane, Queensland.....	Annual report, under secretary for mines.
Minister of mines.....	Adelaide, South Australia....	Mining Review, department of mines.
Secretary for mines.....	Hobart, Tasmania.....	Report of the secretary for mines.
Do.....	Melbourne, Victoria.....	Gold and Mineral Statistics, department of mines. .
Minister for mines.....	Perth, Western Australia....	Report of the department of mines.
Minister of mines.....	Wellington, New Zealand....	The Mines Statement.
<i>Belgium</i>		
L'Ingénieur en chef-directeur des mines.	Bruxelles.....	Annales des mines de Belgique.
<i>Canada</i>		
Minister of mines.....	Toronto, Ontario.....	Annual report Ontario Department of Mines.
Minister of lands and mines.....	Fredericton, New Brunswick..	Annual report of the department of lands and mines.
Chief inspector of mines, mines branch.	Qu'Appelle Building, Edmonton, Alberta.	Annual report of the mines branch of the Province of Alberta.
Minister of mines, bureau of mines..	Victoria, British Columbia....	Annual report of the minister of mines.
Provincial mineralogist, bureau of mines.	.....do.....	Do.
Minister of public works and mines..	Halifax, Nova Scotia.....	Annual report on the mines.
Minister of mines of the Federal Government.	Ottawa, Ontario.....	Report of department of mines.
Deputy of mines.....	.....do.....	Do.
Director, geological survey.....	.....do.....	Do.
Minister of mines.....	Toronto, Ontario.....	Annual report of Ontario Department of Mines.
Minister, department of colonization, mines, and fisheries, bureau of mines.	Quebec, Quebec.....	Report of the mining operations.
Minister of public works.....	Regina, Saskatchewan.....	Annual report of the department of public works.
Acting gold commissioner.....	Dawson, Yukon.....	Publications of national resources intelligence service of the Northwest Territories and Yukon branch, department of interior.
<i>France</i>		
Ministère des travaux public, Direction des mines.	Paris.....	Statistique de l'industrie miniere,
<i>Germany</i>		
Ministerium für Handel und Gewerbe.	Berlin.....	Zeitschrift für das Berg-Hütten und Salinenwesen im Preussischen Staate.
<i>Great Britain</i>		
Secretary for mines, mines department.	Dean Stanley Street, Millbank, Westminster, London, W. 1, England.	Annual report of the secretary for mines, and the annual report of chief inspector of mines.
Chief inspector of mines.....	.....do.....	Do.
Deputy chief inspector.....	.....do.....	Do.
Do.....	.....do.....	Do.
<i>India</i>		
Director, Geological Survey of India..	Calcutta.....	Records of the Geological Survey of India.
<i>Italy</i>		
Ministry of national economy.....	Rome.....	Rivista del Servizio Minerario.

Mining officials of some foreign countries—Continued

Country and designation	Address	Publication
<i>Japan</i> Bureau of statistics, department of commerce and industry.	Tokyo.....	The statistics of the department of commerce and industry.
<i>Mexico</i> Chief of department of mines, department of industry, commerce, and labor.	Mexico City.....	Annual of Mineral Statistics.
<i>Union of South Africa</i> Secretary for mines and industries...	Johannesburg, South Africa...	Annual report of the secretary for mines and industry.

