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1924

BY

WILLIAM W. ADAMS



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COAL-MINE FATALITIES IN THE UNITED STATES, 1924

By WILLIAM W. ADAMS

INTRODUCTION

Accidents at coal mines in the United States during the calendar year 1924 resulted in the death of 2,381 men, a decrease of 77 from fatality record of 2,458 for the year 1923. The reduction of 77 in the number of deaths at the mines in 1924 did not, however, result in a lower fatality rate per million tons of coal produced; the production of coal during 1924 was unusually small and the number of deaths resulting from mine explosions was large.

A summarization of the reports furnished by State mine inspectors to the Bureau of Mines for the entire year shows that the 2,381 deaths in 1924 represented a fatality rate of 4.15 per million tons of coal produced as compared with a rate of 3.74 per million tons in 1923 based on 2,458 deaths. The production of coal in 1924, according to preliminary reports to the United States Geological Survey, was approximately 573 million tons as against 657 million tons in 1923. For the anthracite mines the fatality rate in 1924 was 5.51 per million tons as compared with 5.45 in 1923, figures that indicate no material net change. Anthracite mines showed a slight reduction in the rate for underground-haulage accidents and a small increase in the death rates from explosives and gas explosions; the rate for falls of roofs or coal remained stationary. For bituminous coal mines throughout the country the fatality rate increased from 3.46 per million tons in 1923 to 3.90 in 1924. Nearly all of this increase was due to gas and dust explosions, the rate for which rose from 0.585 to 1.006 per million tons.

Ten "major" disasters—accidents killing 5 or more men each—caused an aggregate loss of 459 lives in 1924; 11 similar disasters in 1923 resulted in a loss of 301 lives. The fatality rate from this class of accidents as indicated by the number of deaths per million tons of coal produced, nearly doubled during the past year; it was 0.458 in 1923 and 0.801 in 1924.

Table 1 summarizes the chief data concerning coal-mine fatalities since 1906.

TABLE 1.—*Fatality rates for the years 1907 to 1924*

Year	Men employed		Average days active	Total shifts	Men killed	Killed per 1,000 300-day workers	Production (short tons)	Production per death (short tons)	Average production per man	
	Actual number	Equivalent in 300-day workers							Tons per year	Tons per day
1906 °	630, 283	439, 097	209	131, 729, 147	2, 138	4. 87	405, 955, 888	189, 876	644	3. 08
1907 °	674, 613	519, 452	231	155, 835, 603	3, 242	6. 24	477, 892, 536	147, 407	708	3. 07
1908 °	678, 873	441, 267	195	132, 380, 235	2, 445	5. 54	409, 309, 857	167, 407	603	3. 09
1909 °	666, 535	490, 763	221	147, 228, 770	2, 642	5. 38	460, 807, 263	174, 416	691	3. 13
1910	725, 030	531, 689	220	159, 506, 600	2, 821	5. 31	501, 596, 378	177, 808	692	3. 14
Av. 5 yrs.	675, 067	484, 454	215	145, 336, 071	2, 658	5. 49	451, 112, 384	169, 719	668	3. 10
1911	728, 348	534, 122	220	160, 236, 560	2, 656	4. 97	496, 371, 126	186, 887	682	3. 10
1912	722, 662	541, 997	225	162, 598, 950	2, 419	4. 46	534, 466, 580	220, 945	740	3. 29
1913	747, 644	593, 131	238	177, 939, 272	2, 785	4. 70	570, 048, 125	204, 685	762	3. 20
1914	763, 185	526, 598	207	157, 979, 295	2, 454	4. 66	513, 525, 477	209, 261	673	3. 25
1915	734, 008	511, 598	209	153, 479, 495	2, 269	4. 44	531, 619, 487	234, 297	724	3. 46
Av. 5 yrs.	739, 169	541, 489	220	162, 446, 714	2, 517	4. 65	529, 206, 159	210, 253	716	3. 26
1916	720, 971	565, 766	235	169, 729, 816	2, 226	3. 93	590, 098, 175	265, 094	818	3. 48
1917	757, 317	634, 666	251	190, 399, 680	2, 696	4. 25	651, 402, 374	241, 618	860	3. 42
1918	762, 426	654, 973	258	196, 491, 984	2, 580	3. 94	678, 211, 904	262, 873	890	3. 45
1919	776, 569	542, 217	209	162, 665, 023	2, 317	4. 27	553, 952, 259	239, 082	713	3. 41
1920	784, 621	601, 283	230	180, 384, 942	2, 271	3. 78	658, 264, 932	289, 857	839	3. 65
Av. 5 yrs.	760, 381	599, 781	237	179, 934, 289	2, 418	4. 03	626, 385, 929	259, 051	824	3. 48
1921	823, 253	474, 529	173	142, 358, 601	1, 987	4. 10	506, 395, 401	254, 854	615	3. 56
1922	844, 807	405, 056	144	121, 516, 822	1, 979	4. 89	476, 951, 121	241, 006	565	3. 92
1923	860, 560	500, 000	195	167, 999, 932	2, 458	4. 39	657, 495, 926	267, 492	764	3. 91
1924	828, 237	528, 237	195	167, 999, 932	2, 381	4. 39	657, 495, 926	241, 000	764	3. 91

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

^b Number of employees based on estimates of State mine inspectors.

° Estimated.

TABLE 2.—*United States: Fatalities at coal mines for the years ended December 31, 1923 and 1924*

Cause	Number killed		Rate per million tons	
	1923	1924	1923	1924
Underground:				
Falls of roof or face.....	1, 162	1, 052	1. 77	1. 84
Mine cars and locomotives.....	415	348	. 63	. 61
Explosions of gas or coal dust—				
Local explosions.....	76	77	. 12	. 13
Major disasters.....	296	459	. 45	. 80
Explosives.....	114	100	. 17	. 18
Electricity.....	75	81	. 11	. 14
Mining machines.....	23	28	. 04	. 05
Mine fires.....	—	2	—	(*)
Miscellaneous.....	94	69	. 14	. 12
Total underground.....	2, 255	2, 216	3. 43	3. 87
Shaft: Total shaft.....	46	29	. 07	. 05
Surface:				
Haulage.....	59	70	. 09	. 12
Machinery.....	26	8	. 04	. 01
Miscellaneous.....	72	58	. 11	. 10
Total surface.....	157	136	. 24	. 23
Grand total.....	2, 458	2, 381	3. 74	4. 15

* Less than one-tenth of 1 per cent.

ACKNOWLEDGMENTS

Without the hearty cooperation of every State coal-mine inspector, the Bureau of Mines could not issue a prompt and complete summary of coal-mine fatalities for each month as the year progressed nor an annual compilation so soon after the close of the year. The bureau, therefore, gratefully acknowledges the assistance it has received from the mine officials of all coal-producing States. For assistance in the compilation and verification of the tables herein presented the writer is indebted to Miss Lillian Chenoweth, of the Bureau of Mines. Acknowledgment is also due the United States Geological Survey for statistics on coal production and the number of employees at coal mines.

CAUSES OF FATALITIES IN 1924, BY STATES AND MONTHS

The causes of fatal accidents at coal mines in 1924, by States and months, are shown in Tables 3 to 17, inclusive.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 4.—United States: Coal-mine fatalities during the years ended December 31, 1923 and 1924, 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 or coal dust	Explosives	Suffocation from mine gases	Electricity	Animals	Mining machines	Minefires (burned, suffocated, etc.)	Other causes	Total	Falling down shafts or slopes	Objects falling or 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
1923																									
January	100	8	36	12	11	7	2	3	3	182	4	4	3	3	4	2	1	6	2	3	3	3	8	20	206
February	84	6	38	131	3	5	2	3	7	281	2	1	3	3	3	4	1	4	3	3	3	3	3	19	303
March	85	10	28	21	9	1	5	2	5	163	2	1	3	3	3	3	1	1	1	1	2	2	7	15	183
April	84	13	38	2	17	6	2	2	10	197	3	1	3	3	3	6	2	2	2	2	2	2	7	15	188
May	89	8	27	14	12	1	10	1	2	174	3	1	1	1	2	3	3	3	2	1	1	1	3	9	186
June	95	9	42	15	12	5	2	5	7	187	1	1	1	1	1	2	4	1	1	1	1	6	4	13	202
July	99	18	43	5	8	10	1	2	7	193	3	4	1	1	1	1	2	3	1	2	2	2	4	11	211
August	88	11	50	107	14	2	9	1	2	281	3	2	1	1	1	1	6	5	1	2	1	1	10	18	315
September	85	4	24	6	5	9	2	2	2	159	2	1	1	1	1	1	2	1	1	2	2	2	3	5	150
October	93	6	34	13	8	6	2	3	7	170	1	1	1	1	1	2	3	1	1	1	2	2	3	8	190
November	72	13	26	36	4	2	2	3	5	161	1	3	3	3	3	1	2	2	4	4	1	1	3	11	175
December	77	5	29	10	11	1	1	2	11	147	1	2	2	3	2	1	4	3	2	1	4	1	2	9	159
Total, 1923	1,051	111	415	372	114	10	75	10	23	2,255	22	3	20	1	46	35	8	26	8	26	24	64	157	2,458	
1924																									
January	99	11	26	79	9	4	3	3	3	231	3	2	3	5	4	1	1	3	2	3	4	4	4	13	249
February	78	16	32	3	7	1	5	1	2	155	2	1	1	3	13	2	3	2	2	3	2	5	5	25	183
March	87	4	34	203	12	3	3	2	1	347	2	1	1	2	4	4	1	1	1	1	4	3	2	6	355
April	55	12	24	124	3	2	4	2	2	229	2	1	1	1	3	2	1	4	4	2	2	6	3	12	245
May	59	9	29	4	4	10	1	1	6	122	2	1	1	2	2	2	2	2	2	1	2	2	6	11	133
June	79	11	24	20	8	2	7	2	2	197	2	1	1	2	2	2	1	2	1	1	1	1	4	7	163
July	73	9	26	18	11	1	17	6	9	191	1	1	1	1	1	1	2	1	2	1	3	4	2	10	174
August	66	9	31	9	13	1	11	1	6	164	1	1	1	1	3	1	2	1	2	1	3	2	4	7	159
September	63	9	35	47	8	1	11	1	8	182	1	1	1	1	5	1	2	1	2	1	3	2	10	14	189
October	83	12	27	8	10	2	7	2	4	197	2	3	3	3	4	1	1	1	1	1	1	3	2	14	176
November	82	9	25	8	11	1	7	1	5	149	1	1	1	1	11	1	1	1	1	1	1	1	2	20	170
December	97	8	35	13	7	3	7	1	1	172	1	1	1	1	2	3	3	1	3	4	1	1	2	11	185
Total, 1924	931	121	348	586	100	13	81	4	28	2,216	15	5	7	2	29	50	16	9	8	20	42	136	2,381		

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 5.—United States: Coal-mine fatalities during January, 1924, by causes and States

State	Underground										Shaft					Surface					Total by States					
	Falls of roof (coal, rock, etc.)	Falls of face or pillar	Mine cars and loco-motives	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 loco-motives	Other causes	Total	1924	1923
Alabama	1		1				2																		4	13
Alaska																									0	0
Arizona	1																								0	0
California, Idaho, and Nevada	2																								0	7
Colorado																									0	0
Georgia and North Carolina	19		5	35				1																	61	19
Illinois	5		1	2																					9	4
Indiana	5																								2	3
Iowa	2																								2	3
Kansas	12		1		1			1																	15	9
Kentucky																									0	2
Maryland																									1	0
Michigan	2																								2	0
Missouri	4		1																						5	3
Montana	1																								1	2
New Mexico	1																								0	0
New York	5		1		2		1																		9	14
North Dakota																									0	0
Ohio																									0	0
Oklahoma																									0	0
Oregon																									0	0
Pennsylvania (bituminous)	11	3	4	36	2			1																	60	89
Pennsylvania (anthracite)																									0	0
South Dakota																									0	2
Tennessee																									0	0
Texas																									0	0
Utah																									0	0
Virginia	4																								0	0
Washington																									0	0
West Virginia	14	3	6				1																		4	4
Wyoming	3																								31	84
Total (bituminous)	88	6	21	73	5		4		3																4	1
Pennsylvania (anthracite)	11	5	5	0	4																				213	162
Total, January, 1924	99	11	26	79	9		4		3																38	44
Total, January, 1923	100	8	36	12	11		7	2	3		3														249	206

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 6.—United States: Coal-mine fatalities during February, 1924, 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 loco-motives	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	Hallway cars and loco-motives	Other causes	Total	1924	1923
Alabama	3		1	1	1		1					8												8		5
Alaska																									0	0
Arizona																									0	1
California, Idaho, and Nevada			2									5													5	4
Colorado		3																						0	0	
Georgia and North Carolina			5									14													0	0
Illinois	9		2									9													14	19
Indiana	7											2													9	5
Iowa	2											2													2	2
Kansas																									0	2
Kentucky	4	2	2				1	1				10						2							13	10
Maryland																									0	0
Michigan																									0	0
Missouri	1											1													1	1
Montana																									0	2
New Mexico																									0	0
New York																									0	0
North Dakota	6		2									10													0	121
Ohio																									0	0
Oklahoma																									0	0
Oregon																									11	9
Pennsylvania (bituminous)	15	2	7						1			25							4						0	2
South Dakota																									0	0
Tennessee	1											2													2	1
Texas																									0	0
Utah																									0	0
Virginia	1	2										4													0	0
Washington																									0	0
West Virginia	14	3	6		2							25													4	4
Wyoming	2											2													2	2
Total (bituminous)	65	13	27	1	3	1	4	1	2	2	119	8	2	1	3	1	7	7	2	1	3	13	3	132	253	
Pennsylvania (anthracite)	13	5	5	2	4						36	2	1				8	6	2			2	2	12	51	
Total, February, 1924	78	18	32	3	7	1	5	1	2	8	155	2	1	3	1	3	13	6	2	2	3	5	95	183		
Total, February, 1923	84	6	38	131	3	2	5	2	3	7	281	3	4	3	1	8	4	4	4	1	3	8	19	303		

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 7.—United States: Coal-mine fatalities during March, 1924, by causes and States

State	Underground										Shaft						Surface			Total by States						
	Falls of roof (coal, rock, etc.)	Falls of face or pillar	Mine cars and loco-motives	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 loco-motives	Other causes	Total	1924	1923
Alabama.....	2		1																						3	8
Alaska.....																									0	0
Arkansas.....																									0	0
California, Idaho, and Nevada.....			1						1																2	5
Colorado.....																									0	0
Georgia and North Carolina.....	10		4		1		1																		16	10
Illinois.....	1		1																						2	3
Indiana.....	1																								1	4
Iowa.....																									1	1
Kansas.....	7		3		2		1																		12	10
Kentucky.....																									1	1
Maryland.....																									0	2
Michigan.....																									0	0
Missouri.....																									0	0
Montana.....	2																								2	0
New Mexico.....	2																								2	0
North Dakota.....	3		2																						5	0
Ohio.....			1																						1	0
Oklahoma.....			1																						0	0
Oregon.....	19		2		1																				28	31
Pennsylvania (bituminous).....			6																						1	0
Pennsylvania (anthracite).....			1																						1	0
South Dakota.....																									1	0
Tennessee.....																									1	0
Texas.....																									178	4
Utah.....	1		3		171					1															2	2
Virginia.....	2																								1	1
Washington.....	1																								1	2
West Virginia.....	14		7		25		1																		49	37
Wyoming.....	3																								3	2
Total (bituminous).....	69	3	30	197	5	1	1	1	1	1	1	1	1	308	2	1	3	2	1	2	2	2	3	311	135	
Pennsylvania (anthracite).....	18	1	4	6	7	1	2	1	1	1	1	1	39	2	1	1	3	2	1	2	2	2	2	44	48	
Total, March, 1924.....	87	4	34	203	12	1	3	1	1	2	2	1	347	2	1	3	3	2	1	1	2	5	5	365	163	
Total, March, 1923.....	85	10	28	21	9	1	5	1	1	3	1	2	163	2	1	2	5	3	1	1	3	7	15	163	163	

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 8.—United States: Coal-mine fatalities during April, 1924, 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 loco-motives	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 loco-motives	Other causes	Total	1924	1923
Alabama.....	6			1			2															2			11	8
Alaska.....																									0	0
Arkansas.....																									0	0
California, Idaho, and Nevada.....																									0	0
Colorado.....	1	2																							0	0
Georgia and North Carolina.....	2		2																			1			0	0
Illinois.....	2		2																						0	18
Indiana.....	2																								2	1
Iowa.....																									0	0
Kansas.....																									0	0
Kentucky.....	0	1	1																						0	0
Maryland.....	1																								0	0
Michigan.....	1																								0	0
Missouri.....																									0	0
Montana.....	1		1																						0	0
New Mexico.....																									0	0
North Dakota.....																									0	0
Ohio.....	3		1																						0	0
Oklahoma.....																									0	0
Oregon.....																									0	0
Pennsylvania (bituminous).....	9	2	2	1				2																	16	31
South Dakota.....																									0	0
Tennessee.....			2																						0	0
Texas.....																									0	0
Utah.....	1																								0	1
Virginia.....	1		2																						0	2
Washington.....	2	1																							0	1
West Virginia.....	11	3	5	119																					4	2
Wyoming.....			1																						3	1
Total (bituminous).....	47	9	19	121	1	3	3	202	1	1	2	2	2	2	2	2	2	2	2	2	2	4	1	7	148	
Pennsylvania (anthracite).....	8	3	5	3	2	1		3	37	1	1	1	2	2	1	2	2	1	1	1	4	1	2	5	34	
Total April, 1924.....	55	12	24	124	3	4	2	205	2	1	3	4	4	4	4	3	12	245	12	7	15	7	15	186		
Total, April, 1923.....	84	13	38	2	17	6	5	167	2	3	1	6	4	3	1	7	15	186	7	12	7	12	7	186		

TABLE 9.—United States: Coal-mine fatalities during May, 1924, 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 loco-motives	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	Roller explosions or bursting steam pipes	Haulway cars and loco-motives	Other causes	Total	1924	1923
Alabama.....	3		1				1																		6	3
Alaska.....																							1		1	0
Arkansas.....																									0	0
California, Idaho, and Nevada.....																									0	1
Colorado.....	2		1																						4	12
Georgia and North Carolina.....	1		1	1																					4	0
Illinois.....	1		1																						3	15
Indiana.....	1		1																						1	2
Iowa.....	1																								1	0
Kansas.....	1																								1	1
Kentucky.....	9	1	4	1			1													1					17	6
Maryland.....																									0	0
Michigan.....			1																						1	0
Missouri.....																									0	0
Montana.....																									0	0
New Mexico.....	1																								2	4
North Dakota.....			2																						2	0
Ohio.....	5		2				2																		10	16
Oklahoma.....																									1	1
Oregon.....																									0	0
Pennsylvania (bituminous).....	9	1	3				1																		14	34
South Dakota.....																									0	0
Tennessee.....	1		2				2																		0	0
Texas.....																									6	1
Utah.....	1																								0	0
Virginia.....	2		1	2																					3	1
Washington.....																									0	0
West Virginia.....			7				3																		24	31
Wyoming.....	10																								0	2
Total (bituminous).....	47	2	24	4			10	1												1	1				86	133
Pennsylvania (anthracite).....	12	7	5		4																				37	53
Total, May, 1924.....	59	9	29	4	4		10	1												2	1				133	186
Total, May, 1923.....	89	8	27	14	12	1	10	1												2	1				3	9

TABLE 10.—United States: Coal-mine fatalities during June, 1924, by causes and States

State	Underground										Shaft					Surface					Total by States						
	Falls of roof (coal, rock, etc.)	Falls of face or pillar	Mine cars and loco-motives	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	Hallway cars and loco-motives	Other causes	Total	1924	1923	
Alabama.....	4						1																		5	10	
Alaska.....																										0	0
Arkansas.....	1																								1	1	
California, Idaho, and Nevada.....																									0	0	
Colorado.....	1	2																							1	1	
Georgia and North Carolina.....																									1	1	
Illinois.....	4		2																						6	16	
Indiana.....	6																								6	7	
Iowa.....	2																								2	2	
Kansas.....	1																								1	0	
Kentucky.....	6		1																						8	16	
Maryland.....																									0	0	
Michigan.....																									0	0	
Missouri.....																									0	0	
Montana.....																									0	0	
New Mexico.....	1																								1	2	
North Dakota.....	2																								2	2	
Ohio.....																									0	1	
Oklahoma.....																									0	0	
Oregon.....																									0	0	
Pennsylvania (bituminous).....	10	1	5		3		2																	21	35		
South Dakota.....																									0	0	
Tennessee.....	2																								2	2	
Texas.....																									0	0	
Utah.....																									0	0	
Virginia.....	1																								0	0	
Washington.....	18		11		2		3																		3	3	
West Virginia.....	3		2																						5	4	
Wyoming.....	3																								3	3	
Total (bituminous).....	63	7	20	1	5	6	6	2	4	53	104	1	1	1	1	1	1	1	1	1	1	1	3	108	150		
Pennsylvania (anthracite).....	16	4	4	19	3	2	1																		55	52	
Total, June, 1924.....	79	11	24	20	8	8	7	3	4	157	187	2	2	2	1	1	1	1	1	1	1	6	4	163	202		
Total, June, 1923.....	95	9	42	15	12	2	5	7	4	187	1	1	1	1	1	1	1	1	1	1	4	15	4	163	202		

TABLE 12.—United States: Coal-mine fatalities during August, 1924, 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 loco-motives	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 bucket	Cage, skip, or bucket	Other causes	Total	Mine cars and mine locomotives	Electricity	Machinery	Boiler explosions or bursting steam pipes	Railway cars and loco-motives	Other causes	Total	1924	1923
Alabama	4		1	2		2																			9	8
Alaska																									0	0
Arkansas	1			1			1																		3	0
California, Idaho, and Nevada																									9	5
Colorado	2	1	1	2		2																		0	0	
Georgia and North Carolina																									13	16
Illinois	5		4			2		2																	1	9
Indiana	1		1																						1	4
Iowa																									1	0
Kansas																									12	10
Kentucky	6		3	1		2																			1	0
Maryland			1																						0	0
Michigan																									0	0
Missouri																									0	4
Montana																									0	0
New Mexico	1																								1	2
Ohio	5		1	1		1																			2	10
North Dakota																									1	0
Oklahoma																									2	0
Oregon																									0	0
Pennsylvania (bituminous)	17	1	2			22		1	1	1	1	22													24	40
Pennsylvania (anthracite)																									1	2
South Dakota																									0	0
Tennessee																									1	2
Texas																									0	0
Utah																									0	2
Virginia	4		2																						3	3
Washington																									3	3
West Virginia	17	2	10	2	1	1		1	1	1	32														38	43
Wyoming																									3	7
Total (bituminous)	62	6	30	5	7	11	11	6	5	132	5	132	6	5	2	2	5	2	2	2	1	1	2	5	137	267
Total (anthracite)	14	3	1	4	6	4	32	4	4	32	4	32	4	3	1	2	5	2	1	1	3	1	5	37	48	
Total, August, 1924	76	9	31	9	13	11	11	6	9	164	9	164	6	3	1	10	6	5	2	2	3	1	10	174	315	
Total, August, 1923	88	11	50	107	14	2	9	1	7	291	7	291	6	3	1	18	6	5	2	2	1	18	18	315	315	

TABLE 13.—United States: Coal-mine fatalities during September, 1924, by causes and States

State	Underground										Shaft					Surface					Total by States				
	Falls of roof (coal, falls of face or pillar)	Mine cars and loco-motives	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 loco-motives	Other causes	Total	1924	1923
Alabama.....	2	1		1		2																	6	7	0
Alaska.....																								0	0
Arkansas.....																								0	0
California, Idaho, and Nevada.....	1	2																					3	3	0
Colorado.....																							9	6	0
Georgia and North Carolina.....	3	1																					2	2	19
Illinois.....	2																						1	6	2
Indiana.....																							1	3	0
Iowa.....																							1	2	6
Kansas.....																							13	8	0
Kentucky.....	9	1		1		2																	18	2	0
Maryland.....		1																					1	0	0
Michigan.....																							1	1	0
Missouri.....	2																						2	2	0
Montana.....	2																						2	2	0
New Mexico.....																							1	1	0
North Dakota.....	6	1																					8	2	0
Ohio.....																							11	13	1
Oklahoma.....																							1	2	0
Oregon.....																							17	32	0
Pennsylvania (bituminous).....	6	7		1		1	2																20	0	0
South Dakota.....																							2	0	0
Tennessee.....		1																					3	1	0
Texas.....																							8	0	0
Utah.....	1	2	5	1		1																	8	0	0
Virginia.....	2					1																	4	4	2
Washington.....																							1	1	1
West Virginia.....																							1	0	0
Wyoming.....	13	1	2	39		3	1	2															28	28	0
Total (bituminous).....	56	4	30	44	4	9	1	2	5	154			1	1	2								3	159	130
Pennsylvania (anthracite).....	8	5	5	3	1	2			3	28													1	30	20
Total, September, 1924.....	63	9	35	47	5	11	1	2	8	182	1		1	1	3	1	1	2					4	189	150
Total, September, 1923.....	85	4	24	6	5	9	2	2	2	139	2		1	1	5	1	1	1					8		

TABLE 14.—United States: Coal-mining fatalities during October, 1924, 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 loco-motives	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 loco-motives	Other causes	Total	1924	1923
Alabama.....	3		2	1		3																		9	10
Alaska.....																								0	0
Arkansas.....																								0	0
California, Idaho, and Nevada.....		1	1																1					3	0
Colorado.....																								0	0
Georgia and North Carolina.....	5		1	4		1									2						1			10	12
Illinois.....	1																							1	6
Indiana.....	1																							1	2
Iowa.....	1																							1	2
Kansas.....	1																							1	2
Kentucky.....	1																							1	2
Maryland.....	1																							2	1
Michigan.....	1		2	3	1	2		1																19	9
Missouri.....	1																							3	1
Montana.....																								0	0
New Mexico.....	2														1									0	0
North Dakota.....		1																						0	0
Ohio.....	8																							10	11
Oklahoma.....	1																							1	0
Oregon.....																								1	0
Pennsylvania (bituminous).....	12	4	7	2																				31	29
South Dakota.....																								0	0
Tennessee.....																								0	0
Texas.....																								0	0
Utah.....	1																							0	0
Virginia.....	2																							0	0
Washington.....	1		1																					2	2
West Virginia.....	16	2	5																					2	4
Wyoming.....	2																							30	34
Total (bituminous)	65	10	18	8	7	7	6	6	1	22	2	3	5	2	3	10	3	2	1	1	3	3	3	137	140
Pennsylvania (anthracite).....	18	2	9		3		3	3	3	35														39	40
Total, October, 1924	83	12	27	8	10	7	6	6	4	157	2	3	5	4	1	14	3	5	4	1	3	5	14	176	180
Total, October, 1923	93	6	34	13	8	6	3	3	7	170	1	1	1	2	3	9	5	4	2	1	2	3	5	176	180

TABLE 15.—United States: Coal-mine fatalities during November, 1924, 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 loco-motives	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 loco-motives	Other causes	Total	1924	1923	
Alabama	3																								3	6	
Alaska																										0	0
Arkansas																										0	0
California, Idaho, and Nevada	2		2																				1		5	4	
Colorado																										0	0
Georgia and North Carolina	5				2																				7	6	
Illinois	2												1												4	8	
Indiana			1																						1	2	
Iowa																										1	1
Kansas																										11	11
Kentucky	5																								5	13	
Maryland	1																								1	0	
Michigan																									1	0	
Missouri																									1	1	
Montana	2																								2	1	
New Mexico																									1	1	
North Dakota	7		1																						8	4	
Ohio																									10	10	
Oklahoma																									9	11	
Oregon																									0	0	
Pennsylvania (bituminous)	11	2	4		2	1			1															3	24	24	
South Dakota																									1	0	
Tennessee																									1	3	3
Texas																									0	0	0
Utah	3	1																							4	4	4
Virginia	1																								2	3	3
Washington	1																								3	0	0
West Virginia	17	1	10	3	1		2		4															3	4	4	
Wyoming	4																								4	4	3
Total (bituminous)	64	4	20	3	5	2	5		5	1														10	119	147	
Pennsylvania (anthracite)	18	5	5	5	6					1														4	10	28	
Total, November, 1924	82	9	25	8	11	2	5	1	5	1														1	7	20	170
Total, November, 1923	72	13	26	36	4	2	2		1	5					3									1	3	11	175

TABLE 17.—United States: Coal-mine fatalities, by detailed causes, 1917 to 1924—Continued

Cause	1924												Total
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
11. Other causes:													
(a) Fall of person.....	11	5	6	2	17	7	4						6
(b) Machinery (other than 9).....	2	1	2	1	4	6	6						5
(c) Rush of coal or gob.....	22	21	15	9	6	13	13						12
(d) Falling timber.....	12	12	23	11	10	8	14						3
(e) Suffocation in chutes.....	2	3	2	6	8	4	4						5
(f) Hand tools, axes, bars, etc.....					3		2						1
(g) Nails, splinters, etc.....	21	22	19	16	22	18	31						20
(h) Miscellaneous.....													
Total.....	70	63	69	45	75	43	74						52
Total underground.....	2,375	2,281	2,077	2,020	1,831	1,800	2,255						2,216
NUMBER KILLED IN SHAFT													
12. Falling down shafts or slopes.....	21	21	20	27	18	14	22						15
13. Objects falling down shafts or slopes.....	12	9	6	8	9	4	3						5
14. Cage, skip, or bucket:													
(a) Runaway.....	1	1	8	11	3	1	7						1
(b) Riding with rock or coal.....	13	2	2	2	2								
(c) Riding with timber or tools.....	6	9	4	4	2	10	5						4
(d) Struck by.....	2	7	6	2	2	9	8						2
(e) Miscellaneous.....													
Total.....	22	17	21	19	9	20	20						7
15. Other causes:													
(a) Overwinding.....	2	1				1							1
(b) Breaking of cables.....	2	4	6	2		2	1						1
(c) Miscellaneous.....													
Total.....	5	5	6	2		3	1						2
Total shaft.....	60	52	53	56	36	41	46						29

	74	87	71	54	25	32	35	4	13	2	4	2	1	2	1	2	1	4	11	6	50
16. Mine cars and mine locomotives.....	17	15	10	17	17	9	8	1	2	1	---	2	1	2	1	2	2	1	3	3	16
17. Electricity.....	46	40	22	25	16	20	26	---	3	---	---	1	1	1	---	---	---	1	1	---	8
18. Machinery.....	8	7	6	4	1	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
19. Boiler explosions or bursting steam pipes.....	36	31	22	24	20	22	24	4	2	---	---	4	2	1	3	---	---	3	1	---	20
20. Railway cars and locomotives.....																					
21. Other causes:																					
(a) Explosives.....	13	11	1	11	5	9	10	---	---	---	---	2	---	---	---	---	---	1	1	---	3
(b) Fall of person.....	19	12	15	9	9	6	15	---	1	---	---	---	---	---	1	---	---	1	1	---	6
(c) Falling objects (derricks, booms, etc.).....	7	12	9	10	5	2	1	---	1	---	---	2	1	---	---	---	---	1	2	1	8
(d) Suffocation in chute, bin, or culm.....	4	4	3	6	1	2	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(e) Falls or slides of rock or coal.....	3	3	10	9	2	7	10	---	1	---	---	---	1	---	---	---	---	---	---	---	2
(f) Steam shovels.....	3	2	2	---	1	5	1	---	---	---	---	1	---	---	---	---	---	---	---	---	1
(g) Hand tools.....			2	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(h) Miscellaneous.....	31	23	14	25	18	21	24	4	2	2	2	2	2	2	2	2	2	3	3	---	22
Total.....	80	67	56	71	41	52	64	4	5	2	3	6	1	4	2	1	5	7	2	---	42
Total surface.....	261	247	187	195	120	138	157	13	25	5	12	11	4	7	10	4	14	20	11	---	136
Grand total.....	2,696	2,560	2,317	2,271	1,987	1,979	2,458	249	193	355	245	183	163	159	174	189	176	170	185	---	2,381

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 100 or more deaths each, and all disasters since January 1, 1916, in each of which 5 or more men were killed.

TABLE 18.—*Coal-mine disasters in the United States in which 100 or more men were killed, and those since 1916 in which 5 or more men were killed*

Date	Name of mine	Location of mine	Nature of accident	Killed	
1869	Sept. 6	Avondale.....	Plymouth, Pa.....	Mine fire.....	179
1884	Mar. 13	Laurel.....	Pocahontas, Va.....	Explosion.....	112
1891	Jan. 27	Mammoth.....	Mount Pleasant, Pa.....	do.....	109
1892	Jan. 7	No. 11.....	Krebs, Okla.....	do.....	100
1900	May 1	Winter quarters Nos. 1 and 4.....	Scofield, Utah.....	do.....	200
1902	May 19	Fraterville.....	Coal Creek, Tenn.....	do.....	184
1902	July 10	Rolling Mill.....	Johnstown, Pa.....	do.....	112
1903	June 30	Hanna No. 1.....	Hanna, Wyo.....	Explosion and fire.....	169
1904	Jan. 25	Harwick.....	Cheswick, Pa.....	Explosion.....	179
1905	Feb. 20	Virginia City.....	Virginia City, Ala.....	do.....	108
1907	Dec. 6	Monongah Nos. 6 and 8.....	Monongah, W. Va.....	do.....	361
1907	Dec. 19	Darr.....	Jacobs Creek, Pa.....	do.....	239
1908	Nov. 28	Rachel and Agnes.....	Marianna, Pa.....	do.....	154
1909	Nov. 13	St. Paul No. 2.....	Cherry, Ill.....	Mine fire.....	259
1911	Apr. 8	Banner.....	Littleton, Ala.....	Explosion.....	128
1913	Oct. 22	Stag Canon No. 2.....	Dawson, N. Mex.....	do.....	263
1914	Apr. 28	Eccles Nos. 5 and 6.....	Eccles, W. Va.....	do.....	181
1915	Mar. 27	Layland No. 3.....	Layland, W. Va.....	do.....	112
1917	Apr. 27	Hastings.....	Hastings, Colo.....	do.....	121
1923	Feb. 8	Dawson No. 1.....	Dawson, N. Mex.....	do.....	120
1924	Mar. 8	No. 2.....	Castle Gate, Utah.....	do.....	172
1924	Apr. 28	Benwood.....	Benwood, W. Va.....	do.....	119
1916	Feb. 8	Lance.....	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.....	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.....	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.....	Agular, Colo.....	do.....	13
1919	Apr. 29	Majestic.....	Majestic, Ala.....	do.....	22
1919	June 5	Baltimore tunnel No. 2.....	Wilkes-Barre, Pa.....	Powder explosion.....	92
1919	June 30	Alderson No. 5.....	Alderson, Okla.....	Explosion.....	15
1919	July 8	Lansford colliery.....	Lansford, Pa.....	do.....	8
1919	July 18	Carswell.....	Kimball, W. Va.....	do.....	6
1919	Aug. 6	Weirwood.....	Wierwood, 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	Dawson 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.....	Earlington, Ky.....	Mine fire.....	6
1920	Nov. 23	Parrish.....	Parrish, Ala.....	Explosion.....	12

TABLE 18.—*Coal-mine disasters in the United States in which 100 or more men were killed, and those since 1916 in which 5 or more men were killed—Continued*

Date	Name of mine	Location of mine	Nature of accident	Killed	
1921	Feb. 12	Oak Hill Nos. 1 and 2	Oak Creek, Colo.	Explosion	5
1921	Feb. 23	Kathleen	Dowell, Ill.	Mine fire	7
1921	Mar. 9	Rahn No. 11	Seek, Pa.	Explosion	5
1921	Aug. 31	Harco	Harrisburg, Ill.	do.	11
1921	Dec. 13	Satanic	Morrison, Colo.	Mine fire	6
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.	(*) 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	McCurtain, Okla.	do.	8
1922	Nov. 3	Eddy Creek	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	Cerrillos, N. Mex.	do.	7
1923	Jan. 10	Dolomite No. 1	Dolomite, Ala.	do.	5
1923	Feb. 8	Dawson No. 1	Dawson, N. Mex.	do.	120
1923	Feb. 21	Alliance	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	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	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.	172
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	Wilkesbarre, 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

* Includes four nonemployees.

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, 1923

State	Production (short tons)	Number employed ^a			Number of days labor performed ^a	Average days active ^a	Number killed		Number killed per 1,000 300-day workers		Number killed per 1,000,000 short tons mined	Pro- duc- tion per death (short tons)	
		Underground		Surface			Total	Under- ground	Sur- face	Total			
		Miners, loaders, etc. ^b	All others	Total									
							Under- ground	Sur- face	Under- ground	Sur- face			Total
Alabama.....	20,457,649	17,304	7,330	24,634	6,970,967	232	82	7	4.30	1.68	3.83	4.35	229,861
Alaska.....	119,826	73	48	121	43,905	220						3.08	324,223
Arkansas.....	1,296,822	2,124	846	2,970	365,048	97	4		4.15		3.29		
California, Idaho, and Nevada ^c	20,066	4	26	69	19,143	206		4					
Colorado.....	10,346,218	8,063	3,114	11,178	2,315,488	174	63	3	9.74	2.40	8.55	6.38	156,761
Georgia and North Carolina.....	111,639	124	93	217	79,947	252							
Illinois.....	79,310,075	64,194	24,900	89,094	15,773,125	158	108	2	3.58	.86	3.23	2.14	466,530
Indiana.....	26,229,069	22,777	8,228	31,005	4,800,556	136	68	2	4.85	1.01	4.37	2.67	374,701
Iowa.....	4,035,404	7,797	1,269	6,893	1,160,516	149	18	1	3.31	2.05	4.91	4.71	212,990
Kansas.....	44,777,317	33,911	16,546	50,457	9,246,289	152	127	2	4.97	.38	4.19	2.88	347,111
Kentucky.....	2,285,926	2,360	814	3,174	661,900	178	5		2.05		2.27	2.19	457,185
Maryland.....	1,172,075	1,213	580	1,793	1,977,438	222	5		3.77		3.42	4.27	234,415
Michigan.....	3,403,151	4,217	1,335	5,552	1,079,977	165	16		5.57		4.44	4.70	212,697
Missouri.....	3,147,678	2,054	910	2,964	629,713	179	11		6.21		5.24	3.49	286,153
Montana.....	2,915,173	2,522	1,025	3,547	884,894	216	141		55.19		47.80	48.37	20,075
New Mexico.....	1,385,400	883	257	1,140	295,070	182	1		1.45	3.42	2.03	1.44	692,700
New York.....	40,546,443	34,121	12,225	46,346	8,159,908	133	122	8	5.28	1.95	4.78	3.21	311,896
Ohio.....	2,885,038	4,100	1,930	6,030	7,949,765	130	8		2.99		2.53	2.77	360,630
Oregon ^d	171,879,913	120,385	46,183	166,568	41,455,008	213	371	31	3.14	1.54	2.91	2.34	427,562
Pennsylvania (bituminous).....	10,379	34			4,157	122						2.98	333,370
South Dakota.....	6,040,268	6,752	2,733	9,485	2,056,110	183	18		3.11		2.63	2.84	1,187,329
Tennessee.....	1,187,329	1,641	493	2,134	436,249	178	1		7.79		6.69	4.87	205,227
Texas.....	4,720,217	2,379	1,063	3,442	698,802	160	21	2	11.48	4.01	9.88	3.32	301,881
Utah.....	11,761,643	6,810	4,841	11,651	2,996,333	212	39	1	4.61	5.7	3.90	6.83	146,320
Virginia.....	2,926,392	2,313	1,147	3,460	4,306,319	213	19	1	7.72		1.66	6.83	146,320
Washington.....	107,899,941	62,676	35,207	97,883	19,839,194	169	389	35	7.23	3.20	6.56	4.02	248,617
West Virginia.....	7,575,031	4,203	2,020	6,223	1,446,024	192	126		31.03		26.14	16.63	60,119
Wyoming.....	564,156,917	490,608	177,872	598,480	125,795,769	179	1,853	96	5.19	1.54	4.65	3.45	289,460
Pennsylvania (anthracite).....	93,339,009	72,362	42,359	114,721	42,204,163	268	448	61	4.38	1.59	3.62	5.45	183,377
Total.....	657,495,926	492,970	220,231	713,201	167,999,932	195	2,301	157	4.96	1.64	4.39	3.74	267,492

^a Data furnished by the U. S. Geological Survey.
^b Includes also shot firers.
^c Includes Oregon.
^d Included with California, Idaho, and Nevada.

TABLE 21.—Coal-mine fatalities: Percentages, by causes, 1914 to 1924

Cause	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total 10 years	1924
Underground:												
Falls of roof (coal, rock, etc.)	40.14	40.50	43.22	39.21	45.82	40.83	44.21	46.50	39.67	42.76	42.24	39.10
Falls of face or pillar coal	5.95	7.05	4.63	6.42	4.34	6.65	5.64	5.03	6.07	4.52	5.62	5.08
Mine cars and locomotives	13.48	13.29	17.52	18.10	19.61	16.44	17.97	17.16	17.23	16.88	17.20	14.62
Explosions of gas or coal dust—												
Local explosions	3.30	2.47	3.23	4.04	3.41	4.40	5.15	4.78	2.12	3.09	3.61	3.23
Major disasters	10.92	10.93	6.92	9.31	1.69	3.84	2.07	1.06	13.59	12.04	7.25	19.28
Explosives	3.95	6.83	6.96	4.08	5.23	8.89	5.64	7.65	4.65	4.64	5.96	4.20
Suffocation from mine gases	3.57	7.71	.94	.30	.58	.47	.79	.45	.46	.41	.53	.55
Electricity	3.63	3.92	4.94	2.93	3.41	2.98	3.35	4.03	3.74	3.05	3.48	3.40
Animals	.29	.13	.36	.53	.31	.09	.17	.35	.25	.41	.27	.17
Mining machines	.81	.53	.90	.70	.66	1.12	1.63	.91	1.01	.96	.91	1.18
Mine fires (burned, suffocated, etc.)	.29	.06	.13	.07	1.01	.95	1.35	.45	.45	.33	.48	.08
Other causes	2.32	2.78	3.01	2.60	2.44	2.98	1.98	3.78	2.17	3.01	2.69	2.18
Total	89.65	91.19	91.06	88.09	88.41	89.64	88.95	92.15	90.96	91.74	90.09	93.07
Shaft:												
Falling down shafts or slopes	2.85	1.36	1.39	.78	.81	.86	1.19	.91	.71	.90	1.18	.63
Objects falling down shafts or slopes	.21	.09	.09	.45	.35	.26	.35	.45	.20	.12	.26	.21
Cage, skip, or bucket	.49	.31	.94	.82	.66	.91	.83	.45	1.01	.81	.68	.30
Other causes	.04	-----	-----	.18	.19	.26	.09	-----	.15	.04	.12	.08
Total	3.59	1.76	2.20	2.23	2.01	2.29	2.46	1.81	2.07	1.87	2.24	1.22
Surface:												
Mine cars and mine locomotives	2.77	2.73	2.65	2.74	3.38	3.06	2.38	1.26	1.62	1.42	2.44	2.10
Electricity	1.45	1.44	.31	.65	.58	.43	.75	.86	.45	.33	1.52	.67
Machinery	1.96	1.53	.99	1.71	1.55	.95	1.10	.80	1.01	1.06	1.16	.34
Boiler explosions or bursting steam pipes	.90	.26	.48	.30	.27	.26	.17	.65	.15	-----	.19	-----
Railway cars and locomotives	1.75	1.72	1.89	1.83	1.20	1.95	3.16	1.01	1.11	.98	.96	.84
Other causes	1.75	1.85	1.89	2.97	2.60	2.42	3.13	2.06	2.63	2.60	2.40	1.76
Total	6.76	7.05	6.74	9.86	9.56	8.07	8.59	6.04	6.97	6.39	7.67	5.71
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
Total killed	2,454	2,269	2,226	2,696	2,580	2,317	2,271	1,987	1,979	2,458	23,237	2,381

COAL PRODUCTION AND FATALITIES, BY MONTHS, 1915 TO 1924

Table 22 shows the monthly production of coal since 1915, as estimated by the United States Geological Survey. The number of coal-mine fatalities, arranged by corresponding months, appears in Table 23. Considered together, these two tables indicate the fluctuations in output and in number of fatalities in different seasons of the year, as well as the relationship between production and accidents in different months, as shown in Table 24.

TABLE 22.—Monthly production of anthracite and of bituminous coal in the United States, 1915 to 1924 ^a

[Net tons—000 omitted]

	1915		1916		1917		1918		1919		1920		1921		1922		1923		1924 ^b		
	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.....	37,190	8.4	46,596	9.3	47,967	8.7	42,227	7.3	42,193	9.0	49,748	8.7	41,148	9.9	38,928	9.2	51,903	9.2	52,464	10.8	
February.....	29,321	6.6	45,187	9.0	41,353	7.5	43,777	7.6	32,103	6.9	41,055	7.2	31,524	7.6	42,423	10.0	43,610	7.7	47,262	9.8	
March.....	31,801	7.2	43,827	8.7	47,869	8.7	48,113	8.3	34,293	7.4	47,850	8.4	31,054	7.5	51,833	12.3	48,411	8.6	41,253	8.5	
April.....	29,968	6.8	33,628	6.7	41,854	7.6	46,041	8.0	32,712	7.0	38,764	6.8	28,154	6.8	16,332	3.9	44,028	7.8	30,404	6.3	
May.....	30,938	7.0	38,804	7.7	47,086	8.5	50,443	8.8	38,186	8.2	39,841	7.0	34,057	8.2	21,001	5.0	47,660	8.4	32,248	6.7	
June.....	33,957	7.7	37,742	7.5	46,824	7.5	51,138	8.8	37,685	8.1	37,685	8.1	34,635	8.3	23,114	5.5	47,054	8.3	31,433	6.5	
July.....	35,573	8.0	38,113	7.6	46,292	8.4	54,971	9.5	43,425	9.3	45,988	8.1	31,047	7.5	17,602	4.2	46,678	8.3	33,317	6.9	
August.....	38,161	8.6	42,696	8.5	47,372	8.6	55,114	9.5	43,613	9.4	49,974	8.8	35,291	8.5	28,321	6.7	50,544	9.0	35,892	7.4	
September.....	40,964	9.3	42,098	8.4	45,108	8.2	51,183	8.8	48,209	10.3	50,241	8.8	35,870	8.6	40,901	9.7	47,805	8.5	42,340	8.8	
October.....	44,198	10.0	44,807	8.9	45,337	8.7	52,300	9.0	57,200	12.3	53,278	9.4	44,687	10.7	46,730	11.0	50,869	9.0	48,373	10.0	
November.....	44,737	10.1	44,927	8.9	47,690	8.6	43,895	7.6	19,006	4.1	52,576	9.3	36,805	8.8	46,898	11.1	44,337	7.9	42,066	8.7	
December.....	45,814	10.3	44,098	8.8	44,037	8.0	40,184	6.9	37,235	8.0	53,257	9.4	31,650	7.6	48,085	11.4	41,208	7.3	46,228	9.6	
Total, bituminous.....	442,926	100.0	502,520	100.0	551,791	100.0	579,386	100.0	465,860	100.0	568,667	100.0	415,922	100.0	422,268	100.0	564,157	100.0	483,280	100.0	
Anthracite:																					
January.....	6,337	7.1	7,649	8.7	7,672	7.7	7,270	7.3	7,819	8.9	7,459	8.3	7,681	8.5	6,566	12.0	8,521	9.1	7,924	8.8	
February.....	5,703	6.4	7,404	8.5	6,688	6.7	7,494	7.6	5,102	5.8	6,415	7.2	7,983	8.8	7,096	13.0	7,602	8.1	7,621	8.5	
March.....	6,654	7.5	7,964	9.1	7,222	7.3	8,211	8.3	6,884	7.9	7,835	8.9	7,677	8.5	9,181	16.8	9,175	9.4	8,114	9.0	
April.....	8,725	8.8	5,887	6.7	7,222	7.3	8,211	8.3	6,884	7.8	6,285	7.0	7,985	8.8	7,885	15.8	7,885	8.4	6,811	7.6	
May.....	7,807	8.8	7,212	8.2	8,933	9.0	8,880	9.0	7,525	8.5	8,037	9.0	7,752	8.6	36	.1	8,384	9.0	7,704	8.6	
June.....	7,157	8.0	7,327	8.4	9,103	9.1	8,855	9.0	7,404	8.4	8,251	9.2	8,071	8.9	86	.1	8,474	9.1	7,745	8.6	
July.....	6,691	7.5	7,062	8.1	8,684	8.7	9,134	9.2	7,974	9.1	8,342	9.3	7,309	8.1	118	.2	8,136	8.7	7,086	7.9	
August.....	7,161	8.0	7,190	8.2	9,058	9.1	9,258	9.4	8,096	9.2	8,105	9.0	7,459	8.2	164	.3	8,672	9.3	7,086	7.9	
September.....	7,423	8.3	7,206	8.2	8,230	8.2	8,038	8.1	7,494	8.5	8,148	9.1	7,385	8.2	5,075	9.2	8,853	3.1	7,901	8.4	
October.....	8,761	9.9	7,630	8.7	9,183	9.2	8,105	8.2	8,645	9.8	8,148	9.1	7,858	8.7	8,396	16.3	8,532	9.2	7,674	8.5	
November.....	8,514	9.6	7,790	8.9	8,453	8.5	6,803	6.9	7,870	8.9	7,527	8.4	7,110	7.9	8,695	15.9	7,575	8.1	6,776	7.5	
December.....	8,062	9.1	7,257	8.3	7,360	7.4	7,396	7.4	8,089	9.2	8,403	9.4	6,203	6.8	8,743	16.0	7,530	8.1	7,162	8.0	
Total, anthracite.....	88,995	100.0	87,578	100.0	99,612	100.0	98,626	100.0	86,092	100.0	89,598	100.0	90,473	100.0	54,683	100.0	93,339	100.0	90,000	100.0	
Grand total.....	531,919		590,098		651,402		678,012		553,952		658,265		506,395		476,951		657,496		573,280		

^a Monthly production estimated for bituminous coal on basis of rail shipments; for anthracite, on basis of monthly reports of Anthracite Bureau of Information. The above monthly production figures were compiled by the U. S. Geological Survey, and the percentages were calculated by the U. S. Bureau of Mines.
^b Subject to revision.
^c Less than one-tenth of 1 per cent.

TABLE 23.—Coal-mine fatalities, by months and years, 1915 to 1924

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bituminous:													
1915.....	113	133	235	114	99	104	165	129	135	133	181	142	1,683
1916.....	135	178	128	115	116	108	139	155	116	145	179	157	1,671
1917.....	170	130	182	260	136	188	189	217	140	142	173	187	2,114
1918.....	160	171	148	169	168	183	214	184	198	172	125	127	2,029
1919.....	139	129	138	141	151	154	180	180	195	195	169	117	1,682
1920.....	161	121	133	127	111	169	150	161	178	159	167	143	1,780
1921.....	146	124	88	109	129	122	115	117	112	140	313	112	1,440
1922.....	111	191	145	78	86	107	86	101	148	176	332	118	1,679
1923.....	162	253	135	148	133	150	161	267	130	140	147	123	1,949
1924.....	213	132	311	211	96	108	117	137	139	137	119	145	1,885
Total.....	1,510	1,562	1,643	1,472	1,215	1,393	1,490	1,658	1,464	1,539	1,595	1,371	17,912
Anthracite:													
1915.....	53	46	47	55	54	45	32	50	43	56	59	46	586
1916.....	64	47	70	39	28	39	40	53	45	52	32	46	555
1917.....	57	38	48	49	45	44	52	52	41	55	57	58	582
1918.....	55	51	48	46	43	47	62	55	52	43	32	37	551
1919.....	44	31	33	48	44	144	68	43	41	49	36	54	635
1920.....	47	39	48	52	50	50	44	42	20	35	31	44	491
1921.....	51	36	49	55	44	45	47	38	45	42	51	44	547
1922.....	50	46	51	40	1	3	6	2	24	31	38	48	300
1923.....	44	50	48	50	53	52	50	48	20	40	28	36	509
1924.....	36	51	44	34	37	55	42	37	30	39	51	40	486
Total.....	501	435	498	401	401	524	449	420	341	442	415	437	5,232

TABLE 24.—United States: Fatality rates, per million tons mined, by months and years, 1915 to 1924

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Bituminous:													
1915.....	3.04	4.54	7.39	3.80	3.20	3.06	4.64	3.38	3.30	3.01	4.05	3.10	3.80
1916.....	2.90	3.04	2.92	3.42	2.99	2.86	3.65	3.63	2.76	3.24	3.98	3.56	3.33
1917.....	3.54	3.14	3.80	6.21	2.89	4.02	4.08	4.58	3.87	2.04	2.85	4.25	3.83
1918.....	3.79	3.91	3.08	3.67	3.33	3.58	3.89	3.52	3.87	3.29	2.85	3.16	3.50
1919.....	3.29	4.02	4.02	4.31	3.69	4.01	3.55	4.13	2.86	3.41	3.18	3.14	3.61
1920.....	3.24	2.95	2.78	3.28	2.79	3.67	3.26	3.22	2.86	2.98	3.18	2.69	3.13
1921.....	3.55	3.93	2.83	3.87	3.79	3.61	3.70	3.32	3.40	3.13	3.07	3.54	3.46
1922.....	2.85	4.50	4.78	4.78	3.10	4.63	4.89	3.57	3.62	3.77	7.08	2.45	3.98
1923.....	3.12	5.80	2.79	3.86	2.79	3.19	3.45	5.28	2.72	2.75	3.31	2.98	3.45
1924 ^a	4.06	2.79	7.54	6.94	2.98	3.44	3.51	3.82	3.76	2.83	2.83	3.14	3.90
Anthracite:													
1915.....	8.36	8.07	7.06	6.30	6.92	6.29	4.78	6.98	5.79	6.39	6.93	5.71	6.58
1916.....	8.37	6.35	8.79	6.62	3.88	5.32	5.66	7.37	6.24	6.82	4.11	6.34	6.34
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	6.47	6.06	5.27	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	6.43	5.09	6.09	5.34	7.17	7.09	6.05
1922.....	7.61	6.48	5.55	27.78	34.88	34.88	50.85	12.20	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 ^a	4.54	6.69	5.42	4.99	4.78	7.14	5.40	5.22	3.95	5.08	7.53	5.59	5.51
Bituminous and anthracite:													
1915.....	3.81	5.11	7.33	4.37	3.95	3.62	4.66	3.95	3.68	3.57	4.51	3.49	4.27
1916.....	3.67	4.28	3.82	3.90	3.13	3.26	3.96	4.17	3.27	3.77	4.00	3.77	3.95
1917.....	4.08	3.50	4.04	6.30	3.23	4.15	4.49	4.77	3.89	3.42	4.10	4.38	4.14
1918.....	4.34	3.33	3.41	3.96	3.56	3.83	4.31	3.87	3.58	3.56	3.10	4.35	3.80
1919.....	3.66	4.30	4.33	4.77	4.05	6.54	4.32	4.31	3.21	3.71	3.53	3.77	4.18
1920.....	3.64	3.37	3.24	4.60	3.40	4.03	3.57	3.50	3.60	3.16	3.29	3.10	3.45
1921.....	4.03	4.05	3.54	4.54	4.14	3.98	4.22	3.62	3.86	3.46	3.73	4.12	3.92
1922.....	3.54	4.79	3.21	4.77	4.14	4.74	5.19	6.63	3.74	3.72	6.66	2.92	4.15
1923.....	3.41	3.92	3.18	3.62	3.32	3.64	3.85	5.32	2.96	3.03	3.37	3.26	3.74
1924 ^a	4.12	3.33	7.19	6.58	3.33	4.16	3.87	4.05	3.78	3.14	3.48	3.47	4.15

^a Subject to revision.

TABLE 25.—United States: Coal-mine fatalities during the years 1920 to 1924, by causes and States

State	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	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																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Alabama:																										1920	1	2	3	4	5	6	7	8	9	10	11	72	12	13	14	15	16	17	18	19	20	21	4	76	1921	20	5	14	13	6	1	4	1	1	—	—	78	—	—	—	—	1	—	—	—	1	2	2	80	1922	39	12	6	8	1	12	—	—	—	—	—	76	—	—	—	—	—	1	—	—	—	1	1	80	1923	48	14	11	1	1	6	—	—	—	—	2	182	—	—	—	—	—	—	—	—	—	—	—	183	1924	44	1	10	8	1	8	—	—	—	—	—	82	—	—	—	—	1	2	—	—	3	1	7	89	Alaska:																									1920	39	—	9	4	4	15	—	—	—	—	1	72	—	—	—	—	—	—	—	—	3	1	5	77	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Arkansas:																									1920	7	—	—	1	—	—	—	—	—	—	—	8	1	—	—	—	—	—	—	—	—	—	—	9	1921	7	—	—	6	2	—	—	—	—	—	—	16	—	—	—	—	—	—	—	—	—	—	—	17	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	1923	2	1	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	6	1924	6	—	—	1	—	2	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	9	California, Idaho, and Nevada:																									1920	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Colorado:																									1920	23	11	23	—	3	—	5	—	—	—	—	65	—	—	1	—	—	—	—	—	—	—	—	70	1921	21	6	8	5	—	3	3	—	—	—	—	48	—	—	—	—	—	—	—	—	—	—	—	52	1922	21	9	6	15	—	3	3	—	6	—	—	71	—	—	—	—	—	—	—	—	—	—	—	53	1923	17	13	10	17	2	—	2	1	—	—	—	63	—	—	—	—	—	—	—	—	—	—	—	66	1924	11	14	10	—	2	—	2	—	—	—	—	41	—	—	—	—	—	—	—	—	—	—	—	44
1920	1	2	3	4	5	6	7	8	9	10	11	72	12	13	14	15	16	17	18	19	20	21	4	76	1921	20	5	14	13	6	1	4	1	1	—	—	78	—	—	—	—	1	—	—	—	1	2	2	80	1922	39	12	6	8	1	12	—	—	—	—	—	76	—	—	—	—	—	1	—	—	—	1	1	80	1923	48	14	11	1	1	6	—	—	—	—	2	182	—	—	—	—	—	—	—	—	—	—	—	183	1924	44	1	10	8	1	8	—	—	—	—	—	82	—	—	—	—	1	2	—	—	3	1	7	89	Alaska:																									1920	39	—	9	4	4	15	—	—	—	—	1	72	—	—	—	—	—	—	—	—	3	1	5	77	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Arkansas:																									1920	7	—	—	1	—	—	—	—	—	—	—	8	1	—	—	—	—	—	—	—	—	—	—	9	1921	7	—	—	6	2	—	—	—	—	—	—	16	—	—	—	—	—	—	—	—	—	—	—	17	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	1923	2	1	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	6	1924	6	—	—	1	—	2	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	9	California, Idaho, and Nevada:																									1920	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Colorado:																									1920	23	11	23	—	3	—	5	—	—	—	—	65	—	—	1	—	—	—	—	—	—	—	—	70	1921	21	6	8	5	—	3	3	—	—	—	—	48	—	—	—	—	—	—	—	—	—	—	—	52	1922	21	9	6	15	—	3	3	—	6	—	—	71	—	—	—	—	—	—	—	—	—	—	—	53	1923	17	13	10	17	2	—	2	1	—	—	—	63	—	—	—	—	—	—	—	—	—	—	—	66	1924	11	14	10	—	2	—	2	—	—	—	—	41	—	—	—	—	—	—	—	—	—	—	—	44																										
1921	20	5	14	13	6	1	4	1	1	—	—	78	—	—	—	—	1	—	—	—	1	2	2	80	1922	39	12	6	8	1	12	—	—	—	—	—	76	—	—	—	—	—	1	—	—	—	1	1	80	1923	48	14	11	1	1	6	—	—	—	—	2	182	—	—	—	—	—	—	—	—	—	—	—	183	1924	44	1	10	8	1	8	—	—	—	—	—	82	—	—	—	—	1	2	—	—	3	1	7	89	Alaska:																									1920	39	—	9	4	4	15	—	—	—	—	1	72	—	—	—	—	—	—	—	—	3	1	5	77	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Arkansas:																									1920	7	—	—	1	—	—	—	—	—	—	—	8	1	—	—	—	—	—	—	—	—	—	—	9	1921	7	—	—	6	2	—	—	—	—	—	—	16	—	—	—	—	—	—	—	—	—	—	—	17	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	1923	2	1	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	6	1924	6	—	—	1	—	2	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	9	California, Idaho, and Nevada:																									1920	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Colorado:																									1920	23	11	23	—	3	—	5	—	—	—	—	65	—	—	1	—	—	—	—	—	—	—	—	70	1921	21	6	8	5	—	3	3	—	—	—	—	48	—	—	—	—	—	—	—	—	—	—	—	52	1922	21	9	6	15	—	3	3	—	6	—	—	71	—	—	—	—	—	—	—	—	—	—	—	53	1923	17	13	10	17	2	—	2	1	—	—	—	63	—	—	—	—	—	—	—	—	—	—	—	66	1924	11	14	10	—	2	—	2	—	—	—	—	41	—	—	—	—	—	—	—	—	—	—	—	44																																																			
1922	39	12	6	8	1	12	—	—	—	—	—	76	—	—	—	—	—	1	—	—	—	1	1	80	1923	48	14	11	1	1	6	—	—	—	—	2	182	—	—	—	—	—	—	—	—	—	—	—	183	1924	44	1	10	8	1	8	—	—	—	—	—	82	—	—	—	—	1	2	—	—	3	1	7	89	Alaska:																									1920	39	—	9	4	4	15	—	—	—	—	1	72	—	—	—	—	—	—	—	—	3	1	5	77	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Arkansas:																									1920	7	—	—	1	—	—	—	—	—	—	—	8	1	—	—	—	—	—	—	—	—	—	—	9	1921	7	—	—	6	2	—	—	—	—	—	—	16	—	—	—	—	—	—	—	—	—	—	—	17	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	1923	2	1	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	6	1924	6	—	—	1	—	2	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	9	California, Idaho, and Nevada:																									1920	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Colorado:																									1920	23	11	23	—	3	—	5	—	—	—	—	65	—	—	1	—	—	—	—	—	—	—	—	70	1921	21	6	8	5	—	3	3	—	—	—	—	48	—	—	—	—	—	—	—	—	—	—	—	52	1922	21	9	6	15	—	3	3	—	6	—	—	71	—	—	—	—	—	—	—	—	—	—	—	53	1923	17	13	10	17	2	—	2	1	—	—	—	63	—	—	—	—	—	—	—	—	—	—	—	66	1924	11	14	10	—	2	—	2	—	—	—	—	41	—	—	—	—	—	—	—	—	—	—	—	44																																																																												
1923	48	14	11	1	1	6	—	—	—	—	2	182	—	—	—	—	—	—	—	—	—	—	—	183	1924	44	1	10	8	1	8	—	—	—	—	—	82	—	—	—	—	1	2	—	—	3	1	7	89	Alaska:																									1920	39	—	9	4	4	15	—	—	—	—	1	72	—	—	—	—	—	—	—	—	3	1	5	77	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Arkansas:																									1920	7	—	—	1	—	—	—	—	—	—	—	8	1	—	—	—	—	—	—	—	—	—	—	9	1921	7	—	—	6	2	—	—	—	—	—	—	16	—	—	—	—	—	—	—	—	—	—	—	17	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	1923	2	1	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	6	1924	6	—	—	1	—	2	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—	9	California, Idaho, and Nevada:																									1920	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1921	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1922	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1923	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	1924	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0	Colorado:																									1920	23	11	23	—	3	—	5	—	—	—	—	65	—	—	1	—	—	—	—	—	—	—	—	70	1921	21	6	8	5	—	3	3	—	—	—	—	48	—	—	—	—	—	—	—	—	—	—	—	52	1922	21	9	6	15	—	3	3	—	6	—	—	71	—	—	—	—	—	—	—	—	—	—	—	53	1923	17	13	10	17	2	—	2	1	—	—	—	63	—	—	—	—	—	—	—	—	—	—	—	66	1924	11	14	10	—	2	—	2	—	—	—	—	41	—	—	—	—	—	—	—	—	—	—	—	44																																																																																																					
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* Includes Oregon.

COAL-MINE FATALITIES IN THE UNITED STATES

Kentucky:													
1920	68	4	20	4	6	6	3	7	1	115	1	7	128
1921	69	1	24	3	11	2	10	1	3	119	2	9	128
1922	57	24	17	15	7	7	4	4	1	118	2	9	125
1923	58	6	24	14	2	7	1	4	1	118	2	5	129
1924	82	6	20	6	0	8	1	2	3	124	2	2	135
Maryland:													
1920	7									7			7
1921	6									7			7
1922	1	1		1						3			3
1923	3	2	2	1						8			8
Michigan:													
1920	3		1		1		1			5		1	6
1921	2		1						1	3		1	3
1922	2		1						1	4		1	5
1923	1		1						1	2		1	3
1924	1									2			3
Missouri:													
1920	6		2		1				1	9		1	11
1921	10	1		1						12		1	12
1922	15		1							6		2	6
1923	12		1		1		1		1	14		16	16
1924	5									5		6	6
Montana:													
1920	6	1	4		1		1		1	14			14
1921	7	1	1		1		2		1	12		1	13
1922	6		3		1		1			10			10
1923	8				1		2			11			11
1924	10		3		1		1			15			15
New Mexico:													
1920	10	7	4	5	1	3				31		2	33
1921	8		2		1	1		1		13			13
1922	7	1	2	7		1		1		20			21
1923	13	1	3	120	2	2			1	141			141
1924	13		2			1				16			16
North Dakota:													
1920	1			1		1				3			3
1921	1			1		1				4			4
1922	1			1		1				3			4
1923						1				1		1	2
1924		2								2		1	3
Ohio:													
1920	79	1	25	3	10	3	2	4	2	129	1	1	136
1921	74		20		3	2	2	4	2	102		1	109
1922	58		13		6	1	6	1	4	88		1	96
1923	86		19	2	3	1	3	2	3	119	2	4	130
1924	63	1	17		4		4	2	3	91	1	1	98

COAL-MINE FATALITIES IN THE UNITED STATES

1923	11	8	9	1	1	30	11	11	22	22	20	1	3	1	6	1	0
1924	4	5	6	2	1	13	2	1	8	9	20	1	1	1	3	1	35
Utah:	6	5	6	1	1	13	1	1	1	1	20	1	1	1	1	3	15
1920	10	2	4	2	1	20	1	1	1	1	20	1	1	2	2	2	22
1921	11	3	5	1	1	198	1	1	1	1	198	1	1	2	2	2	23
1922	5	6	8	4	3	25	2	2	1	1	25	1	1	1	1	1	189
1923	13	1	3	1	3	17	1	1	1	1	17	1	1	1	1	1	26
1924	18	5	6	1	1	25	1	1	1	1	25	1	1	1	1	1	17
Virginia:	23	1	2	1	1	38	1	1	1	1	38	1	1	1	1	1	25
1920	25	2	7	1	4	39	1	1	1	1	39	1	1	1	1	1	39
1921	7	1	5	1	1	16	1	1	1	1	16	1	1	1	1	1	18
1922	2	1	2	1	1	6	1	1	1	1	6	1	1	1	1	1	7
1923	8	1	3	1	1	19	1	1	1	1	19	1	1	1	1	1	23
1924	9	2	3	1	1	25	1	1	1	1	25	1	1	1	1	1	23
West Virginia:	7	4	1	1	2	1	1	1	1	1	25	1	1	1	1	1	26
1920	162	35	66	36	49	394	6	4	1	25	394	11	11	2	20	1	491
1921	176	5	71	4	14	289	4	3	1	4	289	2	2	4	1	3	530
1922	179	13	77	4	17	324	1	6	2	4	324	2	2	5	4	1	330
1923	206	11	95	42	14	393	1	8	1	4	393	1	1	3	11	33	364
1924	178	17	90	151	12	476	1	16	1	4	476	1	1	9	4	18	484
Wyoming:	16	5	10	1	2	35	2	2	1	1	35	1	1	1	1	1	512
1920	18	1	5	1	1	28	1	1	1	1	28	1	1	1	1	1	49
1921	14	2	7	1	1	22	1	1	1	1	22	1	1	1	1	1	39
1922	15	2	7	99	1	126	1	1	1	1	126	1	1	1	1	1	23
1923	20	3	6	40	1	69	1	1	1	1	69	1	1	1	1	1	126
1924	842	93	342	128	79	628	8	8	2	8	628	16	16	8	8	2	89
1921	719	62	271	52	84	832	4	6	8	8	832	11	11	6	8	2	1,780
1922	887	90	283	298	54	1,541	7	3	3	16	1,541	11	11	13	4	4	1,440
1923	874	69	342	330	65	1,822	3	20	3	16	1,822	12	12	10	1	20	1,679
1924	759	77	290	486	47	1,786	7	3	2	5	1,786	7	7	4	4	4	1,885
Pennsylvania (anthracite):	162	35	66	36	49	394	6	4	1	25	394	11	11	2	20	1	491
1920	205	38	70	64	68	433	3	4	3	1	433	9	9	4	4	4	547
1921	98	30	58	13	38	259	3	3	2	1	259	3	3	1	1	10	300
1922	177	42	73	42	49	383	10	1	4	4	383	10	10	3	14	61	509
1923	172	44	58	50	53	430	8	2	2	2	430	8	8	2	4	13	509
1924	1,004	128	408	164	128	2,020	27	8	19	2	2,020	27	27	4	24	71	195
1921	924	100	341	116	152	1,831	18	9	9	2	1,831	18	18	16	1	20	1,120
1922	785	120	341	311	92	1,800	14	3	20	3	1,800	14	14	3	3	22	1,388
1923	1,051	111	415	372	114	2,255	22	4	20	1	2,255	22	22	8	26	24	1,979
1924	931	121	348	536	100	2,218	15	5	7	2	2,218	15	15	8	8	20	2,488
United States:	1,004	128	408	164	128	2,020	27	8	19	2	2,020	27	27	4	24	71	2,271
1921	924	100	341	116	152	1,831	18	9	9	2	1,831	18	18	16	1	20	1,120
1922	785	120	341	311	92	1,800	14	3	20	3	1,800	14	14	3	3	22	1,388
1923	1,051	111	415	372	114	2,255	22	4	20	1	2,255	22	22	8	26	24	1,979
1924	931	121	348	536	100	2,218	15	5	7	2	2,218	15	15	8	8	20	2,488
Total (bituminous):	842	93	342	128	79	628	8	8	2	8	628	16	16	8	8	2	89
1920	719	62	271	52	84	832	4	6	8	8	832	11	11	6	8	2	1,780
1921	887	90	283	298	54	1,541	7	3	3	16	1,541	11	11	13	4	4	1,440
1922	874	69	342	330	65	1,822	3	20	3	16	1,822	12	12	10	1	20	1,679
1923	759	77	290	486	47	1,786	7	3	2	5	1,786	7	7	4	4	4	1,885
1924	1,004	128	408	164	128	2,020	27	8	19	2	2,020	27	27	4	24	71	1,987
1921	924	100	341	116	152	1,831	18	9	9	2	1,831	18	18	16	1	20	1,120
1922	785	120	341	311	92	1,800	14	3	20	3	1,800	14	14	3	3	22	1,388
1923	1,051	111	415	372	114	2,255	22	4	20	1	2,255	22	22	8	26	24	1,979
1924	931	121	348	536	100	2,218	15	5	7	2	2,218	15	15	8	8	20	2,488

a Included with California, Idaho, and Nevada.

TABLE 26.—Percentage of bituminous coal mined by various methods, by States and years,^a 1919 to 1923

State and year	Percentage coal mined by—				State and year	Percentage coal mined by—			
	Hand	Machine	Shot off solid	Not reported ^b		Hand	Machine	Shot off solid	Not reported ^b
Alabama:					Maryland:				
1919	17.8	33.1	46.9	2.2	1919	75.7	10.3	13.3	.7
1920	15.8	34.7	46.9	2.6	1920	69.9	11.2	17.8	1.1
1921	17.5	39.9	39.6	3.0	1921	83.5	10.2	6.2	.1
1922	19.9	39.7	37.7	2.7	1922	56.5	24.8	14.3	4.4
1923	18.3	42.6	35.4	3.7	1923	61.7	25.5	11.2	1.6
Alaska:					Michigan:				
1919					1919	1.3	94.7	4.0	-----
1920					1920	1.4	93.5	5.0	.1
1921					1921	.9	95.6	3.5	-----
1922					1922	.1	96.1	3.8	-----
1923	10.0		90.0	-----	1923	-----	92.7	6.9	.4
Arkansas:					Missouri:				
1919	3.8	7.9	86.6	1.7	1919	15.4	22.3	34.4	27.9
1920	3.5	3.2	89.2	4.1	1920	11.5	26.0	37.5	25.0
1921	1.8	13.0	84.4	.8	1921	12.8	29.9	34.2	23.1
1922	3.8	15.5	71.9	8.8	1922	12.1	29.8	25.9	32.2
1923	2.3	14.6	64.7	18.4	1923	14.1	29.6	28.1	28.2
California, Idaho, and Nevada:					Montana:				
1919					1919	11.7	44.2	42.4	1.7
1920					1920	10.3	47.5	41.4	.8
1921					1921	24.4	40.5	34.7	.4
1922					1922	21.9	55.8	20.7	1.6
1923					1923	25.0	47.5	26.7	.8
Colorado:					New Mexico:				
1919	49.0	40.3	9.9	.8	1919	65.0	30.5	4.1	.4
1920	48.3	43.8	7.5	.4	1920	60.3	34.1	5.3	.3
1921	48.2	45.8	5.2	.8	1921	65.7	30.3	3.4	.6
1922	42.1	50.4	6.2	1.3	1922	50.5	31.3	16.8	1.4
1923	42.8	47.3	8.7	1.2	1923	46.8	29.2	23.0	1.0
Georgia and North Carolina:					North Dakota:				
1919			100.0	-----	1919	6.1	38.6	38.8	16.5
1920			100.0	-----	1920	1.3	37.7	39.1	21.9
1921			68.8	31.2	1921	4.3	39.0	38.0	18.7
1922			34.0	66.0	1922	1.0	33.3	30.2	35.5
1923	3.2		28.7	68.1	1923	1.5	30.8	26.9	40.8
Illinois:					Ohio:				
1919	7.4	59.0	32.5	1.1	1919	3.8	87.1	2.6	6.5
1920	5.9	61.9	31.2	1.0	1920	3.2	83.3	4.0	9.5
1921	5.5	65.5	28.0	1.0	1921	2.7	91.6	1.2	4.5
1922	5.4	66.6	26.1	1.9	1922	2.8	80.5	2.5	14.2
1923	5.8	68.3	23.9	2.0	1923	1.6	88.5	1.6	8.3
Indiana:					Oklahoma:				
1919	7.9	51.7	35.3	5.1	1919	.8	47.3	47.3	4.6
1920	8.3	48.7	37.1	5.9	1920	.5	48.4	45.4	5.7
1921	7.3	52.8	35.7	4.2	1921	.6	56.8	35.4	7.2
1922	6.6	49.8	35.0	8.6	1922	.5	49.9	36.0	13.6
1923	3.9	54.3	31.6	10.2	1923	2.0	56.7	28.3	13.0
Iowa:					Oregon:				
1919	20.4	11.7	65.9	2.0	1919	-----	-----	-----	-----
1920	15.2	20.7	62.7	1.4	1920	-----	-----	-----	-----
1921	12.7	15.4	71.2	.7	1921	-----	-----	-----	-----
1922	18.0	13.6	66.4	2.0	1922	-----	-----	-----	-----
1923	17.7	20.7	60.4	1.2	1923	-----	-----	-----	-----
Kansas:					Pennsylvania, bituminous:				
1919	2.8	1.0	84.7	11.5	1919	38.0	57.3	3.6	1.1
1920	6.6	1.1	77.2	15.1	1920	35.7	57.9	3.6	2.8
1921	7.5	1.0	80.0	11.5	1921	33.1	63.6	1.9	1.4
1922	3.9	3.2	72.3	20.6	1922	33.5	58.0	3.7	4.8
1923	2.6	2.4	75.5	19.5	1923	31.7	64.1	2.5	1.7
Kentucky:					South Dakota:				
1919	4.1	79.8	15.1	1.0	1919	-----	-----	-----	-----
1920	4.2	77.6	17.0	1.2	1920	-----	-----	-----	-----
1921	5.0	83.9	10.8	.3	1921	-----	-----	-----	-----
1922	4.2	79.1	12.7	4.0	1922	-----	-----	-----	-----
1923	3.5	84.2	9.3	3.0	1923	-----	-----	-----	-----

^a Compiled from Mineral Resources, U. S. Geological Survey.^b Includes coal mined from steam-shovel pits.

TABLE 26.—Percentage of bituminous coal mined by various methods, by States and years, 1919 to 1923—Continued

State and year	Percentage coal mined by—				State and year	Percentage coal mined by—			
	Hand	Machine	Shot off solid	Not reported		Hand	Machine	Shot off solid	Not reported
Tennessee:					Washington:				
1919	24.8	30.6	44.2	.4	1919	64.8	9.1	26.1	—
1920	23.6	25.6	49.1	1.7	1920	55.9	10.5	32.1	1.5
1921	31.6	27.8	40.1	.5	1921	48.2	5.4	42.9	3.5
1922	13.6	29.5	54.6	2.3	1922	45.7	12.8	40.0	1.5
1923	15.3	33.1	49.7	1.9	1923	54.9	8.6	35.1	1.4
Texas:					West Virginia:				
1919	77.0	.6	22.4	—	1919	26.5	70.3	3.0	.2
1920	69.5	2.0	27.4	1.1	1920	23.4	72.2	3.7	.7
1921	67.5	4.6	27.9	—	1921	20.4	77.2	2.1	.3
1922	68.3	4.3	25.7	1.7	1922	19.1	76.7	3.3	.9
1923	58.1	3.8	31.3	6.8	1923	16.6	78.7	3.9	.8
Utah:					Wyoming:				
1919	24.3	68.8	6.8	.1	1919	17.4	55.2	27.3	.1
1920	35.8	58.7	5.4	.1	1920	13.9	54.4	31.2	.5
1921	21.3	75.1	3.4	.2	1921	13.4	51.8	33.8	1.0
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
Virginia:					Total (bituminous):				
1919	13.8	67.7	18.4	1.1	1919	23.6	39.2	15.3	1.9
1920	3.0	69.9	25.9	1.2	1920	20.7	59.8	16.6	2.9
1921	3.1	77.9	19.0	—	1921	18.8	65.6	13.9	1.7
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

FATALITY RATES ON A 2,000-HOUR BASIS

Tables 27 and 28, which show the number of men killed per thousand 2,000-hour workers, are based upon reports of the United States Geological Survey that give the number of coal-mine employees who worked 8, 9, or 10 hours a day. (See Table 29.) The figures published by the Survey were used to calculate the total number of hours of work performed by all mine employees. The hours of actual work are not indicated with complete exactness by these figures because all men, even at a single mine, do not necessarily work the same number of hours per shift; moreover, an established 8, 9, or 10 hour shift does not necessarily mean that all employees were actually at work, or even in the mine, that many hours each day. The figures are, however, the best approximation possible for the industry as a whole, and have been used to calculate fatality rates for different States and for different years on a uniform number of hours of exposure to hazard. The 2,000-hour basis was selected some years ago as a basis for calculating the fatality rates because it closely approximated the actual number of hours of work performed by the average coal-mine employee in the United States. The basis is continued for the convenience of organizations that have used the rates in their studies of mine-accident prevention problems.

In connection with these tables attention is called to Table 51, wherein the accident rates are given on a basis of 300 days to the working year, regardless of the number of hours constituting a day's work. Accident rates on a 300-day basis make possible the comparison of fatal accidents at coal mines with similar accidents at metal mines, quarries, and in other branches of the mineral industry. (See Tables 64 and 65.) Allowance must be made, however, for variations in the length of the working-day in different States or in different years.

NUMBER OF 8, 9, OR 10 HOUR EMPLOYEES IN COAL MINES

Table 29 shows the number of 8, 9, or 10 hour employees in the coal mines of the United States during the years 1919 to 1923. Figures for 1924 are not available. The figures in this table and in similar tables for previous years form the basis of the fatality rates presented in Tables 27, 28, and 30.

TABLE 27.—Men employed, hours worked, and fatality rates, at bituminous and anthracite coal mines, for the years ended December 31, 1911 to 1923 ^a

Year	Men employed	Average days worked	Total hours worked (all employees)		Number of 2,000-hour workers	Fatalities		
			Per day	Per year		Total	Per 1,000 2,000-hour workers	
			1	2		3	4	5	6	7
1911:								
Bituminous.....	549,775	211	4,755,531	1,003,417,041	501,709	1,957	3.91	
Anthracite.....	172,585	246	1,380,680	339,647,280	169,824	699	4.12	
Total.....	722,360	220	6,136,211	1,349,966,420	674,983	2,656	3.93	
1912:								
Bituminous.....	548,632	223	4,756,813	1,060,769,299	530,385	1,818	3.43	
Anthracite.....	174,030	231	1,392,240	321,607,440	160,804	601	3.74	
Total.....	722,662	225	6,149,053	1,383,536,925	691,768	2,419	3.50	
1913:								
Bituminous.....	571,899	232	4,927,935	1,143,280,920	571,640	2,167	3.79	
Anthracite.....	175,745	257	1,405,960	361,331,720	180,666	618	3.42	
Total.....	747,644	238	6,333,895	1,507,467,010	753,734	2,785	3.69	
1914:								
Bituminous.....	583,506	195	5,042,006	982,529,145	491,265	1,859	3.78	
Anthracite.....	179,679	245	1,617,111	396,192,195	198,096	595	3.00	
Total.....	763,185	207	6,659,117	1,378,437,219	689,219	2,454	3.56	
1915:								
Bituminous.....	557,456	203	4,819,064	977,467,939	488,734	1,683	3.44	
Anthracite.....	176,552	230	1,588,968	365,462,640	182,731	586	3.21	
Total.....	734,008	209	6,408,032	1,339,278,688	669,639	2,269	3.39	
1916:								
Bituminous.....	561,102	230	4,863,068	1,117,387,840	558,694	1,671	2.99	
Anthracite.....	159,869	253	1,318,919	333,686,507	166,843	555	3.33	
Total.....	720,971	235	6,181,987	1,452,788,095	726,394	2,226	3.06	

^a Compiled (except for fatalities) from Mineral Resources, U. S. Geological Survey.

TABLE 27.—Men employed, hours worked, and fatality rates, at bituminous and anthracite coal mines, for the years ended December 31, 1911 to 1923—Contd.

Year	Men employed	Average days worked	Total hours worked (all employees)		Number of 2,000-hour workers	Fatalities		
			Per day	Per year		Total	Per 1,000 2,000-hour workers	
			1	2		3	4	5	6	7
1917:								
Bituminous.....	603, 143	243	5, 044, 949	1, 225, 922, 607	612, 961	2, 114	3. 45	
Anthracite.....	154, 174	285	1, 233, 392	351, 516, 720	175, 758	582	3. 31	
Total.....	757, 317	251	6, 278, 341	1, 575, 863, 591	787, 932	2, 696	3. 42	
1918:								
Bituminous.....	615, 305	249	5, 024, 015	1, 250, 979, 735	625, 490	2, 029	3. 24	
Anthracite.....	147, 121	293	1, 176, 968	344, 851, 624	172, 426	551	3. 20	
Total.....	762, 426	258	6, 200, 983	1, 599, 853, 614	799, 927	2, 580	3. 23	
1919:								
Bituminous.....	621, 998	195	5, 027, 331	980, 329, 545	490, 165	1, 682	3. 43	
Anthracite.....	154, 571	266	1, 236, 568	328, 927, 088	164, 464	635	3. 86	
Total.....	776, 569	209	6, 263, 899	1, 309, 154, 891	654, 577	2, 317	3. 54	
1920:								
Bituminous.....	639, 547	220	5, 148, 808	1, 132, 737, 760	566, 369	1, 780	3. 14	
Anthracite.....	145, 074	271	1, 160, 592	314, 520, 432	157, 260	491	3. 12	
Total.....	784, 621	230	6, 309, 400	1, 451, 182, 000	725, 581	2, 271	3. 13	
1921:								
Bituminous.....	663, 754	149	5, 346, 773	796, 669, 177	398, 335	1, 440	3. 62	
Anthracite.....	159, 499	271	1, 275, 992	345, 793, 832	172, 897	547	3. 16	
Total.....	823, 253	173	6, 622, 765	1, 145, 738, 345	572, 869	1, 987	3. 47	
1922:								
Bituminous.....	687, 958	142	5, 550, 728	788, 203, 376	394, 102	1, 679	4. 26	
Anthracite.....	156, 849	151	1, 254, 792	189, 473, 592	94, 737	300	3. 17	
Total.....	844, 807	144	6, 805, 520	979, 994, 880	489, 997	1, 979	4. 04	
1923:								
Bituminous.....	702, 817	179	5, 676, 550	1, 016, 102, 450	508, 051	1, 949	3. 84	
Anthracite.....	157, 743	268	1, 261, 944	338, 200, 992	169, 100	509	3. 01	
Total.....	860, 560	195	6, 938, 494	1, 353, 006, 330	676, 503	2, 458	3. 63	

NOTE.—Totals in columns 4 and 5 obtained by calculating averages for United States, and not by adding.

TABLE 28.—Men employed, hours worked, and fatality rates at coal mines during the year ended December 31, 1923 ^a

State	Men employed	Average days worked	Total hours worked (all employees)		Number of 2,000-hour workers	Fatalities	
			Per day	Per year		Total	Per 1,000 2,000-hour workers
			1	2		3	4	5	6	7
Alabama.....	30,035	232	260,387	60,409,784	30,205	89	2.95
Alaska.....	199	220	1,610	355,810	178		
Arkansas.....	3,754	97	30,388	2,947,636	1,474	4	2.71
California, Idaho, and Nevada.....	93	206	744	153,264	77		
Colorado.....	13,340	174	107,126	18,639,924	9,320	66	7.08
Georgia and North Carolina.....	317	252	2,556	644,112	322		
Illinois.....	99,714	158	798,633	126,184,014	63,092	170	2.69
Indiana.....	35,408	136	283,556	38,563,616	19,282	70	3.63
Iowa.....	11,448	181	91,679	16,593,899	8,297	21	2.53
Kansas.....	7,785	149	62,344	9,289,256	4,645	19	4.09
Kentucky.....	60,811	152	494,726	75,198,352	37,599	129	3.43
Maryland.....	3,725	178	29,905	5,323,090	2,662	5	1.88
Michigan.....	1,977	222	15,854	3,519,588	1,760	5	2.84
Missouri.....	6,952	155	55,824	8,652,720	4,326	16	3.70
Montana.....	3,511	179	28,154	5,039,566	2,520	11	4.37
New Mexico.....	4,095	216	32,783	7,081,128	3,541	141	39.82
North Dakota.....	1,621	182	13,463	2,450,266	1,225	2	1.63
Ohio.....	54,555	150	437,812	65,671,800	32,836	130	3.96
Oklahoma.....	7,130	133	57,367	7,629,811	3,815	8	2.10
Oregon.....							
Pennsylvania (bituminous).....	194,981	213	1,567,516	333,880,908	166,940	402	2.41
South Dakota.....	34	122	306	37,332	19		
Tennessee.....	11,244	183	91,120	16,674,960	8,337	18	2.16
Texas.....	2,452	178	21,637	3,851,386	1,926	1	.52
Utah.....	4,381	160	35,054	5,608,640	2,804	23	8.20
Virginia.....	14,120	212	115,066	24,393,992	12,197	39	3.20
Washington.....	4,306	213	34,456	7,339,128	3,670	20	5.45
West Virginia.....	117,300	169	946,247	159,915,743	79,958	434	5.43
Wyoming.....	7,529	192	60,237	11,565,504	5,783	126	21.79
Total (bituminous).....	702,817	179	5,676,550	1,016,102,450	508,051	1,949	3.84
Pennsylvania (anthracite).....	157,743	268	1,261,944	338,200,992	169,100	509	3.01
Total.....	860,560	195	6,938,494	1,353,006,330	676,503	2,458	3.63

^a Compiled (except for fatalities) from Mineral Resources, U. S. Geological Survey.

^b Included with California, Idaho, and Nevada.

^c Totals in columns 4 and 5 obtained by calculating averages for United States, and not by adding corresponding figures for each State.

TABLE 29.—Number of hours to the working day, in and about the coal mines in the United States, by States, for the years 1919 to 1923

[Compiled from Mineral Resources, U. S. Geological Survey]

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		
Alabama:								
1919	268	24,054	1	5	3	562	2,253	26,874
1920	251	24,851	1	260	2	419	10	25,540
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
Alaska:								
1919	4	138					28	166
1920	5	174					33	207
1921	2	150					251	401
1922	11	412					18	430
1923	8	181					18	199
Arkansas:								
1919	91	3,782	1	30			2	3,814
1920	93	3,934	1	2			30	3,966
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
California, Idaho, and Nevada:								
1919	2	69					8	77
1920	2	10						10
1921	2	69						69
1922 ^a	3	60						60
1923	5	93						93
Colorado:								
1919	157	10,224	6	1,187	2	15	403	11,829
1920	156	13,320	2	204			187	13,711
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
Georgia and North Carolina:								
1919	2	217						217
1920	2	198						198
1921	2	196						196
1922	3	277						277
1923	3	297					20	317
Illinois:								
1919	486	83,882	7	48			1,090	85,020
1920	472	86,865	2	9			210	87,084
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
Indiana:								
1919	303	29,721	3	9			257	29,987
1920	279	30,839	3	179			137	31,155
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
Iowa:								
1919	175	11,700	1	6			660	12,366
1920	150	11,538					367	11,905
1921	134	11,307			1	4	75	11,386
1922	132	12,744					113	12,857
1923	131	11,353					95	11,448
Kansas:								
1919	174	9,803	1	7			116	9,926
1920	154	8,946					38	8,984
1921	130	8,109					98	8,207
1922	122	7,308					51	7,359
1923	116	7,721	1	5			59	7,785
Kentucky:								
1919	585	36,807	75	5,849	34	1,062	1,880	45,598
1920	661	43,602	63	4,824	23	523	503	49,452
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

^a Includes Oregon.

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

TABLE 29.—Number of hours to the working day, in and about the coal mines in the United States, by States, for the years, 1919 to 1923—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		
Maryland:								
1919	85	5,127					267	5,394
1920	98	5,486					62	5,548
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
Michigan:								
1919	14	2,104						2,104
1920	14	2,154						2,154
1921	14	2,212						2,212
1922	12	2,142					24	2,166
1923	12	1,939					38	1,977
Missouri:								
1919	193	8,831	8	176	2	44	263	9,314
1920	168	8,621	5	63	2	36	118	8,838
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
Montana:								
1919	61	4,050			3	11	62	4,123
1920	49	4,116			2	7	81	4,204
1921	47	4,154			1	3	21	4,178
1922	35	3,572					63	3,635
1923	32	3,445					66	3,511
New Mexico:								
1919	38	3,560	1	165			20	3,745
1920	33	3,182	1	21			535	3,738
1921	37	4,548	1	20			9	4,577
1922	34	3,969	1	16			16	4,001
1923	35	4,072					23	4,095
North Dakota:								
1919	62	927	2	14	10	52	79	1,072
1920	43	910	2	12	4	79	109	1,110
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
Ohio:								
1919	816	47,980	12	382	9	116	1,146	49,624
1920	887	50,083	2	52	8	359	413	50,857
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
Oklahoma:								
1919	118	8,087	3	22	1	27	312	8,448
1920	129	7,954	3	84	2	68	138	8,244
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
Oregon:								
1919	2	57					10	67
1920	3	85						85
1921	1	69					3	72
1922 ^b								
1923 ^b								
Pennsylvania, bituminous:								
1919	2,325	160,490	136	6,138	37	2,400	5,522	174,550
1920	2,288	163,063	90	5,404	17	821	4,682	173,970
1921	2,115	181,572	92	8,244	9	399	428	190,643
1922	2,551	182,403	83	4,218	15	580	1,637	118,838
1923	2,463	187,681	95	4,881	11	368	2,051	194,981
South Dakota:								
1919	2	5	1	4	2	6	31	46
1920							47	47
1921							43	43
1922							32	32
1923							34	34

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

^b Included with California, Idaho, and Nevada.

TABLE 29.—Number of hours to the working day, in and about the coal mines in the United States, by States, for the years 1919 to 1923—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:								
1919	142	10,002	3	316	2	665	540	11,523
1920	162	10,638	1	25	1	600	90	11,353
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
Texas:								
1919	17	2,273	22	1,115	6	148	108	3,644
1920	13	1,395	21	892	7	571	92	2,950
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
Utah:								
1919	30	3,809	2	9			39	3,857
1920	34	4,496	1	6	1	2		4,504
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
Virginia:								
1919	104	10,966	11	288	9	232	100	11,586
1920	130	13,387	4	226	5	355	42	14,010
1921	96	11,428	5	241	4	253		11,922
1922	153	13,028	6	253	3	67	51	13,399
1923	140	12,883	5	229	5	869	139	14,120
Washington:								
1919	45	5,022					14	5,036
1920	45	4,985					9	4,994
1921	51	4,334						4,334
1922	47	4,481						4,481
1923	54	4,298					8	4,306
West Virginia:								
1919	1,232	85,815	46	5,353	10	787	2,750	94,705
1920	1,396	100,320	13	465	10	1,922	243	102,950
1921	1,253	97,750	26	2,731	12	789	580	101,850
1922	1,528	104,047	46	5,147	12	619	201	110,014
1923	1,542	110,599	48	4,972	17	1,146	583	117,300
Wyoming:								
1919	69	7,276					10	7,286
1920	68	7,775					4	7,779
1921	63	8,484						8,484
1922	61	9,043					2	9,045
1923	61	7,524					5	7,529
Total bituminous:								
1919	7,602	576,778	342	21,123	130	6,127	17,970	621,998
1920	7,785	612,877	215	12,728	84	5,762	8,180	639,547
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	7,766	656,833	324	29,120	100	8,030	8,834	702,817
Pennsylvania, anthracite:^d								
1919		154,571						154,571
1920		145,074						145,074
1921		159,499						159,499
1922		156,849						156,849
1923		157,743						157,743
Total, United States:								
1919		731,349		21,123		6,127	17,970	776,569
1920		757,951		12,728		5,762	8,180	784,621
1921		789,939		25,157		3,427	4,730	823,253
1922		803,899		26,834		6,156	7,918	844,807
1923		814,576		29,120		8,030	8,834	860,560

^c Includes 816 men working 8 hours prior to September.

^d 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.

INDEX NUMBERS OF MINE FATALITIES

Tables 30 and 31 are tables of index numbers showing how the yearly fatality rates for bituminous coal mines compare with the average fatality rate during the combined 5-year period 1911 to 1915. For purposes of comparison, the 5-year average rate for the years 1911 to 1915 has been weighted 100, and with this as a base, the rate for any given year appears above or below 100 depending upon whether the rate for the given year was above or below the average 5-year rate. For example, the average fatality rate per million hours of work during the five years mentioned was 1.832, but the rate for the year 1923 was 1.918; if the former is weighted 100, the latter must be weighted 105, as shown in Table 30. In a similar manner the fatality rate for each year may be compared with the base rate for the 5-year period.

The index numbers in Table 30 were calculated on the yearly fatality rates per million hours of labor performed; those in Table 31 were calculated on the yearly fatality rates per million tons of coal produced. Both tables relate to bituminous coal mines only, and both show the main causes of fatal accidents at the mines.

As the figures show, during the past three years the per million-hour fatality rates have been above the 5-year base rate, and the per-million-ton rates have been lower than that rate. The decrease per million tons mined is attributable in part to the larger use of machinery in mining; the daily productivity of the average mine employee is increased, hence the production per death is increased; or, in other words, the death rate per ton of coal produced is lowered.

The figures in Table 30 show that during the past four years the million-hour fatality rates from falls of roof and coal have been higher than the base rate. The death rates from haulage accidents since 1916 have been above the average, and the figures indicate that this class of accidents is tending to increase. The rates for gas and dust explosions have been irregular; during the years 1914 to 1921 they were encouragingly low, but were above normal rates during the past three years. Accidents from explosives have resulted in death rates above normal during 7 of the 14 years, with a gratifying improvement during 1923 and 1924.

Electricity must be charged with death rates above normal during 6 years and credited with rates below normal during 8 years. The latest year, 1924, shows an increased death rate.

The death rate from mining machines was above normal in 11 out of the 14 years covered by the table. Lest this bare statement be somewhat misleading, attention is called to the rapid increase of mining machines in bituminous coal mines. In 1911 the number of machines in use was 13,829, 44 per cent of the nation's coal production was machine-mined, and the average tonnage per machine was

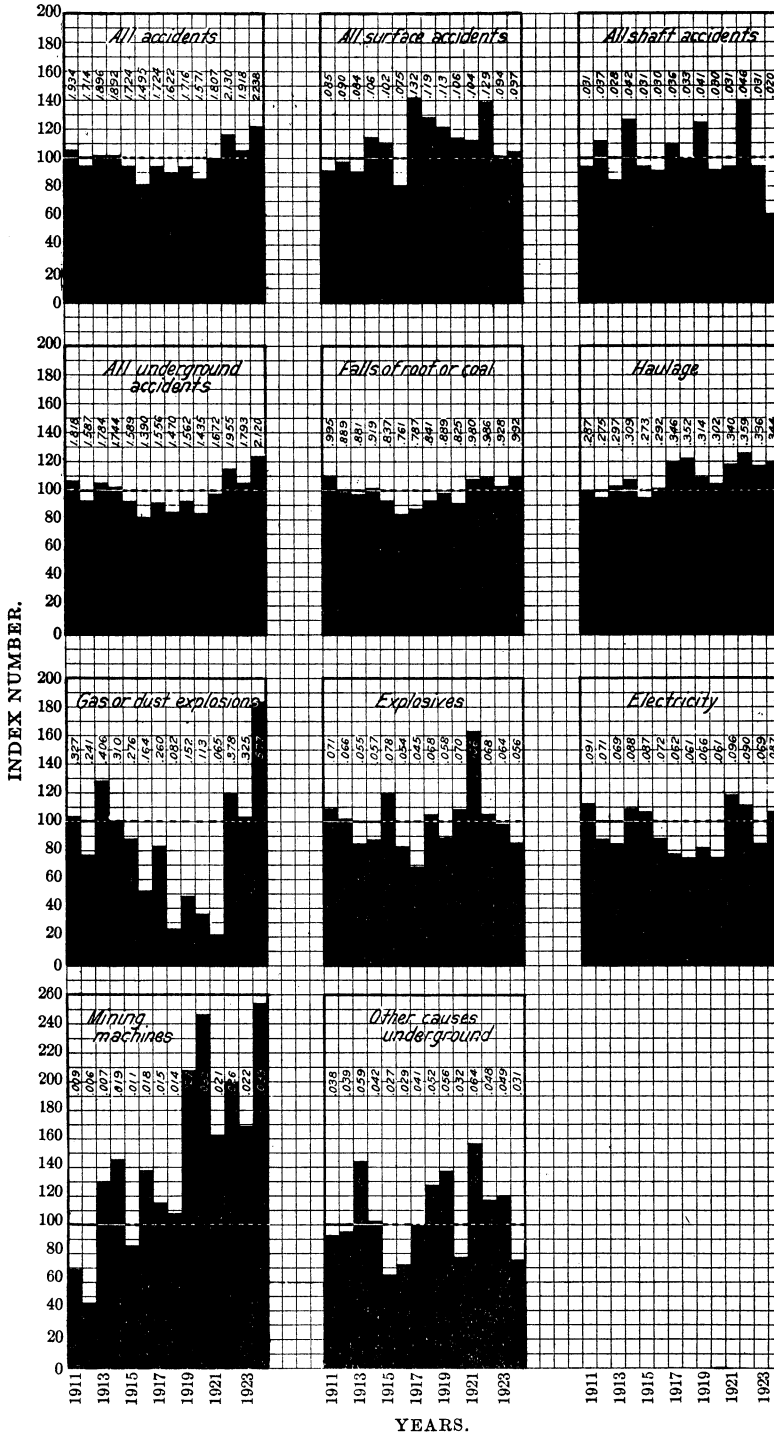


FIGURE 1.—Index numbers showing comparison of yearly fatality rates per million hours of labor at bituminous mines for each of the main causes of accidents, with average rate for each cause during the 5-year period, 1911-1915. (Average rate for each cause 1911-1915=100.) Figures within the squares show numbers of fatalities per million hours of labor.

12,854; in 1923 the number of machines had risen to 21,229, nearly 67 per cent of the country's coal was mined by machines and the average production was 17,779 tons per machine. Hence the index numbers in Tables 30 and 31 and the shaded curve in Figure 1 do not, standing alone, adequately portray the hazards attending the operation of coal-cutting machines. The figures in the two tables should in fact be further supplemented by a statement as to the number of deaths per machine, or, better, the number of deaths per thousand machine-days of operation. As the bituminous coal mines averaged 211 days of operation in 1911, it may be assumed that the 13,829 machines in use that year represented 2,917,919 machine-days of work, so that the 9 fatal accidents caused by machines in 1911 represented a fatality rate of 3.084 deaths per million machine-days of operation. In 1923 the bituminous mines were active 179 days; hence the 21,229 machines in use during the year represented 3,799,991 machine-days of operation, and the 22 fatalities during the year indicated a fatality rate of 5.789 per million days. On a basis of tonnage mined by machines, the death rate, based on fatal accidents caused by mining machines, was 5.052 per hundred million tons in 1911 and 5.829 in 1923, the quantity of machine-mined coal having been 178,158,236 tons in 1911 and 377,435,543 tons in 1923.

Shaft accidents were gratifyingly few during 1923 and 1924, and in 8 years out of the 14-year period the death rate per million hours from this class of accidents was less than the average 5-year base rate. Accidents to employees above ground, in surface shops and yards have remained above normal during the past 8 years, and have been above the base rate in 10 out of the 14 years covered by the table.

TABLE 30.—Index numbers, showing comparison of yearly fatality rates per million man-hours worked in bituminous coal mines, with average rate for the five-year period 1911-1915.

[Average rate 1911-1915=Index number 100]

Cause of accident	Num-ber killed 1911-1915	Rate 1911-1915	Index number														
			1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924 ^b	
Falls of roof and coal	4,678	0.904	110	98	97	102	93	84	87	93	98	91	105	108	109	103	110
Underground haulage	1,492	.238	100	95	103	107	101	101	120	122	109	122	105	118	125	117	119
Explosions of gas or coal dust	1,635	.314	104	77	129	99	52	52	83	26	48	36	48	21	120	104	184
Explosives	1,337	.065	109	102	85	88	83	83	69	105	80	108	89	163	105	98	87
Electricity	417	.081	112	88	85	109	107	80	77	75	81	75	81	119	111	107	107
Mining machines	66	.013	69	46	131	146	106	80	115	108	298	246	246	162	200	169	254
Other causes underground	214	.041	93	95	144	102	71	138	100	127	137	78	156	156	117	120	76
All causes underground	8,829	1.706	107	93	105	102	93	81	91	86	92	84	98	98	115	105	124
All shaft accidents	1,173	.033	94	112	85	127	81	109	109	100	124	91	94	94	130	94	61
All accidents on surface	482	.083	91	97	90	114	81	142	128	128	122	114	112	139	101	101	108
All accidents	9,484	1.832	106	94	103	103	94	94	94	89	94	96	99	116	106	106	122

^a Figures in this table are based on 5,175,780,000 man-hours worked.

^b Figures for 1924 estimated on basis of production per man per hour in 1923.

TABLE 31.—Index numbers, showing comparison of yearly fatality rates per million tons of coal produced in bituminous coal mines, with average rate for the five-year period 1911-1915.^a

[Average rate 1911-1915=index number 100]

Cause of accident	Num-ber killed 1911-1915	Rate 1911-1915	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924 ^b
Falls of roof and coal	4,678	2.126	117	99	99	100	87	80	82	85	88	77	88	87	79	81
Underground haulage	1,492	.678	105	96	104	106	89	96	113	112	97	89	96	96	89	88
Explosions of gas and coal dust	1,625	.739	110	77	131	98	83	49	78	24	43	30	17	96	79	136
Explosives	1,337	.553	116	101	86	86	112	78	65	96	80	91	132	84	75	63
Electricity	417	.190	119	88	87	107	101	85	73	70	73	65	96	88	65	79
Mining machine	66	.030	73	50	140	150	83	133	110	97	187	210	137	157	130	163
Other causes underground	214	.097	99	94	144	100	60	68	95	115	122	65	127	193	92	56
All causes underground	8,829	4.013	113	93	106	101	87	77	86	79	82	71	80	91	80	92
All shaft accidents	173	.079	96	110	85	123	86	86	101	90	109	76	76	108	70	44
All accidents on surface	482	.219	97	97	92	112	103	76	134	117	109	96	91	111	78	77
All accidents	9,484	4.311	112	94	105	102	88	77	89	81	84	73	80	92	80	80

^a Figures in this table are based on 2,199,863,540 tons of bituminous coal mined.

^b Estimated.

NORMAL FATALITY RATES FOR BITUMINOUS COAL MINES

Mine explosions or other abnormal disasters sometimes obscure the trend of what may be called the normal fatality rates at coal mines. Disastrous explosions are exceptional and the number of deaths they cause depends largely on the number of men in the mine at the time, or, rather, the number of men in the pathway of the explosion. An explosion that caused the death of 100 men would have no less significance as indicating a mine hazard if no lives had been lost because no one happened to be in the mine at the time. Hence the number of lives lost in explosions each year, though properly included in any general survey of mine fatalities, might with propriety be omitted when the purpose is to reveal the day-to-day hazards of coal mining. Therefore, in preparing Tables 32 and 33, all accidents causing 5 or more deaths have been eliminated, and the comparisons shown are on the basis of the ordinary or normal accidents in the mines.

Table 32 shows the number of fatalities at bituminous coal mines from ordinary accidents calculated on a basis of one million hours of exposure; Table 33 shows the number of ordinary fatalities for every million tons of coal produced. For every million hours the men were in the mines, during the 10-year period 1911-1920, the normal fatality rate was 1.529, and for every million tons of coal produced the normal rate was 3.416. During the same 10-year period, the abnormal or major disaster rate based upon those accidents that killed 5 or more men, was 0.196 per million hours and 0.438 per million tons. It will be noted that the per-million-hours rates for such important causes of accidents as haulage and falls of roof or coal have, during the last three years covered by the table, been higher than the average for the preceding decade. This fact calls attention to the need for giving special attention to falls and to haulage accidents and to the study of methods for their prevention.

TABLE 32.—*Bituminous mines: Normal fatality rates, by causes, per million hours of labor performed*

Cause	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	10-year total	1921	1922	1923
1. Falls of roof (coal, rock, etc.).....	0.846	0.762	0.760	0.820	0.742	0.700	0.700	0.774	0.790	0.743	0.762	0.903	0.872	0.855
2. Falls of face or pillar coal.....	.148	.126	.122	.086	.095	.061	.087	.067	.099	.062	.086	.078	.114	.068
3. Mine cars and locomotives.....	.289	.275	.297	.304	.264	.292	.346	.352	.314	.302	.305	.340	.359	.337
4. Explosions of gas or coal dust.....	.014	.037	.043	.044	.036	.043	.055	.050	.069	.072	.048	.045	.042	.043
5. Explosives.....	.072	.061	.055	.057	.073	.054	.041	.068	.058	.070	.081	.106	.061	.064
6. Suffocation from mine gases.....	.006	.001	.013	.006	.005	.002	.002	.008	.005	.007	.005	.007	.004	.007
7. Electricity.....	.092	.071	.069	.088	.087	.072	.062	.061	.066	.062	.072	.065	.060	.069
8. Animals.....	.004	.004	.004	.005	.002	.003	.007	.005	.001	.027	.004	.005	.004	.007
9. Mining machines.....	.009	.007	.018	.019	.011	.018	.015	.014	.027	.032	.017	.022	.026	.022
10. Mine fires (burned, suffocated, etc.).....	.003	.002	.003	.002	.001	.003	.002	.009	.002	.002	.003	.004	.004	.004
11. Other causes.....	.026	.024	.032	.024	.018	.021	.026	.019	.028	.010	.023	.040	.034	.035
Total, underground.....	1.599	1.370	1.416	1.455	1.334	1.269	1.343	1.427	1.459	1.382	1.394	1.645	1.606	1.507
12. Falling down shafts or slopes.....	.017	.014	.017	.024	.022	.017	.009	.011	.013	.014	.016	.014	.014	.012
13. Objects falling down shafts or slopes.....	.003	.003	.001	.005	.002	.002	.007	.007	.004	.007	.004	.007	.004	.002
14. Cage, skip, or bucket.....	.012	.017	.008	.006	.007	.009	.017	.013	.019	.007	.011	.010	.017	.016
15. Other causes.....	.002	.003	.002	.001	.000	.002	.003	.002	.005	.002	.002	.004	.004	.001
Total, shaft.....	.031	.037	.033	.036	.031	.030	.036	.033	.041	.030	.033	.031	.039	.031
16. Mine cars and mine locomotives.....	.034	.035	.038	.039	.035	.034	.042	.046	.043	.028	.038	.022	.027	.020
17. Electricity.....	.004	.005	.006	.010	.009	.005	.010	.008	.008	.013	.008	.016	.010	.005
18. Machinery.....	.009	.010	.009	.013	.015	.005	.017	.008	.011	.004	.010	.005	.013	.012
19. Boiler explosions or bursting steam pipes.....	.006	.003	.001	.005	.004	.003	.006	.004	.002	.003	.004	.001	.001	.001
20. Railway cars and locomotives.....	.012	.013	.007	.013	.014	.009	.021	.017	.015	.009	.014	.020	.026	.015
21. Other causes.....	.020	.024	.023	.026	.025	.019	.036	.036	.034	.039	.038	.040	.053	.042
Total, surface.....	.085	.090	.084	.106	.102	.075	.132	.119	.113	.106	.102	.104	.130	.094
Grand total.....	1.625	1.497	1.533	1.597	1.467	1.374	1.511	1.579	1.613	1.518	1.599	1.780	1.775	1.632

TABLE 33.—*Bituminous mines: Normal fatality rates, by causes, per million tons of coal produced*

Cause	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	10-year total	1921	1922	1923
1. Falls of roof (coal, rock, etc.).....	2.092	1.797	1.814	1.907	1.638	1.556	1.555	1.671	1.662	1.481	1.701	1.729	1.627	1.540
2. Falls of face or pillar coal.....	.367	.298	.280	.709	.810	.335	.194	.145	.208	.164	.215	.140	.213	.122
3. Mine cars and locomotives.....	.714	.649	.709	.704	.683	.649	.768	.760	.661	.602	.681	.651	.670	.606
4. Explosions of gas and coal dust.....	.035	.087	.132	.132	.079	.046	.192	.107	.146	.145	.105	.086	.081	.078
5. Explosives.....	.177	.144	.132	.132	.100	.049	.043	.147	.122	.129	.125	.202	.114	.115
6. Suffocation from mine gases.....	.015	.022	.081	.074	.011	.004	.002	.011	.011	.014	.019	.015	.007	.011
7. Electricity.....	.227	.107	.168	.218	.022	.141	.128	.133	.140	.123	.181	.183	.168	.124
8. Animals.....	.010	.009	.019	.042	.005	.008	.016	.010	.002	.003	.008	.010	.007	.013
9. Mining machines.....	.022	.013	.042	.035	.046	.046	.033	.039	.054	.063	.038	.041	.047	.039
10. Mine fires (burned, suffocated, etc.).....	.007	.004	.008	.005	.002	.008	.004	.021	.004	.004	.007	.007	.007	.009
11. Other causes.....	.064	.036	.075	.053	.041	.048	.058	.041	.058	.021	.051	.077	.064	.064
Total, underground.....	3.730	3.228	3.381	3.393	2.948	2.822	2.983	3.081	3.070	2.752	3.114	3.150	2.988	2.714
12. Falling down shafts or slopes.....	.041	.033	.042	.055	.047	.040	.020	.024	.028	.028	.035	.026	.025	.021
13. Objects falling down shafts or slopes.....	.....	.007	.002	.012	.005	.004	.015	.014	.008	.014	.008	.015	.007	.004
14. Cage, skip, or bucket.....	.030	.040	.019	.014	.016	.026	.038	.028	.030	.014	.026	.019	.033	.028
15. Other causes.....	.005	.007	.004	.002	.....	.004	.007	.005	.011	.004	.005	.....	.007	.002
Total, shaft.....	.076	.087	.087	.083	.068	.068	.080	.071	.086	.080	.074	.080	.073	.065
16. Mine cars and mine locomotives.....	.086	.082	.000	.000	.077	.075	.082	.100	.000	.056	.084	.041	.050	.037
17. Electricity.....	.010	.013	.015	.023	.020	.012	.022	.017	.017	.026	.018	.031	.019	.009
18. Machinery.....	.022	.024	.023	.031	.024	.012	.038	.017	.024	.009	.028	.030	.024	.021
19. Boiler explosions or bursting steam pipes.....	.035	.007	.002	.012	.009	.006	.013	.009	.004	.005	.008	.002	.002	.....
20. Railway cars and locomotives.....	.030	.031	.017	.031	.032	.020	.047	.036	.032	.037	.032	.038	.047	.037
21. Other causes.....	.049	.036	.054	.059	.054	.042	.080	.078	.071	.078	.083	.077	.100	.076
Total, surface.....	.212	.213	.201	.248	.226	.187	.283	.257	.238	.211	.238	.198	.242	.170
Grand total.....	4.018	3.698	3.649	3.712	3.240	3.057	3.356	3.409	3.394	3.023	3.416	3.409	3.313	2.939

TABLE 34.—*Accident rates in different branches of mineral industries in 1923 compared on a 300-day basis (length of shift not considered)*

Branch of mineral industry	Average days active	Men employed			Days of labor performed	Killed	Injured	Number killed or injured per 1,000 300-day workers			
		Actual number	Equivalent in 300-day workers (calculated)					Killed	Injured	Killed	Injured
Coal mines *	195	860,560	560,000	167,999,932	2,458	-----	4.39	-----			
All metal mines	297	123,279	121,866	36,559,905	367	33,563	3.01	275.41			
Copper mines	317	32,477	34,355	10,306,466	107	11,993	3.11	349.09			
Gold and miscellaneous metal mines	285	30,525	29,016	8,704,653	114	8,672	3.93	298.87			
Iron mines	292	38,419	37,382	11,214,624	89	5,616	2.38	150.23			
Lead and zinc mines (Mississippi Valley)	290	10,226	9,874	2,962,289	27	4,894	2.73	495.65			
Nonmetallic mineral mines	290	11,632	11,239	3,371,773	30	2,388	2.67	212.47			
All quarries (including outside works)	276	92,455	85,153	25,545,859	143	14,990	1.68	176.04			
Cement-rock quarries	336	13,378	14,969	4,490,722	25	3,199	1.67	213.71			
Granite quarries	256	11,658	9,950	2,984,842	9	1,771	.90	177.99			
Limestone quarries	271	46,325	41,818	12,545,402	78	7,080	1.87	169.30			
Marble quarries	287	5,351	5,122	1,536,552	3	655	.59	127.88			
Sandstone and bluestone quarries	252	4,972	4,170	1,251,039	2	498	.48	119.42			
Slate quarries	260	4,329	3,749	1,124,757	8	559	2.13	149.11			
Trap-rock quarries	250	6,442	5,375	1,612,545	18	1,228	3.35	228.47			
All quarries (excluding outside works)	263	57,188	50,226	15,067,691	99	8,946	1.97	178.11			
All quarries (outside works only)	297	35,267	34,927	10,478,168	44	6,044	1.26	173.05			
Metallurgical plants:											
Ore-dressing plants	300	15,446	15,442	4,632,749	24	2,601	1.55	168.44			
Smelters	357	22,439	26,677	8,003,175	17	3,487	.64	130.71			
Auxiliary works	327	16,533	18,040	5,411,850	17	2,388	.94	132.37			
All coke ovens	324	23,729	25,627	7,688,160	45	2,593	1.76	101.18			
Beehive coke ovens	252	8,515	7,144	2,143,363	12	875	1.68	122.48			
By-product coke ovens	364	15,214	18,483	5,544,797	33	1,718	1.79	92.95			
Total, 1923	222	1,154,441	852,805	255,841,530	3,071	59,622	3.60	203.62			
Total, 1922	174	1,092,863	635,299	190,589,710	2,529	46,307	3.98	201.12			
Total, 1921	188	1,044,001	653,414	196,024,209	2,381	35,416	3.64	197.98			
Total, 1920	249	1,095,063	908,419	272,525,550	2,984	56,057	3.28	182.52			
Total, 1919	230	1,087,197	832,914	249,874,093	3,025	52,862	3.63	181.85			
Total, 1918	272	1,125,505	1,018,807	305,641,671	3,513	72,119	3.45	198.22			
Total, 1917	266	1,156,645	1,025,916	307,774,565	3,871	79,819	3.77	204.01			
Total, 1916	255	1,128,257	957,393	287,218,232	3,224	81,981	3.37	209.33			

* Injuries for coal mines not available.

DATA ESSENTIAL TO DETERMINE TRUE ACCIDENT RATES

Tables 35 to 61, covering the period 1914 to 1923, present in compact and convenient form the basic and pertinent data needed in the study of mine-accident rates. The figures showing the production of coal, number of employees, etc., were obtained from reports of the United States Geological Survey. All of the data bear directly on mine accidents.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 35.—United States: Production of coal during the years ended December 31, 1914 to 1923^a
[Net tons]

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years
Alabama.....	15,593,422	14,927,937	18,086,197	20,068,074	19,184,962	15,536,721	16,294,099	12,568,899	18,324,740	20,147,649	171,042,700
Alaska.....	(^b)	1,400	13,073	53,955	69,962	60,674	61,111	76,817	79,275	119,826	457,649
Arkansas.....	1,836,540	1,652,506	1,904,915	2,143,527	2,227,369	1,429,020	2,103,596	1,227,777	1,110,046	1,296,892	17,021,840
California, Idaho, and Nevada	13,974	12,503	7,240	6,423	6,400	6,554	2,753	38,845	26,893	20,066	141,651
Colorado.....	8,170,559	8,624,980	10,484,242	12,483,328	12,407,571	10,323,420	12,278,225	9,122,723	9,122,723	10,346,218	104,260,903
Georgia and North Carolina	166,498	134,486	173,554	119,028	68,136	60,326	61,696	57,225	139,206	111,639	1,091,832
Illinois.....	57,880,197	58,820,576	66,195,326	85,199,387	89,291,105	60,852,608	88,724,893	69,602,783	58,467,735	79,310,075	715,072,676
Indiana.....	17,641,132	17,006,152	20,078,534	26,539,329	30,578,534	20,912,288	29,350,585	20,319,509	19,132,889	26,229,099	226,903,145
Iowa.....	7,451,022	7,614,143	7,280,800	8,965,830	8,192,193	5,624,692	7,813,916	4,531,392	4,335,161	5,710,735	57,489,886
Kansas.....	6,860,988	6,824,474	6,881,455	7,184,975	7,561,947	5,224,724	5,926,408	3,466,641	2,955,170	4,035,404	31,078,507
Kentucky.....	20,382,763	21,361,674	25,393,997	27,807,971	31,612,617	30,036,061	35,690,762	31,688,270	42,134,175	44,777,317	310,785,607
Maryland.....	4,133,547	4,180,477	4,460,046	4,745,924	4,497,297	3,021,686	4,065,239	1,827,740	1,222,707	1,222,707	4,440,589
Michigan.....	1,283,030	1,156,138	1,180,360	1,374,805	1,464,818	996,545	1,489,765	1,141,715	929,390	1,172,075	12,188,641
Missouri.....	3,935,980	3,811,593	4,742,146	5,670,549	5,667,730	3,276,798	5,369,565	3,551,621	2,924,750	3,403,151	43,056,883
Montana.....	2,805,173	2,780,755	3,632,527	4,226,689	4,532,505	3,236,369	4,413,866	2,733,938	2,572,221	3,147,678	34,090,741
New Mexico.....	3,877,689	3,817,940	3,793,011	4,000,527	4,023,239	3,138,756	3,683,440	2,453,482	3,147,173	3,147,173	34,850,430
North Dakota.....	506,685	528,078	634,912	790,548	719,733	840,959	948,625	864,903	1,327,564	1,385,400	8,547,407
Ohio.....	18,843,115	22,434,691	34,728,219	40,748,734	45,812,943	35,876,682	45,878,191	31,942,776	26,953,791	40,546,443	343,765,585
Oklahoma.....	3,998,613	3,693,580	3,608,011	4,386,844	4,813,447	3,802,113	4,849,288	3,362,623	2,802,511	2,885,038	38,192,008
Oregon.....	51,558	39,231	42,592	28,327	13,328	18,739	20,717	(^c)	(^d)	(^d)	2,540,640,902
Pennsylvania (bituminous)	147,983,294	157,955,137	170,295,142	172,448,142	178,550,741	150,158,154	170,607,847	116,013,942	113,148,308	171,879,913	1,549,640,902
South Dakota.....	11,580	10,588	8,856	8,042	7,942	5,213,205	12,777	7,533	7,752	10,379	58,089,338
Tennessee.....	5,943,258	5,730,361	6,137,449	6,194,221	6,331,046	5,213,205	6,662,428	4,460,326	4,876,774	6,040,258	58,089,338
Texas.....	2,323,773	2,088,908	1,987,503	2,355,815	2,261,135	1,680,656	1,615,015	972,839	1,106,007	1,187,329	17,578,980
Utah.....	3,103,036	3,108,715	3,567,428	4,125,230	5,136,525	4,631,323	6,005,199	4,078,784	4,992,008	4,720,217	43,468,765
Virginia.....	7,959,535	8,122,966	9,707,474	10,087,091	10,289,808	9,326,830	11,378,606	7,492,378	10,491,174	11,761,643	96,617,135
West Virginia.....	3,064,820	4,429,095	3,038,588	4,009,902	4,082,212	2,900,447	3,757,093	2,428,722	2,581,165	2,926,392	31,308,436
Wyoming.....	71,707,626	77,184,099	86,460,127	86,441,667	89,933,339	79,036,533	89,970,707	72,786,966	80,488,192	107,899,941	841,911,717
Wyoming.....	6,475,283	6,554,028	7,910,647	8,575,619	9,438,688	7,219,738	9,630,271	7,200,666	5,971,724	7,575,031	76,551,705
Total (bituminous)	492,703,970	442,692,428	502,519,493	551,770,563	579,385,920	465,860,036	568,666,249	415,921,930	422,268,022	564,166,917	4,935,898,168
Pennsylvania (anthracite)	89,821,507	88,995,061	87,578,483	99,611,811	98,826,961	88,020,581	89,598,269	90,473,451	54,638,022	93,339,009	882,018,888
Total.....	513,525,477	531,619,487	590,098,176	651,402,374	678,211,904	553,922,259	658,264,932	506,395,401	476,951,121	657,495,926	5,817,917,056

^a Compiled from Mineral Resources, U. S. Geological Survey.
^b Not available.

^c Includes Oregon.
^d Included with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 36.—United States: Average number of days the coal mines were operated during the years ended December 31, 1914 to 1923^a

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama.....	226	223	262	273	278	239	247	166	215	232	226
Alaska.....	(*) 143	149	176	187	254	280	240	247	244	227	218
Arkansas.....	291	285	184	173	204	136	176	112	147	97	147
California, Idaho, and Nevada.....	244	194	188	173	240	59	181	140	81	147	185
Colorado.....	207	197	233	263	255	225	292	184	191	174	206
Georgia and North Carolina.....	173	170	280	269	212	242	292	219	298	252	227
Illinois.....	168	179	198	243	238	168	213	152	120	138	182
Indiana.....	204	220	187	221	247	148	192	128	110	167	187
Iowa.....	192	184	202	211	245	178	250	148	131	181	202
Kansas.....	187	187	204	216	224	185	204	137	125	143	187
Kentucky.....	241	242	268	254	261	179	182	152	140	152	179
Maryland.....	179	198	216	240	237	179	207	120	101	178	210
Michigan.....	239	200	207	240	237	175	233	166	113	222	213
Missouri.....	283	292	292	291	264	194	250	143	140	179	211
Montana.....	216	219	247	255	291	273	209	160	216	216	260
New Mexico.....	108	119	247	210	223	216	218	194	175	182	208
North Dakota.....	206	152	177	210	223	184	188	134	100	150	160
Ohio.....	206	206	176	211	228	184	217	134	114	133	170
Oklahoma.....	206	206	236	251	262	258	244	151	154	133	199
Oregon.....	214	226	239	261	269	218	244	151	154	213	253
Pennsylvania (bituminous).....	132	155	209	184	209	164	133	120	128	122	144
South Dakota.....	220	230	245	241	265	207	234	164	183	183	214
Tennessee.....	237	233	239	263	265	221	242	136	185	178	224
Texas.....	210	208	218	263	259	220	252	131	268	160	212
Utah.....	235	235	228	219	259	229	252	164	198	212	232
Virginia.....	191	169	212	273	277	217	264	159	194	213	218
Washington.....	201	208	237	225	217	217	198	140	143	169	194
West Virginia.....	192	201	248	246	268	221	284	167	128	192	210
Wyoming.....	195	203	230	246	268	221	284	167	128	192	210
Total (bituminous).....	207	209	235	251	258	209	230	173	144	195	210
Total (anthracite).....	245	230	253	285	283	266	271	271	151	268	252
Total.....	452	439	488	536	541	475	501	444	295	463	462

^a Not available.

^b Includes Oregon.

TABLE 37.—United States: Number of men employed underground during the years ended December 31, 1914 to 1924 ^a

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years	1924
Alabama.....	20,320	18,984	21,453	22,925	20,584	20,960	20,355	21,173	23,143	24,634	214,231	17,000
Alaska.....	(^b)	(^b)	69	(^c)	3,107	3,103	3,105	3,183	3,359	2,921	1,013	1,013
Arkansas.....	3,074	3,097	3,095	3,195	3,170	3,096	3,354	3,163	3,350	2,970	32,010	2,782
California, Idaho, and Nevada.....	17	5	11	11	11	11	8	8	6	6	6	6
Colorado.....	7,891	9,800	10,456	11,285	11,320	8,931	11,137	11,906	11,069	11,178	104,901	10,398
Georgia and North Carolina.....	72,275	68,231	68,322	75,285	75,170	75,015	76,993	85,500	86,206	89,004	772,188	89,502
Illinois.....	20,827	20,308	20,932	22,064	23,079	23,116	26,922	28,032	28,893	31,003	249,438	24,013
Indiana.....	14,242	13,990	12,960	12,672	14,773	10,373	11,846	10,412	11,846	10,506	120,032	10,506
Iowa.....	10,778	11,412	10,325	8,816	8,352	8,173	7,580	6,991	6,412	6,803	85,951	6,803
Kansas.....	24,262	23,523	26,501	28,162	30,323	33,950	40,036	41,733	50,336	50,157	359,923	381,000
Kentucky.....	4,730	4,977	4,719	4,096	4,307	4,352	4,697	3,948	3,226	3,174	42,803	3,188
Maryland.....	2,234	2,237	2,124	2,194	2,307	2,301	1,697	1,974	1,974	1,703	30,069	1,703
Michigan.....	8,405	7,614	7,877	7,980	7,944	7,235	9,865	7,213	7,213	5,952	73,061	5,552
Missouri.....	2,786	2,626	3,065	3,358	3,347	3,318	3,944	3,460	3,098	3,060	31,420	2,930
Montana.....	3,386	3,437	3,304	3,191	2,971	2,918	2,753	3,855	3,222	3,547	32,777	3,292
New Mexico.....	407	455	553	619	39,032	738	753	755	1,136	1,340	1,198	1,140
North Dakota.....	40,438	35,813	36,680	38,569	39,883	41,536	42,732	44,698	45,906	46,340	411,731	44,000
Ohio.....	6,950	7,270	6,620	7,017	7,057	6,996	6,978	7,425	6,624	6,030	68,577	6,030
Oklahoma.....	162,081	152,086	139,186	143,687	140,502	143,838	143,670	164,222	159,451	(^d)	1,515,317	166,568
Oregon.....	31	18	26	34	21	43	43	43	43	33	319	34
Pennsylvania (bituminous).....	8,267	7,510	7,661	8,053	8,198	8,376	9,227	8,561	9,532	9,485	85,533	9,485
Tennessee.....	4,059	4,476	3,901	3,053	3,391	3,018	2,573	2,598	2,598	2,433	21,111	2,433
Texas.....	2,964	2,763	2,397	2,569	3,063	2,709	3,559	3,491	2,686	2,443	30,588	4,229
Utah.....	7,587	7,261	7,359	8,607	8,788	9,471	10,533	8,807	10,857	11,651	91,911	11,651
Virginia.....	4,439	3,785	3,764	4,072	3,836	3,801	3,966	3,486	3,804	3,660	38,213	3,660
Washington.....	66,073	63,842	64,618	69,155	69,047	74,350	82,893	84,732	90,814	97,883	763,427	98,000
West Virginia.....	6,862	6,170	6,041	6,024	5,932	5,815	6,332	7,020	7,643	6,223	64,062	6,004
Wyoming.....	508,025	482,433	474,244	498,185	498,232	508,801	529,812	587,289	588,409	598,480	5,948,850	598,778
Pennsylvania (anthracite).....	133,309	130,963	116,705	108,989	101,671	107,529	101,023	116,817	114,279	114,721	1,147,306	114,721
Total.....	639,334	613,396	590,949	608,174	597,923	616,650	630,335	694,106	696,688	713,201	6,391,236	683,099

^a Compiled from Mineral Resources, U. S. Geological Survey. Figures for 1924 estimated by Bureau of Mines.

^b Not available.

^c Includes Oregon.

^d Included with California, Idaho, and Nevada.

TABLE 38.—United States: Number of men employed on the surface during the years ended December 31, 1914 to 1924^a

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total 10 years	1924
Alabama.....	3,722	3,607	3,855	5,461	5,637	6,214	5,185	4,636	5,026	5,401	48,744	5,500
Alaska.....	(b)	(b)	14	(b)	69	63	102	218	168	78	712	78
Arkansas.....	665	654	717	863	871	718	612	453	676	784	7,013	815
California, Idaho, and Nevada.....	26	21	7	6	5	23	24	58	15	24	187	e 24
Colorado.....	2,207	2,512	2,648	2,946	3,163	2,898	2,706	2,623	2,437	2,100	26,302	1,800
Georgia and North Carolina.....	80	77	89	76	70	72	61	66	91	100	782	1,100
Illinois.....	7,191	7,117	7,411	9,005	10,695	10,007	10,061	9,922	10,040	10,620	92,099	10,293
Indiana.....	2,748	2,469	2,973	3,864	6,397	4,671	4,233	3,755	4,315	4,403	30,828	3,274
Iowa.....	1,815	1,559	1,483	1,594	1,554	1,493	1,448	974	1,011	942	13,573	942
Kansas.....	1,670	1,848	1,807	1,864	2,013	1,753	1,395	1,216	1,047	982	15,495	982
Kentucky.....	4,502	4,437	4,721	6,764	9,019	10,068	9,416	8,788	10,528	10,354	78,597	10,500
Maryland.....	673	687	914	1,223	1,191	1,072	918	8,788	528	551	8,384	543
Michigan.....	566	352	411	252	351	253	227	192	184	184	3,012	1,400
Missouri.....	1,144	1,559	1,777	1,988	1,946	2,079	1,973	1,584	1,532	1,400	16,982	1,400
Montana.....	1,564	768	1,716	811	1,212	805	780	718	537	547	7,222	514
New Mexico.....	792	1,355	1,218	935	1,124	827	798	722	779	548	8,511	503
North Dakota.....	151	135	161	202	226	314	357	289	512	481	2,828	481
Ohio.....	4,963	4,240	4,714	6,940	8,567	8,288	8,795	7,087	8,288	8,209	70,091	7,000
Ontario.....	1,128	1,187	1,180	1,478	1,394	1,452	1,366	1,429	1,204	1,100	12,918	1,100
Oklahoma.....	58	31	28	27	15	15	20	(e)	(d)	(d)	203	(e)
Oregon.....	22,120	22,507	29,026	30,281	33,804	30,712	30,064	26,421	29,387	28,413	282,765	28,413
Pennsylvania (bituminous).....	16	17	12	10	10	10	10	10	10	10	58	58
South Dakota.....	1,849	1,438	1,550	2,368	2,496	2,547	2,126	1,786	1,916	1,750	19,835	1,750
Tennessee.....	1,576	611	580	692	2,545	626	37	318	306	318	4,925	318
Texas.....	1,148	1,611	1,916	2,368	2,545	2,547	2,126	1,786	1,916	1,750	19,835	1,750
Utah.....	1,148	1,611	1,916	2,368	2,545	2,547	2,126	1,786	1,916	1,750	19,835	1,750
Virginia.....	1,596	1,698	2,418	2,561	2,216	2,115	3,457	2,115	2,542	2,469	23,187	2,469
Washington.....	1,366	1,065	1,033	1,240	1,273	1,235	1,028	848	877	846	10,811	1,010
West Virginia.....	12,890	12,040	13,449	19,267	20,483	20,355	20,057	17,068	19,200	19,417	174,256	20,000
Wyoming.....	1,255	1,074	1,214	1,334	1,622	1,471	1,447	1,464	1,402	1,306	13,589	840
Total (bituminous).....	77,481	75,023	86,858	104,958	119,053	113,197	109,735	98,465	105,549	104,337	992,656	102,116
Pennsylvania (anthracite).....	46,370	45,589	43,164	44,185	45,450	46,742	44,051	42,682	42,670	43,022	443,825	43,022
Total.....	123,851	120,612	130,022	149,143	164,503	159,939	153,786	139,147	148,119	147,359	1,436,481	145,138

^a Compiled from Mineral Resources, U. S. Geological Survey. Figures for 1924 estimated by Bureau of Mines.^b Not available.^c Includes Oregon.^d Included in California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 39.—United States: Number of men employed underground and on the surface during the years ended December 31, 1914 to 1924*

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total 10 years	1924
Alabama.....	24,042	22,591	25,308	28,386	26,221	26,874	25,540	25,809	28,169	30,085	262,975	22,500
Alaska.....	(b)	(b)	83	(c)	239	166	207	401	430	199	1,725	1,169
Arkansas.....	4,339	3,751	3,772	3,998	3,978	3,814	3,966	3,616	4,035	3,754	39,023	3,597
California, Idaho, and Nevada.....	43	18	17	17	15	77	96	141	60	e 93	510	e 93
Colorado.....	10,098	12,372	13,104	14,231	14,483	11,829	13,711	14,529	13,506	13,340	131,203	12,375
Georgia and North Carolina.....	355	368	411	281	240	217	198	196	277	317	2,860	317
Illinois.....	79,499	75,610	75,538	84,090	85,965	85,020	87,084	95,431	96,386	99,714	864,287	99,765
Indiana.....	23,175	22,777	23,965	26,528	30,376	29,987	31,155	32,687	33,208	35,408	289,266	27,287
Iowa.....	16,057	15,549	14,443	14,266	13,328	12,366	11,905	11,886	12,857	11,448	133,063	11,448
Kansas.....	12,448	13,260	12,132	10,680	10,665	9,926	8,984	8,207	7,359	7,785	101,446	7,785
Kentucky.....	28,764	27,960	31,222	34,926	39,342	45,598	49,452	50,521	60,924	60,811	429,520	48,500
Maryland.....	5,403	5,664	5,633	5,919	5,568	5,394	5,448	4,668	3,755	3,725	51,277	3,731
Michigan.....	2,800	2,569	2,535	2,406	2,558	2,104	2,154	2,212	2,166	1,977	23,481	1,977
Missouri.....	9,549	9,173	9,654	9,668	9,590	9,314	8,838	8,555	8,750	6,952	90,043	6,952
Montana.....	3,350	3,158	3,781	4,149	4,559	4,123	4,204	4,178	3,635	3,511	38,648	3,444
New Mexico.....	4,178	4,205	4,522	4,126	4,095	3,745	3,738	4,577	4,001	4,065	41,282	3,795
North Dakota.....	558	590	714	821	828	1,072	1,110	1,064	1,648	1,621	10,025	1,621
Ohio.....	45,401	40,653	41,394	45,509	48,450	49,624	50,857	51,795	54,164	54,555	481,522	51,000
Oklahoma.....	8,078	8,457	7,800	8,495	8,451	8,448	8,244	8,854	7,828	7,130	81,785	7,130
Oregon.....	190	151	106	104	40	67	85	(c)	(d)	(e)	743	(e)
Pennsylvania (bituminous).....	184,201	174,593	168,212	173,968	174,306	174,550	173,970	190,643	188,838	194,981	1,798,272	194,981
South Dakota.....	47	35	38	34	21	46	47	43	32	34	377	34
Tennessee.....	10,116	8,948	9,211	10,421	10,694	11,523	11,353	10,347	11,449	11,244	105,806	11,244
Texas.....	4,635	5,087	4,481	4,375	3,936	3,644	2,950	2,892	2,841	2,432	37,293	2,432
Utah.....	4,112	3,564	3,129	3,485	4,160	3,857	4,504	4,422	4,721	4,381	40,335	5,353
Virginia.....	9,183	8,959	9,777	11,168	11,004	11,586	14,010	11,922	13,399	14,120	115,128	14,120
Washington.....	5,805	4,850	5,312	5,109	5,109	5,036	4,334	4,334	4,306	4,306	49,023	3,947
West Virginia.....	78,963	75,882	78,067	88,422	89,530	94,705	102,950	101,850	110,014	117,300	937,683	118,000
Wyoming.....	8,117	7,255	7,255	7,358	7,554	7,286	7,779	8,484	9,045	7,529	77,651	6,844
Total (bituminous).....	583,506	557,456	561,102	603,143	615,305	621,998	639,547	668,754	687,938	702,917	6,236,986	670,494
Pennsylvania (anthracite).....	179,679	176,552	159,869	154,571	147,121	154,571	145,074	159,499	156,849	157,743	1,591,131	157,743
Total.....	763,185	734,008	720,971	757,717	762,426	776,569	784,621	823,253	844,807	860,560	7,827,717	828,237

* Compiled from Mineral Resources, U. S. Geological Survey. Figures for 1924 estimated by Bureau of Mines.

b Not available.

c Includes Oregon.

d Included in California, Idaho, and Nevada.

TABLE 40.—United States: Number of 300-day workers employed underground during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years
Alabama.....	15,308	14,125	18,746	20,839	19,062	16,436	16,734	11,740	16,585	19,058	168,663
Alaska.....	(^c)	(^c)	41	41	144	96	84	149	128	89	731
Arkansas.....	1,751	1,541	1,871	1,955	2,109	1,401	1,966	1,185	911	963	15,653
California, Idaho, and Nevada.....	6,418	6,384	8,116	9,895	9,640	6,706	9,357	6,493	7,060	6,487	76,536
Colorado.....	1,170	1,14	14	8	8	11	11	6,41	6,41	6,41	194
Georgia and North Carolina.....	6,190	6,384	8,116	9,895	9,640	6,706	9,357	6,493	7,060	6,487	76,536
Illinois.....	41,908	40,908	44,869	60,761	59,610	39,916	54,704	43,234	34,451	46,977	467,128
Indiana.....	11,439	12,065	13,055	16,689	18,165	12,486	17,266	12,317	10,603	14,012	138,127
Iowa.....	9,685	10,282	8,725	10,613	9,608	6,368	8,956	5,122	5,155	6,336	80,850
Kansas.....	6,898	7,014	7,022	6,341	6,736	4,960	5,160	3,202	2,664	3,380	53,377
Kentucky.....	15,124	14,635	18,391	20,066	23,220	22,357	24,291	21,145	23,542	25,573	208,364
Maryland.....	3,800	4,012	4,020	3,978	3,807	2,636	3,200	1,573	1,066	1,880	29,992
Michigan.....	1,497	1,474	1,527	1,825	1,744	1,102	1,678	1,287	1,065	1,326	14,526
Missouri.....	5,015	4,720	5,377	6,138	5,977	4,227	5,330	3,848	2,724	2,875	46,291
Montana.....	1,941	1,759	2,489	2,977	2,942	2,149	2,857	1,645	1,447	1,772	21,978
New Mexico.....	3,104	3,002	3,216	3,418	2,982	2,655	2,856	1,922	2,323	2,555	28,223
North Dakota.....	293	332	450	527	459	545	547	502	661	691	5,007
Ohio.....	14,558	16,967	24,056	27,052	29,606	22,551	26,338	19,912	15,264	23,107	219,411
Oklahoma.....	4,749	4,042	3,838	4,943	5,369	4,297	4,978	3,479	2,519	2,678	40,992
Oregon.....	117	61	61	64	24	45	4	(^c)	(^c)	(^c)	507
Pennsylvania (bituminous).....	115,618	114,556	120,256	125,154	126,144	104,308	117,194	82,724	81,657	118,047	1,105,658
Pennsylvania (anthracite).....	16	9	12	17	10	23	16	18	15	14	150
Tennessee.....	6,062	5,077	6,098	6,466	7,240	6,018	7,200	4,382	5,180	5,782	59,933
Texas.....	3,207	3,472	2,840	3,229	2,957	2,282	2,078	1,205	1,564	1,265	24,099
Utah.....	2,075	1,916	1,822	1,877	2,649	2,162	2,162	1,781	2,466	1,830	21,545
Virginia.....	5,943	6,687	6,675	7,824	8,108	7,796	9,281	5,427	7,154	8,241	79,136
Washington.....	2,826	2,131	2,721	3,680	3,510	2,753	3,437	1,847	2,335	2,460	27,700
West Virginia.....	44,269	44,331	51,056	51,850	54,700	49,605	54,818	42,193	43,256	55,184	491,247
Wyoming.....	4,392	4,129	4,391	4,945	5,301	4,281	5,570	3,908	3,256	3,984	44,762
Total (bituminous).....	328,916	324,741	364,163	403,353	412,258	331,539	389,431	276,211	276,211	337,069	3,471,919
Pennsylvania (anthracite).....	108,869	100,290	98,483	104,396	99,385	85,514	91,857	105,840	57,404	102,312	963,350
Total.....	441,141	427,532	463,733	509,677	513,665	430,542	480,788	394,324	334,088	464,108	4,469,538

^c Not available.^e Includes Oregon^e Included with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 41.—United States: Number of 300-day workers employed on the surface during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years
Alabama	2,804	2,684	3,369	4,964	5,229	4,944	4,263	2,571	3,602	4,178	38,608
Alaska	(^a) 317	325	8	(^a) 538	59	81	81	177	82	82	523
Arkansas	25	20	439	538	591	325	359	170	183	264	3,501
California, Idaho, and Nevada	1,795	1,626	2,055	2,583	2,694	2,176	2,301	1,430	1,555	1,251	19,466
Colorado	55	51	83	68	50	68	59	48	63	84	619
Georgia and North Carolina	4,146	4,251	4,881	7,287	8,470	5,325	7,170	5,017	4,008	5,600	56,155
Illinois	1,539	1,470	1,849	2,845	4,846	2,304	2,714	1,598	1,440	1,990	22,738
Indiana	1,234	1,146	1,998	1,335	1,268	874	1,479	1,479	1,583	1,568	9,268
Iowa	1,069	1,136	1,229	1,341	1,567	1,064	948	557	393	488	9,792
Kansas	2,806	2,760	3,275	4,824	6,906	6,335	5,713	4,453	4,918	5,248	47,239
Kentucky	540	554	3,778	1,036	1,036	580	5,713	2,900	4,178	5,326	5,953
Maryland	379	219	296	1,213	1,277	1,215	1,532	1,600	1,03	136	2,131
Michigan	683	966	1,227	1,589	1,522	1,215	1,532	874	578	725	10,911
Minnesota	393	357	1,582	1,723	1,065	521	651	341	578	327	5,211
Montana	747	671	1,186	1,002	1,128	753	802	360	561	395	7,605
New Mexico	109	99	131	1,172	1,172	226	260	187	298	292	1,946
North Dakota	1,786	2,009	3,092	4,868	6,359	4,521	5,507	3,557	2,756	4,083	38,148
Ohio	1,771	660	1,041	1,041	1,061	4,521	892	670	2,458	488	7,732
Oklahoma	51	21	22	23	15	13	30	(^c)	15	(^c)	7,175
Oregon	15,779	16,953	25,078	26,375	30,349	23,272	24,513	13,309	15,049	20,136	209,813
Pennsylvania (bituminous)	8	9	6	2	2	2	5	5	5	5	30
Pennsylvania (anthracite)	1,356	1,054	1,234	1,901	2,205	1,708	1,659	914	1,041	1,072	14,144
Tennessee	455	474	1,422	607	475	473	136	189	189	189	3,724
Texas	803	555	557	669	947	916	793	470	742	494	6,951
Utah	1,250	1,330	2,193	2,828	2,045	1,741	3,040	1,171	1,675	1,747	18,520
Virginia	870	600	747	1,121	1,165	895	891	449	568	601	7,907
Washington	8,636	8,360	10,622	14,446	16,227	13,581	13,264	8,512	9,145	10,947	113,740
West Virginia	803	719	1,003	1,065	1,449	1,083	1,273	815	597	836	9,673
Wyoming	50,363	50,656	66,896	84,979	98,902	73,760	80,659	48,062	50,057	62,250	666,384
Total (bituminous)	37,869	34,911	36,424	41,938	44,428	41,404	39,836	38,489	21,384	38,369	375,052
Total	85,457	84,066	102,033	124,869	141,318	111,675	120,495	80,205	71,018	85,892	1,017,148

^a Includes Oregon.

^c Included with California, Idaho, and Nevada.

^e Not available.

TABLE 42.—United States: Number of 300-day workers employed underground and on the surface during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years
Alabama.....	18, 112	16, 809	22, 115	25, 803	24, 321	21, 380	20, 997	14, 311	20, 187	23, 236	207, 271
Alaska.....	(^a)	(^a)	49	(^c)	203	158	165	326	210	146	1, 554
Arkansas.....	2, 068	1, 366	2, 310	2, 463	2, 700	1, 726	2, 325	1, 355	1, 094	1, 217	19, 254
California, Idaho, and Nevada.....	8, 213	8, 010	10, 171	12, 478	12, 334	8, 882	11, 658	7, 923	8, 615	7, 718	96, 014
Colorado.....	45, 844	45, 159	49, 730	68, 048	68, 080	45, 241	61, 874	48, 231	38, 439	52, 577	523, 283
Georgia and North Carolina.....	12, 978	13, 565	14, 904	19, 534	23, 011	14, 790	19, 860	13, 915	12, 186	16, 022	160, 865
Illinois.....	10, 919	11, 428	9, 723	11, 948	10, 876	7, 242	9, 912	3, 601	3, 385	6, 804	90, 148
Indiana.....	7, 967	8, 150	8, 251	7, 682	8, 303	6, 024	6, 108	3, 739	3, 057	3, 868	63, 189
Iowa.....	17, 930	17, 395	21, 667	24, 910	30, 126	28, 692	30, 004	23, 538	28, 460	30, 821	255, 003
Kentucky.....	4, 340	4, 566	4, 798	5, 014	4, 843	3, 216	3, 876	1, 863	1, 264	2, 206	33, 945
Maryland.....	1, 876	1, 693	1, 823	2, 088	2, 021	1, 252	1, 876	1, 447	1, 168	1, 462	16, 656
Michigan.....	3, 698	5, 696	6, 664	7, 727	7, 499	3, 442	6, 862	4, 722	3, 362	3, 600	57, 202
Missouri.....	2, 334	2, 116	3, 071	3, 700	4, 007	2, 670	3, 508	1, 986	1, 698	2, 099	27, 189
Montana.....	3, 941	3, 673	4, 402	4, 420	4, 110	3, 408	3, 758	2, 282	2, 884	2, 950	33, 528
New Mexico.....	16, 344	18, 976	27, 148	31, 920	35, 965	27, 072	31, 845	23, 069	18, 020	27, 200	257, 539
North Dakota.....	5, 520	4, 702	4, 640	5, 984	6, 430	5, 189	5, 967	4, 149	2, 977	3, 166	48, 724
Ohio.....	131, 397	131, 509	145, 334	151, 529	156, 493	128, 580	141, 707	96, 033	96, 706	138, 183	1, 315, 471
Oklahoma.....	168	104	83	87	39	58	57	(^c)	(^c)	(^c)	6, 953
Oregon.....	24	18	18	17	10	25	21	18	15	14	180
Pennsylvania (bituminous).....	7, 418	6, 961	7, 332	8, 367	9, 445	7, 726	8, 859	5, 296	6, 221	6, 854	74, 079
South Dakota.....	3, 662	3, 946	3, 262	3, 836	3, 432	2, 755	2, 382	1, 341	1, 753	1, 454	27, 523
Tennessee.....	2, 878	2, 471	2, 379	2, 546	3, 596	3, 078	3, 780	2, 231	3, 208	2, 329	28, 496
Texas.....	7, 193	7, 017	8, 868	10, 152	10, 153	9, 537	12, 321	6, 598	8, 829	9, 988	90, 656
Utah.....	3, 696	2, 731	3, 468	4, 801	4, 675	3, 648	2, 296	2, 903	2, 903	3, 061	35, 007
Virginia.....	52, 905	52, 691	61, 658	66, 286	70, 927	63, 186	68, 082	50, 705	52, 401	66, 131	604, 181
West Virginia.....	5, 195	4, 848	5, 994	6, 040	6, 750	5, 364	6, 843	4, 723	3, 853	4, 820	54, 430
Wyoming.....	378, 397	376, 397	430, 859	498, 332	511, 160	405, 299	470, 090	330, 700	338, 288	419, 319	4, 137, 748
Total (bituminous).....	146, 738	135, 201	134, 907	146, 334	143, 813	136, 919	131, 193	143, 829	149, 788	140, 681	1, 338, 402
Pennsylvania (anthracite).....	528, 598	511, 598	565, 766	634, 666	654, 973	545, 217	601, 283	474, 529	405, 056	560, 000	5, 476, 686

^a Not available.

^b Includes Oregon.

^c Included with California, Idaho, and Nevada.

TABLE 43.—United States: Number of days of labor performed underground during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years
Alabama.....	4,592,320	4,237,622	5,623,900	6,251,775	5,737,715	4,930,042	5,090,306	3,522,158	4,975,466	5,717,423	50,599,807
Alaska.....	(c)		12,688	(e)	43,245	28,870	25,063	44,581	38,461	26,635	219,343
Arkansas.....	525,382	462,076	561,276	586,506	632,784	420,892	589,830	3,554,504	273,240	288,810	4,695,700
California, Idaho, and Nevada	4,947	4,275	2,066	1,902	2,400	3,205	3,076	6,12,382	9,111,240	9,14,203	58,098
Colorado.....	1,925,404	1,915,004	2,434,719	2,968,570	36,099	2,011,770	2,807,095	1,947,864	2,118,028	1,940,219	22,960,844
Georgia and North Carolina	56,925	90,094	90,094	55,182	36,099	33,155	28,446	28,446	38,607	54,659	140,138,336
Illinois.....	12,509,284	12,272,500	13,460,614	18,298,182	17,882,923	11,974,014	16,411,423	12,970,255	10,335,256	14,063,215	140,138,336
Iowa.....	3,431,736	3,628,390	3,916,372	5,006,656	5,440,389	3,745,735	5,111,983	3,695,053	3,180,796	4,203,605	41,437,355
Kansas.....	2,905,368	3,084,681	2,817,492	3,183,793	2,882,247	1,910,583	2,639,729	1,586,506	1,586,506	1,900,658	24,254,462
Kentucky.....	2,069,376	2,104,199	2,106,594	1,902,373	2,030,814	1,487,913	2,594,739	960,546	1,546,547	1,900,658	24,254,462
Maryland.....	4,536,994	4,390,400	5,517,257	6,025,626	6,965,856	4,857,913	7,257,290	6,343,481	7,062,653	7,062,653	62,508,592
Maryland.....	1,139,930	1,203,698	1,205,618	1,193,406	1,142,237	6,707,033	7,257,290	6,343,481	7,062,653	7,062,653	62,508,592
Michigan.....	449,034	442,377	458,115	547,429	1,429,093	700,945	593,163	471,971	325,792	563,992	8,998,052
Missouri.....	1,504,495	1,415,906	1,631,287	1,841,422	1,793,095	1,928,287	1,568,931	386,222	319,488	397,676	4,357,267
Montana.....	582,274	527,732	746,832	883,168	1,032,575	1,644,558	1,568,931	1,134,228	817,086	862,449	13,887,208
New Mexico.....	958,298	900,672	964,857	1,025,544	894,554	793,660	886,135	553,326	434,149	531,606	6,593,671
New York.....	87,912	99,640	135,903	158,100	137,660	703,604	867,217	576,610	696,839	766,476	8,467,055
North Dakota.....	4,367,304	5,080,175	7,216,912	8,115,671	8,881,614	6,755,177	7,904,370	150,606	198,322	207,514	1,502,541
Ohio.....	1,424,750	1,212,664	1,181,454	1,482,779	1,610,732	1,288,207	1,493,492	5,973,323	4,579,350	6,932,070	65,822,168
Oklahoma.....	35,112	24,745	18,391	19,308	7,287	13,452	13,452	1,043,689	(c)	803,237	12,297,804
Oregon.....	34,685,334	34,366,760	36,076,897	37,546,106	37,842,966	31,292,437	35,158,307	24,617,222	24,496,900	35,414,105	135,487
Pennsylvania (bituminous)	4,712	2,796	3,760	5,238	3,043	1,805,287	2,167,045	3,587	4,420	4,157	331,697,031
Pennsylvania (anthracite)	1,818,740	1,652,003	1,829,417	1,969,632	2,172,124	1,805,287	2,167,045	1,314,580	1,554,052	1,734,454	17,980,397
Texas.....	961,983	1,041,521	1,851,845	1,968,856	794,815	688,540	629,384	561,326	469,377	379,472	7,223,806
Utah.....	622,440	1,574,799	546,702	563,006	684,537	648,537	805,992	328,200	739,809	549,021	6,463,364
Virginia.....	1,782,949	1,706,077	2,002,403	2,347,262	2,432,569	2,338,905	2,784,182	1,628,136	2,146,125	2,472,329	21,641,063
Washington.....	847,849	639,405	816,550	1,104,039	1,053,041	825,913	1,031,082	1,354,062	2,709,366	737,897	8,310,008
West Virginia.....	13,280,673	13,299,243	15,310,854	15,555,002	16,409,989	14,884,544	16,444,477	12,657,866	12,976,871	10,555,157	147,372,790
W. Wyoming.....	1,317,504	1,238,843	1,497,379	1,483,494	1,590,201	1,284,242	1,670,923	1,174,485	976,680	1,196,192	13,426,906
Total (bituminous).....	98,674,875	97,792,372	109,248,814	121,005,863	123,677,284	99,468,815	118,899,866	84,791,468	82,863,166	107,120,707	1,041,395,525
Pennsylvania (anthracite).....	32,660,705	30,086,879	29,544,777	31,318,796	29,815,515	28,654,124	27,407,011	31,602,172	17,221,380	30,693,609	289,004,968
Total.....	132,342,138	128,259,767	139,120,082	152,803,042	154,096,485	129,162,835	144,298,367	116,297,091	100,211,422	139,232,262	1,337,861,091

(c) Not available. (e) Includes Oregon. (e) Included with California, Idaho, and Nevada.

TABLE 44.—United States: Number of days of labor performed on the surface during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years
Alabama.....	841, 172	805, 158	1, 010, 603	1, 489, 242	1, 568, 552	1, 483, 124	1, 278, 838	771, 205	1, 080, 530	1, 253, 544	11, 581, 968
Alaska.....	(c)	(c)	2, 510	161, 453	177, 391	97, 658	24, 444	53, 107	24, 675	17, 170	157, 171
Arkansas.....	95, 085	3, 878	137, 739	1, 011, 314	1, 177, 391	97, 658	24, 444	53, 107	24, 675	17, 170	1, 050, 483
California, Idaho, and Nevada.....	7, 566	3, 983	1, 314	1, 038	1, 290	1, 365	107, 625	50, 915	54, 990	76, 288	8, 346, 168
Colorado.....	538, 508	487, 879	616, 595	774, 960	808, 118	682, 791	690, 232	429, 132	466, 314	375, 269	5, 839, 798
Georgia and North Carolina.....	16, 300	3, 156	94, 992	20, 458	14, 865	17, 457	14, 442	14, 442	18, 888	25, 188	185, 798
Illinois.....	1, 244, 043	1, 275, 217	1, 464, 273	2, 186, 117	2, 540, 957	1, 597, 470	2, 102, 448	1, 504, 998	1, 202, 944	1, 679, 910	16, 846, 377
Indiana.....	461, 664	343, 747	554, 678	486, 117	1, 380, 416	691, 131	814, 412	479, 568	475, 027	596, 951	6, 821, 894
Iowa.....	370, 260	343, 747	290, 517	490, 486	380, 416	262, 309	286, 731	143, 739	131, 990	170, 419	2, 789, 614
Kansas.....	320, 640	343, 747	368, 670	402, 225	470, 168	319, 144	284, 544	167, 075	118, 037	146, 388	2, 937, 643
Kentucky.....	841, 874	828, 134	982, 865	1, 447, 246	2, 071, 863	1, 900, 556	1, 713, 879	1, 335, 790	1, 475, 433	1, 574, 321	14, 171, 961
Maryland.....	162, 186	166, 152	233, 568	310, 803	310, 806	173, 857	190, 374	86, 923	53, 423	97, 908	1, 786, 007
Michigan.....	113, 766	86, 695	88, 181	64, 045	83, 181	45, 182	59, 306	47, 873	31, 075	40, 810	639, 539
Minnesota.....	113, 766	86, 695	368, 007	476, 661	450, 481	364, 436	459, 533	262, 272	173, 424	217, 487	3, 272, 994
Missouri.....	204, 776	289, 913	174, 463	217, 004	310, 593	156, 391	195, 277	102, 414	175, 254	98, 107	1, 563, 283
Montana.....	117, 876	106, 914	355, 680	300, 497	338, 431	225, 758	240, 677	107, 993	168, 479	118, 418	2, 281, 334
New Mexico.....	224, 136	241, 236	309, 305	51, 893	51, 890	67, 773	77, 839	56, 162	89, 365	87, 556	583, 473
North Dakota.....	32, 616	29, 394	927, 494	1, 460, 308	1, 907, 802	1, 358, 479	1, 652, 147	947, 120	826, 769	1, 227, 838	11, 444, 601
Ohio.....	536, 004	602, 640	671, 306	1, 312, 319	318, 174	267, 581	296, 614	200, 868	137, 377	146, 528	2, 319, 288
Oklahoma.....	231, 240	197, 396	210, 591	6, 770	3, 374	3, 880	8, 903	(c)	(c)	(c)	62, 944, 351
Oregon.....	15, 428	6, 332	7, 523, 510	7, 912, 577	9, 104, 803	6, 681, 517	7, 353, 930	3, 992, 740	4, 514, 807	6, 040, 903	8, 625
Pennsylvania (bituminous).....	2, 432	2, 920	370, 134	570, 359	661, 333	512, 302	497, 698	274, 230	312, 349	321, 656	4, 243, 166
South Dakota.....	406, 780	316, 323	182, 039	142, 875	142, 875	141, 990	91, 339	40, 912	56, 659	56, 577	1, 117, 429
Tennessee.....	316, 512	142, 134	126, 632	200, 745	285, 955	274, 832	237, 907	140, 880	222, 615	149, 778	2, 085, 380
Texas.....	241, 080	106, 655	166, 953	698, 433	613, 402	523, 316	912, 055	351, 140	502, 482	523, 934	5, 585, 728
Utah.....	375, 660	198, 971	224, 400	336, 201	340, 458	268, 345	267, 261	134, 781	170, 427	180, 432	2, 371, 753
Virginia.....	260, 906	503, 912	3, 186, 640	4, 333, 726	4, 868, 072	4, 074, 147	3, 979, 189	2, 563, 655	2, 743, 437	3, 284, 585	34, 122, 054
Washington.....	2, 590, 880	2, 508, 113	3, 186, 640	4, 333, 726	4, 868, 072	4, 074, 147	3, 979, 189	2, 563, 655	2, 743, 437	3, 284, 585	34, 122, 054
West Virginia.....	2, 590, 880	2, 508, 113	3, 186, 640	4, 333, 726	4, 868, 072	4, 074, 147	3, 979, 189	2, 563, 655	2, 743, 437	3, 284, 585	34, 122, 054
Wyoming.....	2, 590, 880	2, 508, 113	3, 186, 640	4, 333, 726	4, 868, 072	4, 074, 147	3, 979, 189	2, 563, 655	2, 743, 437	3, 284, 585	34, 122, 054
Total (bituminous).....	15, 108, 795	15, 196, 809	90, 008, 956	25, 498, 568	29, 870, 748	22, 128, 115	24, 197, 773	14, 418, 415	15, 017, 150	18, 675, 062	199, 915, 584
Pennsylvania (anthracite).....	11, 300, 650	10, 473, 435	10, 927, 269	12, 581, 438	13, 828, 439	12, 421, 169	11, 950, 802	11, 546, 641	6, 415, 128	11, 510, 544	112, 515, 533
Total.....	25, 687, 157	25, 219, 728	30, 609, 784	37, 496, 638	42, 899, 549	33, 509, 488	36, 148, 575	24, 061, 800	21, 805, 400	28, 767, 670	305, 144, 589

c Includes with California, Idaho, and Nevada.

b Includes Oregon.

a Not available.

TABLE 45.—United States: Number of days of labor performed underground and on the surface during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years
Alabama	5,433,492	5,042,780	6,634,593	7,741,017	7,296,267	6,414,066	6,299,239	4,293,683	6,055,956	6,970,967	62,181,775
Alaska	(c)	(c)	14,878	(c)	60,798	46,528	49,407	97,668	63,156	43,805	376,663
Arizona	620,477	559,654	693,000	747,959	810,175	517,761	697,455	406,419	328,230	365,048	5,746,183
California, Idaho, and Nevada	10,513	10,280	3,380	2,940	3,600	517,570	697,455	b 21,034	b 14,986	b 19,143	94,233
Colorado	2,463,912	2,402,883	3,051,314	3,743,539	3,700,277	2,664,561	3,497,510	2,376,996	2,584,342	2,315,588	28,800,232
Georgia and North Carolina	73,485	72,825	81,904	75,640	50,964	52,612	57,912	42,888	57,495	75,847	678,462
Illinois	13,753,327	13,547,717	14,924,887	20,414,269	20,423,880	13,572,384	18,567,367	14,475,263	11,572,704	15,773,121	156,984,913
Iowa	3,893,400	3,428,428	4,471,030	5,860,245	6,903,152	4,436,866	5,994,761	4,174,601	3,655,783	4,500,556	48,259,249
Kansas	3,275,628	2,444,942	2,917,030	3,584,279	3,262,663	2,172,690	2,973,660	1,680,305	1,678,527	2,071,077	27,044,570
Kentucky	5,378,800	5,218,534	6,500,122	7,479,872	9,037,719	8,807,591	9,832,503	7,127,602	9,197,247	1,168,516	78,950,755
Maryland	1,302,123	1,369,850	1,430,486	1,504,209	1,453,043	8,607,591	9,001,139	7,679,271	8,538,116	9,246,280	76,880,521
Michigan	1,562,800	1,508,032	1,846,761	1,611,474	1,606,204	964,802	1,150,537	558,804	379,215	663,900	10,784,059
Minnesota	1,709,271	1,705,819	1,996,294	2,318,083	2,249,580	375,734	562,757	433,995	350,563	433,486	4,996,809
Missouri	1,700,150	1,634,650	1,921,295	1,110,172	2,249,580	1,632,703	2,055,465	1,416,500	990,510	1,075,977	17,160,292
Montana	1,182,374	1,101,928	1,320,546	1,232,985	1,202,188	1,800,979	1,052,494	595,940	509,403	629,713	8,156,964
Nebraska	1,129,204	1,101,928	1,320,546	1,326,041	1,232,985	1,022,318	1,127,382	684,603	585,318	884,904	10,748,384
North Dakota	4,903,308	5,692,815	8,144,408	10,789,416	10,789,416	8,121,654	242,010	206,608	285,707	291,074	2,066,014
Ohio	1,655,900	1,410,660	1,393,045	1,795,098	1,928,806	1,556,788	1,700,106	6,920,643	5,406,119	8,158,908	77,267,769
Oklahoma	500,540	31,137	24,993	11,680	1,260,078	1,173,332	1,260,078	1,244,567	893,177	943,765	14,167,825
Oregon	39,419,014	39,452,644	43,605,407	45,458,683	46,947,769	37,973,951	42,512,237	28,809,962	29,011,707	41,454,008	394,641,882
Pennsylvania (bituminous)	7,144	5,436	5,497	5,238	3,043	3,043	6,231	5,547	4,420	4,110	54,255
South Dakota	2,225,508	1,968,326	2,198,551	2,510,011	2,833,459	2,317,689	2,657,746	1,588,720	1,866,431	2,056,240	22,223,263
Tennessee	1,098,405	1,183,695	978,497	1,150,895	1,029,677	826,530	714,726	402,438	526,036	436,240	8,347,293
Texas	863,520	741,434	713,655	763,751	1,078,770	923,369	1,133,899	669,140	962,424	698,802	8,548,764
Utah	2,158,005	2,105,048	2,660,348	3,045,685	3,045,971	2,861,221	3,696,237	1,979,336	2,648,607	2,998,332	27,196,791
Virginia	1,108,755	819,317	1,040,306	1,440,249	1,402,499	1,094,258	1,298,347	688,843	870,793	918,310	10,681,761
Washington	15,871,563	15,807,356	18,497,514	19,888,728	21,278,061	18,955,691	20,424,666	15,211,585	15,720,456	19,833,194	181,494,814
West Virginia	1,558,464	1,454,486	1,798,292	1,812,010	2,025,012	1,609,104	2,052,768	1,416,988	1,155,888	1,446,023	16,328,952
Total (bituminous)	113,783,670	112,919,181	129,957,770	148,499,498	153,948,030	121,689,730	141,027,139	99,209,878	97,880,316	125,795,769	1,241,310,909
Pennsylvania (anthracite)	44,021,355	44,560,314	40,477,046	43,900,264	43,143,954	41,075,293	39,357,803	43,148,813	23,636,506	42,204,163	401,520,501
Total	167,979,295	153,479,495	169,729,816	190,399,680	196,491,984	162,665,023	180,384,942	142,358,691	121,516,822	167,999,932	1,643,005,680

• Not available. • Includes Oregon. • Included with California, Idaho, and Nevada.

TABLE 46.—United States: Number of men killed by underground accidents (including shaft accidents) during the years ended December 31, 1914 to 1924

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years	1924
Alabama.....	127	61	116	100	107	88	72	78	182	82	1, 013	72
Arkansas.....	10	6	7	17	13	9	8	17	6	4	91	9
California, Idaho, and Nevada.....	73	60	39	184	69	88	66	49	72	63	763	41
Colorado.....	1	1	1	1	1	1	1	1	1	1	1	1
Georgia and North Carolina.....	184	131	128	215	287	167	203	190	121	168	1, 744	171
Illinois.....	42	43	49	75	95	81	88	84	148	168	653	48
Iowa.....	37	32	29	34	30	17	24	22	18	21	263	15
Kansas.....	32	23	53	29	29	23	25	13	8	19	253	7
Kentucky.....	55	61	63	131	69	72	116	119	120	127	933	199
Maryland.....	17	9	31	20	17	5	7	7	3	3	121	8
Michigan.....	2	6	2	2	10	3	5	3	3	5	41	4
Missouri.....	19	17	6	11	13	3	5	3	3	6	120	8
Montana.....	7	12	16	21	14	10	10	12	10	16	120	6
New Mexico.....	17	19	19	16	26	20	31	13	21	11	177	15
New York.....	3	1	1	3	26	20	10	13	21	11	326	16
North Dakota.....	3	1	1	3	26	20	10	13	21	11	326	16
Ohio.....	62	67	105	104	136	135	130	102	90	3	1, 053	92
Oklahoma.....	31	17	26	36	30	36	40	19	19	8	262	11
Oregon.....	379	408	410	457	448	372	393	263	398	371	3, 896	397
Pennsylvania (bituminous).....	24	25	15	27	14	27	21	12	26	18	200	21
Tennessee.....	1	1	2	2	7	4	5	1	4	1	36	3
Texas.....	11	1	2	2	1	3	5	1	1	1	187	199
Utah.....	17	10	20	17	15	24	30	13	20	21	352	38
Virginia.....	17	46	51	59	41	33	25	17	25	38	352	25
Washington.....	16	43	19	27	31	14	16	6	20	10	211	25
West Virginia.....	528	462	348	329	386	298	282	292	331	390	3, 665	477
Wyoming.....	43	23	29	36	39	33	36	28	22	126	415	69
Total (bituminous).....	1, 755	1, 583	1, 567	1, 942	1, 880	1, 571	1, 680	1, 357	1, 577	1, 853	16, 775	1, 803
Pennsylvania (anthracite).....	533	526	489	483	453	559	416	510	264	448	4, 681	442
Total.....	2, 288	2, 109	2, 076	2, 425	2, 333	2, 130	2, 076	1, 867	1, 841	2, 301	21, 456	2, 245

^a Includes Oregon.

^b Included with California, Idaho, and Nevada.

TABLE 47.—United States: Number of men killed by surface accidents during the years ended December 31, 1914 to 1924

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years	1924
Alabama.....	1	2	3	8	3	5	4	2	1	7	36	5
Arkansas.....	1	2	2	4	2	1	1	1	1	5	31	3
Colorado.....	2	3	4	4	2	3	4	3	3	3	5	2
Georgia and North Carolina.....	9	5	5	18	1	2	4	3	4	2	48	2
Illinois.....	2	3	2	1	1	2	1	1	1	2	18	2
Indiana.....	2	2	2	2	5	2	1	1	1	2	9	1
Iowa.....	1	2	2	2	1	2	1	1	1	1	13	1
Kansas.....	6	3	12	11	8	2	7	9	5	2	75	6
Kentucky.....	1	1	1	1	3	2	1	1	1	1	4	1
Maryland.....	1	1	1	2	2	1	1	1	1	1	6	1
Michigan.....	1	1	1	2	2	1	1	1	1	1	4	1
Missouri.....	1	1	1	2	3	1	1	1	1	1	6	1
Montana.....	1	1	1	2	2	1	1	1	1	1	9	1
New Mexico.....	1	1	1	2	2	5	2	1	1	1	10	1
North Dakota.....	2	5	3	4	13	7	6	7	6	8	56	6
Oklahoma.....	23	30	23	38	43	27	34	23	38	31	310	21
Pennsylvania (bituminous).....	2	5	1	1	1	1	1	1	1	1	10	1
Tennessee.....	2	30	23	38	43	27	34	23	38	31	310	21
Texas.....	5	1	3	5	4	3	5	2	2	2	5	1
Utah.....	10	2	2	4	2	1	1	1	1	2	32	1
Virginia.....	1	3	2	3	2	5	2	1	2	1	23	1
Washington.....	28	32	24	55	51	34	32	28	33	35	352	35
West Virginia.....	8	3	1	1	2	2	13	1	1	1	30	1
Wyoming.....	8	3	1	1	2	2	13	1	1	1	30	1
Total (bituminous).....	104	100	84	162	149	111	120	83	102	98	1,111	82
Pennsylvania (anthracite).....	62	60	66	99	98	76	75	37	36	61	670	54
Total.....	166	160	150	261	247	187	195	120	138	157	1,781	136

TABLE 48.—United States: Number of men killed by underground and surface accidents during the years ended December 31, 1914 to 1924

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Total, 10 years	1924
Alabama.....	128	63	119	108	110	93	76	80	183	89	1,049	77
Arkansas.....	11	8	7	17	13	10	9	17	6	4	102	9
California, Idaho, and Nevada.....	75	63	43	188	71	91	70	52	75	66	794	44
Colorado.....	193	136	128	233	208	169	207	193	125	170	1,792	6
Georgia and North Carolina.....	47	36	51	76	83	68	88	64	125	70	671	18
Illinois.....	33	31	30	30	31	27	23	21	19	21	271	15
Iowa.....	33	24	24	30	22	25	26	21	19	10	268	7
Kansas.....	18	64	74	142	77	84	122	128	125	129	1,008	135
Kentucky.....	19	10	32	21	17	5	7	3	3	5	125	8
Maryland.....	1	7	2	4	12	3	6	3	3	5	25	8
Michigan.....	16	17	6	14	13	10	11	12	8	16	121	6
Missouri.....	18	13	16	22	17	10	11	12	10	11	136	15
Montana.....	3	19	19	11	31	25	33	13	21	141	336	16
New Mexico.....	8	1	9	9	8	4	2	2	4	2	25	3
North Dakota.....	63	7	108	108	149	142	136	109	96	136	1,105	98
Ohio.....	31	67	28	37	31	36	41	20	20	8	272	12
Oklahoma.....	402	438	433	495	491	399	477	(^b) 286	436	402	4,909	348
Oregon.....	26	23	13	28	14	27	21	12	28	18	214	22
Pennsylvania (bituminous).....	22	11	2	22	7	27	5	4	4	4	37	100
Texas.....	48	53	53	63	43	34	32	15	22	23	216	30
Utah.....	17	46	30	30	33	16	18	7	17	30	273	28
Virginia.....	556	494	372	384	437	332	324	320	364	434	4,017	512
West Virginia.....	51	20	30	37	41	33	49	29	23	126	445	69
Wyoming.....	1,859	1,683	1,871	2,114	2,099	1,682	1,750	1,440	1,679	1,949	17,886	1,885
Total (bituminous).....	595	580	555	582	551	635	491	547	300	599	5,351	496
Pennsylvania (anthracite).....	2,454	2,269	2,228	2,696	2,580	2,317	2,271	1,987	1,979	2,458	23,237	2,381
Total.....												

• Includes Oregon.

^b Included with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 49.—United States: Number of men killed by underground accidents per 1,000 300-day workers employed during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama.....	8.29	4.32	6.19	4.80	5.61	5.35	4.30	6.64	10.97	4.30	6.01
Arkansas.....	5.71	3.89	3.74	8.70	6.16	6.42	4.07	14.85	6.39	4.15	6.20
California, Idaho, and Nevada.....	11.37	9.40	4.81	18.60	7.16	13.12	7.05	24.89	10.20	9.74	9.97
Colorado and North Carolina.....	3.26	3.20	2.55	5.43	8.33	4.18	3.71	4.39	7.75	3.58	2.44
Illinois.....	3.67	3.76	3.55	3.54	3.98	4.18	3.10	4.20	3.51	3.51	3.73
Indiana.....	3.82	3.11	3.22	4.49	3.23	6.49	5.20	4.30	4.53	4.85	4.73
Iowa.....	3.04	3.28	7.55	3.20	3.12	2.67	2.98	4.06	3.49	3.31	3.27
Kansas.....	3.04	3.28	7.55	3.20	3.12	2.67	2.98	4.06	3.00	5.33	4.74
Kentucky.....	4.36	2.24	7.71	6.32	4.97	3.22	5.78	5.63	5.10	4.97	4.48
Maryland.....	3.79	3.08	1.31	5.03	4.47	1.90	2.19	4.45	2.76	2.66	4.03
Michigan.....	3.41	3.60	1.11	1.10	3.73	2.72	1.88	2.53	2.82	3.77	2.82
Missouri.....	3.79	3.60	1.11	1.10	3.73	2.72	1.88	2.53	2.20	3.57	2.59
Montana.....	3.92	6.33	6.43	7.03	2.18	2.37	1.88	3.12	6.91	6.21	5.78
New Mexico.....	3.21	6.82	6.43	7.03	4.76	4.65	4.90	7.29	9.04	55.19	11.55
New York.....	10.24	6.01	5.91	4.68	9.73	7.53	10.49	6.70	9.04	4.54	4.39
North Dakota.....	4.25	3.95	4.36	5.69	4.59	5.50	4.94	7.97	5.90	3.28	4.80
Ohio.....	6.53	4.21	4.36	3.84	4.59	3.99	4.94	5.12	7.54	2.99	6.39
Oklahoma.....	8.98	4.21	47.18	7.28	5.59	8.38	8.04	(^a)	7.54	2.99	6.39
Oregon.....	3.28	3.56	3.41	3.65	3.55	3.57	3.35	3.48	4.87	3.14	8.87
Pennsylvania (bituminous).....	3.96	4.54	2.46	4.15	1.95	4.49	2.92	2.74	3.02	3.11	3.53
Tennessee.....	3.43	5.29	7.01	3.1	2.37	1.31	1.92	83	2.56	1.79	3.49
Texas.....	6.19	8.22	10.98	9.06	5.66	11.10	10.04	7.38	8.11	11.48	1.49
Utah.....	2.86	8.09	7.64	7.34	3.06	4.23	2.69	3.13	3.49	4.61	8.68
Virginia.....	3.06	20.18	6.98	7.34	8.83	3.09	4.66	3.25	8.57	7.72	7.62
Washington.....	11.93	10.42	6.82	6.83	7.06	6.01	3.33	6.92	7.65	7.23	7.46
West Virginia.....	9.79	5.57	7.28	7.28	7.36	7.71	6.46	7.16	6.76	31.63	9.27
Wyoming.....	5.34	4.86	4.86	4.84	4.56	4.74	4.26	4.80	5.71	5.19	4.83
Total (bituminous).....	4.90	5.24	4.87	4.63	4.56	5.85	4.55	4.84	4.60	4.38	4.86
Pennsylvania (anthracite).....	5.19	4.93	4.48	4.78	4.54	4.95	4.32	4.73	5.51	4.96	4.81
Total.....	5.19	4.93	4.48	4.78	4.54	4.95	4.32	4.73	5.51	4.96	4.81

^a Includes Oregon.

^b Included in California, Idaho, and Nevada.

TABLE 50.—United States: Number of men killed by surface accidents per 1,000 900-day workers employed on the surface during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama	0.36	0.75	0.89	1.61	0.57	1.01	0.94	0.78	0.28	1.68	0.93
Alaska	3.15	6.15				3.08	2.79				1.43
Arkansas	1.11	1.84	1.95	1.55	.74	1.38	1.74	2.10	1.93	2.40	1.59
California, Idaho, and Nevada	2.17	1.18	12.05	2.47	20.00	.37	.56	.60	1.00	.36	.85
Colorado	1.30	2.04	1.08	.35	1.12	.87			.63	1.01	.79
Georgia and North Carolina	.94	1.75	2.00	1.50	1.03	1.88	1.05		2.27	2.05	.97
Illinois	2.14	1.88	.81	.75	1.91	1.88	1.05	1.80	2.54	2.05	1.33
Indiana	1.85	1.09	3.66	2.28	1.16	1.89	1.23	2.02	1.02	.38	1.59
Iowa	1.85	1.81	1.29	.97			5.05				.67
Kansas	1.85	4.57		9.39	7.22		.65				2.82
Kentucky	2.54	2.80		2.76	2.82	1.92					.09
Louisiana	1.34				1.77	6.64	2.49	2.93			1.73
Michigan	1.12				4.42	4.42			3.36	3.42	1.31
Minnesota	1.12	7.58	.97	.82	2.04	1.55	1.09	2.22	2.18	1.95	1.54
Missouri	1.46	1.77	.92	1.44	.94	1.55	1.01	1.49	2.18	1.95	1.47
Montana	1.46	1.77	.92	1.44	1.42	1.21	1.39	1.73	2.53	1.54	1.48
New Mexico	1.47			.53					1.92		.35
New York	6.23	1.80	5.39	7.47	4.22	3.28	6.31	7.35	1.92		.27
North Dakota	8.00	1.50	.91	1.72	.98	.57	.33	4.26	2.70	4.01	4.60
Ohio	1.14	5.00	2.68	2.68	1.72	5.59	.22	2.23	3.52	1.66	2.78
Oklahoma	3.24	3.83	2.26	3.81	3.14	2.50	2.41	3.29	3.61	3.20	3.09
Oregon	9.96	4.17	1.00	.91	1.38	2.50	10.21	1.23	1.08		3.10
Pennsylvania (bituminous)	2.07	1.97	1.26	1.91	1.51	1.50	1.49	1.73	2.04	1.54	1.67
Pennsylvania (anthracite)	1.64	1.72	1.81	2.36	2.21	1.84	1.84	.96	1.68	1.59	1.79
Total	1.94	1.90	1.47	2.09	1.75	1.67	1.62	1.50	1.94	1.64	1.75

TABLE 51.—United States: Number of men killed by *underground* and *surface* accidents per 1,000 300-day workers employed underground and on the surface during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama	7.07	3.75	5.38	4.19	4.52	4.35	3.62	5.59	9.07	3.83	5.06
Alaska	5.32	4.29	3.03	6.82	4.81	5.79	3.87	12.55	5.48	3.29	5.33
Arkansas	9.13	7.87	4.23	15.07	5.76	10.25	6.00	6.56	8.71	8.55	8.27
California, Idaho, and Nevada	4.08	3.01	2.60	3.17	11.76	3.74	3.35	4.00	3.25	3.23	3.42
Colorado	4.21	3.39	2.57	3.42	3.50	3.61	4.40	4.60	4.02	4.37	4.17
Illinois	3.39	2.98	3.42	3.89	4.35	2.35	2.52	3.93	3.40	3.04	3.03
Indiana	3.39	2.94	3.19	3.91	2.85	4.15	4.26	3.72	2.94	4.91	4.21
Iowa	4.15	2.94	6.54	3.91	3.85	2.93	4.10	5.00	4.39	4.19	3.94
Kansas	3.40	3.68	3.46	5.70	2.56	2.93	4.10	3.76	2.37	2.27	3.48
Kentucky	4.15	2.19	6.67	4.19	3.51	1.55	1.83	2.07	2.57	3.42	2.82
Maryland	1.07	4.13	1.10	1.96	5.94	2.40	3.20	2.54	1.82	4.44	2.12
Michigan	3.33	2.99	.90	1.42	1.73	1.84	1.60	2.44	5.89	5.24	5.00
Missouri	3.43	6.14	5.21	6.21	4.24	4.12	3.99	6.55	7.28	47.80	9.38
Montana	4.57	5.17	4.32	3.62	7.54	7.34	8.78	5.70	4.17	2.03	3.60
New Mexico	7.46	2.32	1.72	4.29	4.14	5.19	3.72	4.72	5.33	4.78	4.31
North Dakota	3.92	3.53	3.98	3.38	4.14	5.25	4.27	4.72	6.72	2.53	5.58
Ohio	5.62	4.68	5.60	6.18	4.82	6.94	6.87	4.82	6.72	2.53	6.39
Oklahoma	5.95	3.33	36.14	3.27	3.14	3.15	3.01	(^b)	4.51	2.91	3.20
Pennsylvania (bituminous)	3.06	3.33	2.98	3.27	3.14	3.15	3.01	2.98	4.51	2.91	3.20
Pennsylvania (anthracite)	3.50	3.81	2.05	3.35	1.48	3.49	2.37	2.27	4.50	2.63	2.89
Tennessee	3.00	.61	.26	2.04	2.04	1.09	2.10	1.49	2.28	1.33	1.33
Texas	7.64	4.45	9.67	8.64	5.28	8.77	9.26	6.72	6.86	9.88	7.69
Utah	3.75	5.98	6.21	4.24	3.57	3.57	2.11	2.58	2.83	3.90	4.14
Virginia	4.60	16.84	6.06	6.25	7.06	5.21	4.16	3.05	7.58	6.53	6.54
Washington	10.51	9.37	6.03	5.79	6.16	5.25	4.76	6.31	6.95	6.64	6.64
West Virginia	9.82	5.36	5.01	6.13	6.07	6.15	7.16	6.14	5.97	26.14	8.18
Wyoming	4.90	4.47	3.88	4.81	3.87	4.15	3.79	4.35	5.15	4.65	4.32
Total (bituminous)	4.05	4.33	4.11	3.98	3.87	4.64	3.74	4.80	3.81	3.62	4.00
Total	4.66	4.44	3.93	4.35	3.94	4.27	3.78	4.19	4.89	4.39	4.24

^b Included in California, Idaho, and Nevada.

^a Includes Oregon.

TABLE 52.—United States: Number of men killed per million tons of coal mined, based on underground and shaft accidents only, during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama	8.14	4.09	6.41	4.98	5.58	5.66	4.42	6.21	9.93	4.01	5.92
Alaska	5.45	3.63	3.51	7.93	5.84	6.30	3.80	13.85	5.41	3.08	5.70
Arkansas	8.93	6.96	3.79	14.74	5.56	8.52	5.38	26.74	7.19	6.09	7.32
California, Idaho, and Nevada	6.01	2.23	1.93	8.40	14.68	2.74	2.29	2.73	7.18	2.12	3.66
Colorado	3.20	2.53	2.44	2.49	2.65	3.87	3.00	3.15	2.07	2.59	2.44
Georgia and North Carolina	4.97	4.20	3.99	3.79	3.10	3.02	3.07	4.86	4.15	3.68	2.88
Illinois	4.66	3.37	7.70	4.04	3.83	4.40	4.22	3.75	2.71	4.46	4.44
Indiana	2.70	2.86	2.48	4.71	2.18	2.40	3.25	3.77	2.85	2.84	3.00
Iowa	4.11	2.15	6.95	4.21	3.78	1.65	1.72	3.83	2.45	2.19	3.51
Kansas	1.56	5.19	1.69	1.45	6.83	3.01	3.36	2.63	3.23	4.27	3.36
Maryland	4.83	4.46	1.27	1.94	2.29	2.51	1.86	3.38	2.05	2.79	3.51
Michigan	2.50	4.30	4.40	4.97	3.09	3.09	3.17	4.39	3.89	4.70	2.79
Minnesota	4.38	4.98	5.01	4.00	7.21	6.37	8.42	5.30	6.67	3.49	3.73
New Mexico	5.92	1.89	1.58	3.79	2.97	3.57	3.16	4.62	2.26	48.37	9.35
North Dakota	3.29	3.02	3.02	2.55	2.97	3.76	3.42	3.19	2.34	3.01	3.06
Ohio	7.77	4.80	7.21	8.21	6.23	9.47	8.25	3.94	6.78	2.77	8.86
Oklaoma	19.40	7.44	70.44	8.21	6.23	9.47	8.25	3.94	6.78	2.77	18.65
Oregon	2.56	2.58	2.41	2.65	2.51	2.47	2.30	(^b) 2.27	3.52	2.16	2.52
Pennsylvania (bituminous)	4.04	4.36	2.44	4.36	2.05	5.18	3.15	2.69	5.33	2.98	3.60
South Dakota	4.73	4.48	1.01	4.42	3.10	1.78	3.10	1.03	3.62	3.84	2.05
Tennessee	5.48	3.22	5.61	4.12	3.92	5.18	5.00	3.19	4.01	4.45	3.84
Texas	2.14	5.66	5.25	5.85	3.98	3.54	2.20	2.27	2.38	3.23	3.64
Utah	5.22	17.70	6.25	6.73	7.59	4.68	4.26	2.47	7.75	6.49	6.74
Virginia	7.36	5.99	4.02	3.81	4.29	3.77	3.25	4.01	4.11	3.70	3.35
West Virginia	6.64	3.51	3.67	4.20	4.13	4.57	3.74	3.80	4.11	16.63	5.42
Wyoming											
Total (bituminous)	4.15	3.68	3.16	3.54	3.24	3.37	3.93	3.26	3.73	3.28	3.40
Pennsylvania (anthracite)	5.87	5.91	5.68	4.85	4.58	6.35	4.64	5.64	4.83	4.80	5.31
Total	4.46	3.97	3.62	3.74	3.44	3.85	3.16	3.69	3.86	3.50	3.69

^a Includes Oregon.

^b Included with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 53.—United States: Number of men killed per million tons of coal mined, based on all accidents during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama.....	8.21	4.22	6.58	5.38	5.73	5.99	4.66	6.36	9.99	4.35	6.13
Arkansas.....	5.99	4.84	3.51	7.93	5.84	7.00	4.28	13.85	5.41	3.08	5.99
California, Idaho, and Nevada.....	9.18	7.30	4.10	15.06	5.72	8.81	5.70	25.74	7.49	6.38	7.06
Colorado.....	6.01	2.31	5.76	8.40	2.67	2.78	2.33	2.77	2.14	2.14	5.50
Georgia and North Carolina.....	3.35	2.70	1.93	2.70	2.67	3.97	3.00	3.15	2.66	2.67	2.96
Illinois.....	2.64	4.47	2.54	2.86	3.26	3.02	3.20	3.15	4.38	3.68	2.96
Indiana.....	4.97	4.27	4.27	4.02	3.78	4.78	4.39	4.04	4.38	4.71	4.67
Iowa.....	4.81	3.52	7.85	4.18	4.23	2.80	3.45	4.05	3.05	2.97	3.24
Kansas.....	2.99	3.00	2.95	5.11	2.44	2.65	1.72	3.83	2.45	2.19	3.63
Kentucky.....	4.35	2.39	7.17	4.42	3.78	1.60	3.01	3.23	2.05	4.27	3.86
Maryland.....	1.56	6.05	1.69	2.91	8.19	2.51	2.05	3.38	2.05	4.70	2.81
Michigan.....	4.83	4.46	1.27	1.94	3.75	3.40	3.17	4.76	3.89	3.49	3.99
Missouri.....	2.85	4.66	4.40	5.44	3.75	7.96	8.96	5.30	6.67	48.37	9.64
Montana.....	5.64	4.98	5.01	4.00	7.71	4.76	3.16	4.62	3.01	1.44	2.92
New Mexico.....	5.92	1.89	1.58	3.79	3.25	3.96	2.96	3.41	3.96	3.21	3.23
North Dakota.....	3.40	2.99	3.11	3.79	3.25	3.96	2.96	3.41	3.96	3.21	3.23
Ohio.....	7.77	5.96	7.21	8.43	6.44	9.47	8.45	5.95	7.14	2.77	7.12
Oklahoma.....	19.40	7.77	70.44	8.43	6.44	9.47	8.45	5.95	7.14	2.77	18.65
Oregon.....	2.72	2.77	2.54	2.87	2.75	2.65	2.50	2.47	3.85	2.34	2.72
Pennsylvania (bituminous).....	4.37	4.36	2.44	4.52	2.05	5.18	3.15	2.69	5.74	2.98	3.68
Tennessee.....	4.73	4.36	2.44	4.52	2.05	5.18	3.15	2.69	5.74	2.98	3.68
Texas.....	4.73	4.36	2.44	4.52	2.05	5.18	3.15	2.69	5.74	2.98	3.68
Utah.....	4.48	3.54	1.01	4.42	3.10	1.79	3.10	2.06	3.62	.84	2.10
Virginia.....	7.09	6.45	6.45	5.33	3.70	5.83	5.83	3.69	4.41	4.87	5.04
Washington.....	3.39	5.91	5.46	6.25	4.18	3.65	2.28	2.27	2.38	3.32	3.88
West Virginia.....	5.55	6.91	7.48	7.48	8.08	6.35	4.79	2.88	8.52	6.83	7.44
Wyoming.....	7.75	6.40	4.30	4.86	4.20	4.20	3.60	4.40	4.52	4.02	4.77
W. Wyoming.....	7.88	3.97	3.79	4.31	4.34	4.57	5.09	4.03	3.85	16.63	5.81
Total (bituminous).....	4.40	3.80	3.33	3.93	3.50	3.61	3.13	3.46	3.98	3.45	3.62
Pennsylvania (anthracite).....	6.55	6.58	6.34	5.84	5.58	7.21	5.48	6.05	5.49	5.45	6.07
Total.....	4.78	4.27	3.77	4.14	3.80	4.18	3.45	3.92	4.15	3.74	3.99

• Includes Oregon.

° Included with California, Idaho, and Nevada.

TABLE 54.—United States: Production per death, based on underground accidents (including shaft accidents), during the years ended December 31, 1914 to 1923

State	[Net tons]										Average, 10 years
	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	
Alabama.....	122, 783	244, 720	155, 915	200, 681	179, 299	176, 554	226, 307	161, 140	100, 685	249, 484	168, 848
Alaska.....	183, 654	275, 351	284, 988	126, 063	171, 336	158, 780	262, 950	72, 222	185, 008	324, 223	175, 483
Arkansas.....	111, 925	143, 750	268, 827	67, 844	179, 820	117, 312	186, 034	186, 179	139, 161	164, 226	136, 646
California, Idaho, and Nevada.....	166, 498	449, 081	517, 151	119, 028	376, 756	364, 447	437, 068	366, 330	483, 204	472, 084	310, 019
Colorado.....	396, 217	237, 942	410, 072	353, 858	322, 933	258, 176	333, 529	317, 492	398, 602	385, 722	347, 478
Georgia and North Carolina.....	201, 379	297, 942	250, 372	263, 701	273, 073	330, 864	325, 580	205, 972	240, 842	271, 040	255, 681
Illinois.....	214, 406	296, 716	129, 839	247, 758	260, 757	227, 162	307, 056	266, 665	369, 396	224, 189	224, 980
Indiana.....	370, 596	350, 191	403, 079	212, 275	458, 154	417, 168	307, 679	265, 448	351, 118	352, 577	333, 104
Iowa.....	243, 150	464, 497	143, 872	237, 296	264, 547	604, 337	580, 748	261, 106	407, 569	457, 185	284, 633
Kansas.....	641, 515	192, 690	590, 180	687, 403	146, 482	332, 182	297, 953	380, 572	309, 797	234, 415	267, 284
Kentucky.....	207, 157	224, 211	790, 358	514, 504	435, 979	397, 980	536, 957	295, 968	489, 458	212, 697	358, 807
Michigan.....	400, 739	232, 480	227, 033	201, 271	323, 750	323, 637	315, 276	227, 830	257, 222	286, 153	298, 431
Missouri.....	228, 099	200, 944	199, 632	250, 083	138, 732	156, 938	118, 821	188, 729	149, 865	20, 675	106, 903
Montana.....	168, 895	528, 078	634, 912	263, 516	280, 320	280, 320	316, 208	216, 226	442, 521	385, 519	388, 519
New Mexico.....	303, 921	334, 846	330, 745	391, 815	336, 860	265, 753	352, 909	313, 164	290, 487	332, 348	326, 463
North Dakota.....	128, 665	217, 269	138, 770	121, 857	160, 448	105, 614	121, 232	178, 980	147, 801	360, 630	145, 771
Ohio.....	51, 558	387, 145	415, 355	377, 348	398, 551	405, 264	434, 117	441, 118	284, 292	463, 288	397, 446
Oklahoma.....	390, 457	225, 214	409, 163	229, 416	487, 932	193, 082	317, 258	371, 694	187, 568	335, 570	277, 939
Oregon.....	247, 635	2, 088, 908	993, 752	2, 355, 815	323, 019	560, 219	323, 019	373, 839	276, 502	1, 187, 329	488, 303
Pennsylvania (bituminous).....	211, 252	310, 872	178, 371	242, 661	342, 455	192, 072	200, 173	313, 733	246, 600	224, 772	232, 453
Pennsylvania (anthracite).....	468, 208	176, 578	190, 343	170, 968	250, 971	282, 631	455, 144	440, 728	419, 647	309, 517	274, 480
Texas.....	191, 551	56, 491	159, 926	148, 515	131, 684	213, 603	434, 818	404, 787	129, 058	154, 381	148, 381
Virginia.....	135, 810	167, 065	248, 449	262, 741	232, 994	265, 223	308, 119	249, 271	243, 167	270, 426	229, 717
West Virginia.....	150, 588	284, 958	272, 781	238, 212	242, 018	218, 780	267, 508	257, 167	271, 442	60, 119	184, 462
Wyoming.....	240, 857	279, 611	316, 643	262, 680	308, 184	296, 537	342, 570	308, 501	267, 767	304, 456	294, 941
Total (bituminous).....	170, 397	169, 192	179, 097	206, 236	218, 159	157, 589	215, 380	177, 399	207, 133	208, 346	188, 425
Total.....	324, 443	252, 072	284, 248	267, 516	290, 703	280, 071	317, 083	271, 235	259, 072	285, 744	271, 156

* Includes Oregon.

* Included with California, Idaho, and Nevada.

TABLE 55.—United States: Production per death, based on all accidents, during the years ended December 31, 1914 to 1923

[Net tons]

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama	121,824	236,951	151,985	185,816	174,409	167,062	214,396	157,111	100,135	229,861	163,053
Arkansas	166,958	206,513	284,988	126,093	171,336	142,902	233,793	72,222	185,008	324,223	166,881
California, Idaho, and Nevada	108,941	136,904	243,819	66,401	174,755	113,444	175,403	175,438	133,595	156,761	131,311
Colorado	166,498	432,570	173,554	119,028	34,068	360,134	428,623	360,636	467,742	466,530	399,036
Georgia and North Carolina	298,390	369,699	517,151	369,954	375,173	251,955	333,529	317,492	390,467	374,701	338,157
Illinois	378,208	207,379	393,991	349,202	306,786	330,864	312,557	205,972	228,166	271,940	247,252
Iowa	207,909	223,945	234,219	249,051	264,264	208,989	227,939	247,617	328,352	212,390	213,993
Kansas	334,144	333,776	338,587	195,831	410,553	357,572	290,169	246,783	337,073	347,111	308,319
Kentucky	229,642	418,048	139,376	225,996	264,547	604,337	580,748	261,106	407,569	457,185	275,525
Maryland	641,515	168,163	590,180	343,701	122,068	332,182	248,294	380,572	309,797	234,415	259,333
Michigan	207,157	224,211	790,358	514,504	435,979	397,980	488,142	295,968	487,458	212,397	355,842
Missouri	350,647	224,597	227,033	250,033	129,782	294,215	315,276	210,304	257,222	286,153	250,607
Montana	215,427	200,944	199,632	263,516	183,769	1 ^a ,550	111,619	188,729	149,865	20,675	103,722
New Mexico	168,895	528,078	634,912	377,303	307,469	410,240	316,208	216,226	331,891	692,700	341,896
North Dakota	294,424	334,846	321,558	263,033	307,469	252,653	337,340	293,053	280,769	311,896	309,978
Ohio	128,665	167,890	138,770	118,563	155,272	105,614	118,275	168,131	140,126	360,630	140,412
Oklahoma	51,558	14,197	14,197	118,563	155,272	105,614	118,275	168,131	140,126	360,630	140,412
Oregon	368,118	369,628	393,292	348,380	363,647	377,840	399,550	405,643	259,514	427,562	368,173
Pennsylvania (bituminous)	228,357	229,214	409,163	221,222	487,932	193,082	317,258	371,694	174,171	335,570	271,446
Tennessee	211,252	208,908	993,752	2,355,815	323,019	560,219	323,003	486,420	176,502	1,187,329	475,108
Texas	141,047	282,610	155,106	187,510	270,360	171,530	171,577	271,919	226,909	205,227	198,488
Utah	294,798	169,221	183,160	160,113	233,298	274,319	437,639	440,728	419,647	301,581	257,646
Virginia	180,284	53,980	144,695	133,663	123,703	157,392	208,727	346,960	117,326	146,320	134,371
Washington	128,971	156,243	232,420	225,109	205,803	238,062	277,687	227,459	221,121	248,617	209,587
West Virginia	126,967	252,073	263,688	231,773	230,212	218,780	196,536	248,299	60,119	60,119	172,026
Wyoming	327,392	262,997	300,730	261,017	265,562	276,968	319,476	288,835	251,500	289,460	275,964
Total (bituminous)	152,641	151,869	157,799	171,154	179,358	138,728	182,481	165,399	182,277	183,377	164,833
Pennsylvania (anthracite)	309,361	334,397	265,094	241,618	262,873	239,082	289,857	254,854	241,006	267,492	250,373

^a Includes Oregon.

^b Included with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 56.—United States: Annual production of coal per man, based on underground employees only, during the years ended December 31, 1914 to 1923

State	[Net tons]										Average, 10 years
	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	
Alabama.....	767	786	843	875	932	752	800	594	792	830	798
Alaska.....	600	533	653	684	717	462	589	420	303	990	535
Arkansas.....	1,035	875	1,003	1,106	1,096	1,156	1,116	468	598	291	532
California, Idaho, and Nevada.....	796	859	972	1,148	1,186	1,416	401	344	330	437	439
Colorado.....	815	837	957	1,171	1,279	1,416	1,116	767	595	291	439
Georgia and North Carolina.....	523	544	560	708	696	826	1,152	814	748	514	525
Illinois.....	637	598	666	815	874	639	781	702	662	890	926
Indiana.....	840	908	945	987	874	517	726	435	366	846	910
Iowa.....	874	840	945	987	1,045	845	891	496	461	593	662
Kansas.....	468	501	602	638	1,027	883	878	757	836	887	865
Kentucky.....	574	517	556	638	664	538	773	464	379	720	803
Maryland.....	1,007	1,062	1,185	1,266	1,354	975	782	509	405	613	589
Michigan.....	1,145	1,111	1,148	1,254	1,354	1,076	1,289	790	830	1,062	1,085
Minnesota.....	1,245	1,161	1,148	1,277	1,354	1,076	1,253	636	977	822	1,063
New Mexico.....	1,466	1,626	947	1,057	1,149	1,109	1,260	1,116	1,169	1,215	1,187
North Dakota.....	574	508	545	625	682	543	705	453	587	875	835
Ohio.....	391	327	546	638	533	360	370	453	423	478	555
Oklahoma.....	913	1,039	1,224	1,200	1,271	1,048	1,186	706	710	1,032	1,023
Oregon.....	382	589	342	2,347	378	1,335	1,345	176	242	305	314
Pennsylvania (bituminous).....	719	763	801	769	833	581	722	521	512	637	680
South Dakota.....	572	467	509	606	667	557	628	374	436	556	543
Texas.....	1,047	1,125	1,488	1,606	1,676	1,710	1,687	1,168	1,376	1,371	1,421
Utah.....	1,049	1,119	1,319	1,173	1,171	985	1,047	763	966	1,009	1,051
Virginia.....	1,690	1,642	1,807	1,985	1,964	1,787	1,947	697	716	846	819
Washington.....	1,085	1,209	1,338	1,250	1,303	1,063	1,065	859	892	1,102	1,103
West Virginia.....	944	1,062	1,309	1,424	1,591	1,242	1,521	1,026	1,217	1,217	1,195
Wyoming.....	835	917	1,060	1,108	1,168	916	1,073	733	725	943	941
Total (bituminous).....	681	680	750	906	972	817	886	774	479	814	769
Pennsylvania (anthracite).....	803	867	999	1,071	1,134	998	1,043	740	685	922	910
Total.....	803	867	999	1,071	1,134	998	1,043	740	685	922	910

* Includes Oregon.

* Includes with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 57.—United States: Annual production of coal per man, based on all employees, during the years ended December 31, 1914 to 1923
 [Net tons]

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama.....	649	661	715	707	732	578	638	487	651	681	650
Alaska.....	423	440	528	536	560	366	295	192	184	602	314
Arkansas.....	809	697	800	877	857	375	530	340	275	345	436
California, Idaho, and Nevada.....	469	365	434	494	494	81	275	275	448	216	278
Colorado.....	724	778	876	1,025	1,030	278	896	628	742	776	795
Georgia and North Carolina.....	713	1,000	888	1,000	1,010	716	1,019	730	607	795	827
Illinois.....	464	490	566	628	615	455	656	398	576	741	784
Indiana.....	551	515	567	673	709	526	660	422	402	518	505
Iowa.....	709	704	703	706	704	709	722	625	709	736	561
Kansas.....	765	739	732	802	808	650	733	392	692	692	724
Kentucky.....	438	490	460	571	573	474	692	516	420	593	519
Maryland.....	412	383	401	587	591	427	608	415	334	493	478
Michigan.....	837	836	931	1,010	982	785	1,050	654	708	897	882
Montana.....	928	908	830	963	869	838	855	536	787	855	844
New Mexico.....	908	895	830	905	946	723	902	617	497	855	853
North Dakota.....	415	490	433	516	570	450	588	380	358	712	713
Ohio.....	494	437	403	272	333	280	244	244	(b)	(b)	289
Oklahoma.....	271	239	1,012	991	1,024	864	981	609	(b)	(b)	862
Oregon.....	963	905	924	237	378	313	272	176	242	305	266
Pennsylvania (bituminous).....	232	303	466	594	639	452	587	431	426	537	552
South Dakota.....	985	940	444	538	574	461	547	336	389	484	471
Tennessee.....	901	872	1,140	1,184	1,235	1,201	1,812	922	1,057	1,077	1,078
Texas.....	735	372	993	903	935	805	812	628	783	833	839
Utah.....	967	907	633	755	799	594	752	560	576	680	639
Virginia.....	528	507	633	633	633	594	752	715	732	920	898
Washington.....	908	1,017	1,108	978	1,005	835	874	849	660	1,006	986
West Virginia.....	793	905	1,090	1,165	1,249	991	1,238	849	660	1,006	986
Wyoming.....	793	905	1,090	1,165	1,249	991	1,238	849	660	1,006	986
Total (bituminous).....	794	794	896	915	943	749	889	697	614	803	791
Pennsylvania (anthracite).....	505	504	548	646	672	570	618	567	349	592	554
Total.....	673	724	818	890	890	713	839	615	565	764	743

* Includes Oregon.

* Included with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 58.—United States: Daily production of coal per man, based on underground employees only, during the years ended December 31, 1914 to 1923

[Net tons]

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama.....	3.4	3.5	3.2	3.2	3.3	3.2	3.2	3.6	3.7	3.6	3.4
Alaska.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Arkansas.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
California, Idaho, and Nevada.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Colorado.....	4.2	4.5	4.3	4.2	4.3	4.3	4.4	4.4	4.7	5.3	4.5
Georgia and North Carolina.....	2.9	2.3	1.9	2.2	1.9	1.9	1.7	1.5	2.0	2.0	2.2
Illinois.....	4.6	4.8	4.7	4.7	5.0	5.6	5.1	5.4	3.6	5.6	5.1
Indiana.....	2.6	2.5	2.8	2.8	2.8	2.9	2.9	2.9	5.7	6.2	5.5
Iowa.....	3.3	3.2	3.3	3.8	3.7	3.5	3.8	3.8	6.0	3.0	5.5
Kansas.....	4.5	4.9	4.6	4.6	4.5	4.5	4.9	3.6	3.7	4.0	3.6
Kentucky.....	3.6	3.5	3.7	4.0	3.8	3.5	4.2	3.8	6.0	5.8	5.0
Maryland.....	2.9	2.6	2.6	2.5	2.8	3.1	3.4	3.0	3.8	4.1	3.8
Michigan.....	2.6	2.7	2.9	3.1	3.2	3.1	3.4	3.0	2.9	2.9	2.8
Missouri.....	4.8	5.3	4.9	4.7	5.1	5.0	5.1	5.5	3.6	3.9	3.1
Montana.....	4.0	4.2	3.9	3.9	4.5	3.9	4.2	4.3	4.5	5.9	5.2
New Mexico.....	5.8	5.3	4.7	5.0	5.2	5.1	5.8	5.7	6.7	6.7	4.1
North Dakota.....	4.3	4.4	4.8	5.0	5.2	5.3	5.8	5.3	5.9	5.8	5.2
Ohio.....	2.8	3.0	3.1	3.0	3.0	2.9	3.2	3.2	3.7	3.6	3.1
Oklahoma.....	1.5	1.6	2.3	1.5	1.8	1.4	1.2	1.2	(b)	(b)	1.6
Oregon.....	4.3	4.6	4.7	4.6	4.7	4.8	4.9	4.7	4.6	4.9	4.7
Pennsylvania (bituminous).....	2.5	3.8	2.4	1.5	2.6	2.0	2.6	1.4	1.8	2.5	2.2
South Dakota.....	3.3	3.5	3.4	3.2	3.1	2.9	3.1	3.4	3.1	3.5	3.2
Tennessee.....	2.4	2.0	2.3	2.3	2.5	2.5	2.6	2.7	2.4	3.1	2.4
Texas.....	5.0	5.4	6.5	7.3	6.5	7.1	6.7	7.7	6.7	8.6	6.7
Utah.....	4.5	4.8	4.8	4.3	4.2	4.0	4.1	4.6	4.9	4.0	4.5
Virginia.....	3.6	3.8	3.7	3.6	3.9	3.6	3.6	4.4	3.7	4.0	3.8
Washington.....	5.4	5.8	5.8	5.6	5.5	5.3	5.8	5.8	6.2	6.5	5.7
West Virginia.....	4.9	5.3	5.3	5.8	5.9	5.6	5.5	6.1	6.1	6.3	5.7
Wyoming.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total (bituminous).....	4.3	4.5	4.6	4.6	4.7	4.7	4.9	4.9	5.1	5.3	4.7
Pennsylvania (anthracite).....	2.8	3.0	3.0	3.2	3.3	3.1	3.3	2.9	3.2	3.0	3.1
Total.....	3.9	4.1	4.2	4.3	4.4	4.3	4.6	4.3	4.8	4.7	4.3

* Includes Oregon.

b Included with California, Idaho, and Nevada.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 59.—United States: Daily production of coal per man, based on all employees during the years ended December 31, 1914 to 1923

[Net tons]

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	Average, 10 years
Alabama	2.9	3.0	2.7	2.6	2.6	2.4	2.6	2.9	3.0	2.9	2.8
Alaska						1.3	1.2	1.3	1.3	1.3	1.4
Arkansas	3.0	3.0	2.9	2.9	2.8	1.3	3.0	3.0	3.4	2.7	3.0
California, Idaho, and Nevada						1.4	1.5	1.8	1.8	1.0	1.5
Colorado	3.3	3.6	3.4	3.3	3.4	3.9	3.3	3.8	3.9	3.6	3.6
Georgia and North Carolina	2.3	1.9	1.4	1.6	1.3	1.1	1.1	1.3	2.4	1.3	1.6
Illinois	4.2	4.3	4.4	4.2	4.4	4.7	4.8	4.9	5.1	5.0	4.7
Indiana	4.3	4.3	4.5	4.5	4.5	4.6	4.9	4.9	5.2	5.3	4.7
Iowa	2.3	2.3	2.5	2.5	2.5	2.9	2.6	2.7	2.6	2.3	2.5
Kansas	2.9	2.5	2.8	2.1	2.0	2.9	2.2	2.1	2.2	2.3	2.0
Kentucky	3.8	4.1	3.9	3.7	3.5	3.3	4.0	4.1	4.6	4.3	4.1
Maine	3.2	3.1	3.1	3.2	3.1	3.3	3.5	3.2	3.2	3.2	3.2
Maryland	2.3	2.3	2.4	2.3	2.4	2.7	2.6	2.6	2.7	2.7	2.7
Michigan	2.3	2.3	2.4	2.4	2.4	2.4	2.6	2.6	2.0	2.2	2.5
Missouri	2.3	2.2	2.6	2.8	2.5	2.4	2.9	2.6	3.0	3.2	2.9
Montana	4.0	4.1	3.9	3.9	3.8	4.0	3.3	3.6	3.6	3.5	3.7
Nebraska	3.3	3.5	3.9	3.9	3.8	3.1	3.3	3.6	3.6	3.5	3.2
New Mexico	3.2	4.1	3.3	3.8	3.8	3.0	3.0	4.2	4.6	4.7	4.1
North Dakota	3.8	3.9	4.3	4.3	4.2	4.4	4.8	4.2	4.6	4.7	4.4
Ohio	2.4	2.9	2.7	2.5	2.5	2.4	2.7	2.7	3.1	3.0	2.6
Oklahoma	2.0	1.3	1.7	1.7	1.1	1.1	1.8	(b)	(b)	(b)	1.1
Oregon	3.8	4.3	1.7	3.6	3.8	4.0	4.1	4.4	3.9	4.1	3.9
Pennsylvania (bituminous)	1.7	2.0	1.8	1.8	2.6	1.9	1.9	1.4	1.8	2.5	1.8
South Dakota	2.7	2.9	2.8	2.5	2.4	2.2	2.3	2.8	2.9	2.9	2.9
Tennessee	2.1	1.8	2.0	2.1	2.2	2.0	2.3	2.4	2.1	2.6	2.1
Texas	2.1	4.2	3.7	3.3	3.6	3.0	3.3	3.6	3.2	3.6	3.6
Utah	3.0	3.9	3.7	3.8	3.4	3.3	3.1	3.8	4.0	3.9	3.6
Virginia	3.7	3.0	2.9	2.8	2.9	2.7	2.9	3.3	3.0	3.2	2.9
Washington	4.5	4.9	4.7	4.4	4.2	4.2	4.4	4.8	5.1	5.4	4.9
West Virginia	4.5	4.9	4.7	4.4	4.2	4.2	4.4	4.8	5.1	5.4	4.9
Wyoming	4.2	4.5	4.4	4.7	4.7	4.5	4.7	5.1	5.2	5.2	4.7
Total (bituminous)	3.7	3.9	3.9	3.8	3.8	3.6	4.0	4.2	4.3	4.5	4.0
Pennsylvania (anthracite)	2.1	2.2	2.2	2.3	2.3	2.1	2.3	2.1	2.3	2.2	2.2
Total	3.3	3.5	3.5	3.4	3.5	3.4	3.6	3.6	3.9	3.9	3.5

^b Included with California, Idaho, and Nevada.

^c Includes Oregon.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 60.—United States: Average value of coal per ton at mines during the years ended December 31, 1914 to 1923

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Alabama.....	1.34	1.28	1.37	2.27	2.85	2.96	3.65	3.08	2.34	2.52
Alaska.....			4.00	4.92	3.45	3.56	3.83	4.46	3.94	6.30
Arkansas.....	1.72	1.79	2.12	2.56	3.07	3.38	4.36	4.37	4.14	4.01
California, Idaho, and Nevada.....	2.55	2.58	1.62	2.30	2.70	3.38	4.36	4.37	3.87	3.94
Colorado.....	1.60	1.58	1.62	2.22	2.69	2.78	3.49	3.55	3.16	3.22
Georgia and North Carolina.....	1.42	1.72	1.29	2.33	3.61	3.73	3.38	3.95	3.16	4.11
Illinois.....	1.12	1.10	1.25	1.88	2.32	2.80	3.08	2.74	2.89	2.50
Indiana.....	1.70	1.79	1.27	1.99	2.29	2.22	3.16	2.57	2.89	2.48
Iowa.....	1.74	1.72	1.27	1.99	2.29	2.22	3.16	2.57	2.89	2.48
Kansas.....	1.64	1.66	1.76	2.31	2.91	3.09	3.94	3.81	3.72	3.59
Kentucky.....	1.02	1.24	1.78	2.17	2.55	3.05	3.87	3.85	3.66	3.22
Maryland.....	1.97	1.93	1.53	2.17	2.55	2.40	4.11	2.69	3.02	2.54
Michigan.....	1.60	2.25	2.25	2.16	2.77	2.73	4.63	3.61	3.37	3.02
Missouri.....	1.73	1.73	2.25	2.43	3.83	3.88	4.93	4.87	3.05	4.73
Montana.....	1.73	1.92	1.73	2.43	3.02	3.21	4.16	3.92	3.81	3.40
New Mexico.....	1.61	1.44	1.47	2.11	2.53	2.67	3.16	3.26	3.19	3.07
North Dakota.....	1.52	1.44	1.46	1.86	2.68	3.11	3.68	3.91	3.49	3.66
Ohio.....	1.13	1.06	1.33	1.80	2.26	2.90	2.87	2.69	(^b)	2.36
Oklahoma.....	2.08	1.06	2.33	2.98	2.58	2.22	3.82	2.65	2.65	2.43
Oregon.....	2.78	2.84	2.68	2.93	3.64	3.53	4.80	4.62	3.23	3.77
Pennsylvania (bituminous).....	1.07	2.04	2.90	2.51	2.51	3.40	4.49	(^b)	4.11	2.75
South Dakota.....	1.73	1.55	2.03	2.44	2.59	2.42	3.77	2.78	3.11	2.41
Tennessee.....	1.14	1.12	1.23	2.00	2.80	3.17	3.60	2.81	2.84	2.41
Texas.....	1.60	1.65	1.52	2.09	2.83	2.77	4.02	3.35	2.89	2.41
Utah.....	1.50	1.62	1.62	2.07	2.93	2.69	3.73	2.64	3.32	1.82
Virginia.....	1.01	1.08	1.06	2.11	2.93	2.75	3.22	3.35	3.14	2.89
Washington.....	2.90	2.97	2.97	2.00	2.51	2.55	3.99	3.06	2.58	2.76
West Virginia.....	2.90	2.97	2.97	2.68	3.46	3.38	3.88	4.03	3.98	3.72
Wyoming.....	1.55	1.40	1.55	2.32	2.39	2.49	4.34	2.84	2.93	2.65
Total (bituminous).....	1.17	1.13	1.39	2.06	2.98	2.49	3.75	2.89	3.02	2.68
Pennsylvania (anthracite).....	2.07	2.07	2.30	2.85	3.40	4.14	4.85	5.00	5.01	5.43
Total.....	1.33	1.29	1.47	2.35	2.70	2.75	3.90	3.26	3.25	3.07

• Includes Oregon.

• Included with California, Idaho, and Nevada.

TABLE 61.—United States: Percentage of bituminous coal mined by machines during the years ended December 31, 1914 to 1923^a

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Alabama.....	31.7	35.4	32.1	30.1	31.0	33.1	34.7	39.9	39.7	42.6
Alaska.....	19.1	23.7	11.2	7.2	10.9	7.9	3.2	13.0	13.5	14.6
California, Idaho, and Nevada.....	30.6	30.5	31.9	32.7	36.9	40.3	43.8	45.8	50.4	47.3
Colorado.....	56.7	61.2	61.7	56.3	56.0	59.0	61.0	65.5	66.8	68.3
Illinois.....	56.2	58.4	56.6	64.1	48.0	51.7	48.7	52.8	49.8	54.3
Indiana.....	4.1	5.3	8.8	11.5	10.7	11.0	20.7	15.4	13.9	20.7
Iowa.....	77.2	81.6	84.4	83.6	78.7	78.8	77.6	83.0	79.3	84.2
Kansas.....	7.6	3.7	5.4	6.1	6.0	10.3	11.2	10.2	24.3	25.5
Kentucky.....	77.8	84.2	88.5	87.3	86.8	94.7	93.5	95.6	96.8	92.7
Maryland.....	19.0	22.0	20.0	19.0	22.3	22.3	26.0	29.0	29.8	29.6
Michigan.....	43.3	52.0	55.7	49.0	50.9	44.2	47.5	40.5	52.8	47.5
Missouri.....	46.0	53.8	53.4	28.3	30.7	34.5	34.1	30.3	33.3	29.2
Montana.....	41.1	38.8	34.4	28.0	47.8	38.6	37.7	39.0	30.3	30.2
New Mexico.....	83.7	89.2	91.1	87.0	84.8	87.1	83.3	91.6	80.3	88.5
North Dakota.....	26.4	30.4	34.8	36.0	39.3	47.3	48.4	56.8	49.9	56.7
Ohio.....	53.8	55.0	55.4	55.4	55.0	57.3	57.9	63.6	58.0	64.1
Oklahoma.....	23.2	26.3	24.7	22.6	22.7	30.6	25.6	27.8	29.3	33.1
Oregon.....	1.2	1.6	1.0	1.1	1.0	3.6	2.0	4.6	4.3	3.8
Pennsylvania.....	30.4	43.6	57.5	54.8	53.0	68.8	58.7	75.1	74.3	68.3
South Dakota.....	51.4	63.2	61.9	63.0	62.2	67.7	69.9	77.9	70.0	73.5
Tennessee.....	51.4	63.2	61.9	63.0	62.2	67.7	69.9	77.9	70.0	73.5
Texas.....	58.9	60.0	62.6	64.8	61.1	70.3	72.2	77.2	76.7	78.7
Utah.....	42.2	44.6	44.0	41.9	47.3	55.2	54.4	51.8	57.8	50.1
Virginia.....	51.7	55.0	56.4	55.5	55.9	59.2	59.8	65.6	63.2	66.9
West Virginia.....	51.7	55.0	56.4	55.5	55.9	59.2	59.8	65.6	63.2	66.9
Wyoming.....	42.2	44.6	44.0	41.9	47.3	55.2	54.4	51.8	57.8	50.1
Total.....	51.7	55.0	56.4	55.5	55.9	59.2	59.8	65.6	63.2	66.9

^a Compiled from Mineral Resources, U. S. Geological Survey.

TABLE 62.—United States: Number of machines used in bituminous coal mines during the years ended December 31, 1914 to 1923.*

State	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Alabama.....	362	373	320	332	403	423	427	310	355	395
Arkansas.....	28	24	20	18	24	20	23	26	45	40
Colorado.....	306	299	305	328	352	387	429	439	455	440
Illinois.....	1,812	1,787	1,938	2,049	2,152	2,217	2,516	2,769	2,841	3,151
Indiana.....	751	660	661	768	904	862	795	856	797	852
Iowa.....	46	45	56	71	72	75	100	98	91	81
Kansas.....	9	9	6	9	16	17	15	8	17	23
Kentucky.....	1,383	1,399	1,528	1,514	1,634	1,765	1,718	1,759	1,784	1,928
Maryland.....	10	12	16	20	25	30	29	35	31	47
Michigan.....	107	107	104	99	111	85	110	90	88	80
Missouri.....	88	97	83	100	104	72	140	134	132	135
Montana.....	99	100	103	115	116	109	119	126	84	95
New Mexico.....	45	42	51	75	97	90	96	96	107	107
North Dakota.....	14	14	13	16	16	14	16	17	20	25
Ohio.....	1,669	1,459	1,604	1,784	1,987	2,065	2,262	2,149	2,342	2,351
Oklahoma.....	1,116	140	167	1,145	1,178	1,194	209	224	207	183
Pennsylvania (bituminous).....	6,326	5,935	5,768	6,004	6,207	6,508	5,823	6,332	6,337	6,481
Tennessee.....	194	193	213	209	200	241	211	176	180	171
Texas.....	13	10	10	1	1	3	6	4	4	5
Utah.....	68	67	78	105	141	146	154	182	183	192
Virginia.....	182	186	194	226	231	232	248	257	264	277
Washington.....	72	73	55	32	48	40	41	57	27	26
West Virginia.....	2,607	2,479	2,702	3,054	3,281	3,136	3,626	3,229	3,809	3,936
Wyoming.....	198	179	192	161	163	228	221	240	235	208
Other States.....	2	3	1	1	1	1	1	1	1	1
Total.....	16,507	15,692	16,198	17,235	18,463	18,959	19,334	19,618	20,436	21,239
Average per machine (tons).....	13,231	15,501	17,514	17,777	17,545	14,559	17,788	13,901	13,067	17,779

* Compiled from Mineral Resources, U. S. Geological Survey.

SEASONAL OCCURRENCE OF MINE EXPLOSIONS

Statistics compiled by the Bureau of Mines show that during the past quarter century (1900-1924) there have been 186 major explosions of gas or coal dust in the bituminous coal mines of the United States. These explosions caused 6,311 deaths. A major explosion is defined as one in which 5 or more lives were lost. Pertinent figures for the 25-year period are summarized by months in the table below:

	25-year pro- duction of coal (tons)	Number of explo- sions	Deaths from ex- plosions	Number of explo- sions per 100 mil- lion tons	Death rate per- 100 mil- lion tons
January.....	896,334,000	19	617	2.120	68.836
February.....	802,012,000	21	519	2.618	64.712
March.....	887,303,000	24	750	2.705	84.526
April.....	682,638,000	19	877	2.783	128.472
May.....	766,936,000	11	563	1.434	73.409
June.....	791,752,000	7	251	.884	31.702
July.....	808,635,000	10	198	1.237	24.486
August.....	877,378,000	11	277	1.254	31.571
September.....	902,232,000	7	99	.776	10.973
October.....	982,696,000	19	579	1.933	58.920
November.....	890,888,000	20	587	2.245	65.889
December.....	891,139,000	18	994	2.020	111.543
Total.....	10,179,943,000	186	6,311	1.827	61.994

Figure 2 presents in graphic form the number of explosions and the number of resulting deaths per hundred million tons of coal produced.

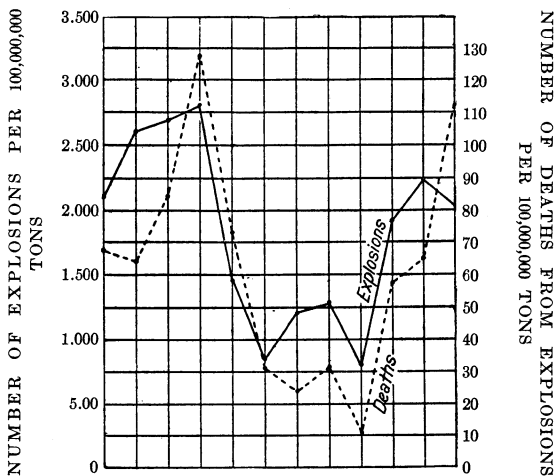


FIGURE 2.—Number of gas and coal-dust explosions in bituminous coal mines in the United States per hundred million tons of coal produced during the 25 years 1900-1924 and death rates per hundred million tons from the explosions

An analysis of the foregoing table and chart shows that explosions were fewer during the months of May to September, inclusive, than during the months of October to April, inclusive. This may seem a natural result of lessened activity at the mines and smaller production of coal during the late spring and the summer. However, not only was the actual number of explosions from May to September

smaller than in other months, but the explosions were fewer in proportion to the output of coal. During the 25-year period 46 explosions occurred during the five months May to September. These explosions represented a rate of 1.109 explosions per hundred million tons of coal produced. During the other seven months of the year 140 explosions occurred, a rate of 2.321 explosions per hundred million tons of coal produced. The death rate from explosions during the spring and summer was 33.471 deaths per hundred million tons; for the remainder of the year the corresponding rate was 81.601.

According to the figures, September is the month of fewest explosions in relation to coal produced; the rate for that month over the 25-year period was 0.776 per hundred million tons. June ranks next with a rate of 0.884, followed by July with a rate of 1.237, August with 1.254, and May with 1.434. The low rate of 0.776 for September is followed by the much higher rate of 1.933 for October; thereafter the monthly rates continue high until April, the rate for which 2.783 is higher than that of any other month of the year.

During the months of February, March, and April, the number of explosions in proportion to the production of coal trends steadily upward. A possible and partial explanation of this fact may be found in conditions that sometimes accompany controversies over the making of contracts to govern wages and working conditions. Whether or not this explanation is sufficient and how far seasonal variations in external temperature affect the humidity of mine air and the explosibility of coal dust are questions that warrant careful inquiry. Merely the bare, undisputed facts on the seasonal distribution of explosions as shown by records covering the past 25 years are presented here.

COMPARISON OF A STATE'S YEARLY FATALITY RATES WITH ITS "NORMAL" DEATH RATE

Table 63 compares the actual death rates at the coal mines in each State with what may be termed the "normal" death rate for that State. In order to establish an acceptable normal basis for any given State, the actual number of deaths from accidents in the mines during the 5 years 1911 to 1915 has been reduced by eliminating all deaths that resulted from "abnormal" accidents or disasters, those that killed five or more men at one time. The fatalities that remain after this elimination may be considered as fairly representing the day-to-day hazards to which coal miners are normally exposed. Instead of a single year, the 5-year period, 1911 to 1915, was chosen in calculating the normal average death rate for a State, because the existence of unusual conditions during a year might prevent the death rate for that year from truly indicating the hazards normally prevailing at the coal mines within the State.

To facilitate comparisons, and to indicate the net results of mine-safety efforts in any given State, the State's normal fatality rate spread over the 5-year period, 1911 to 1915, has been weighted 100; the amount that the index number in the column for any given year is above or below 100 indicates the variation of the actual death rate for that year from the normal for the 5-year period. The table shows that in 1923 the actual death rates in Alabama, Arkansas, Maryland, North Dakota, Oklahoma, Pennsylvania, Tennessee, Texas, and Virginia were lower than the basic normal death rates; that is, the deaths were fewer in those States in proportion to volume of work done than during earlier years covered by the table.

COAL-MINE FATALITIES IN THE UNITED STATES

TABLE 63.—Normal fatality rate per million hours for the combined 5-year period 1911 to 1915 (excluding accidents killing 5 or more) and index numbers 1911 to 1923

State	Number of hours of labor performed	Number killed in normal accidents	Rate per million hours	(Average rate 1911 to 1915=100)												
				1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Alabama.....	284,942,206	449	1.695	251	136	120	143	76	108	86	110	105	88	135	207	87
Arkansas.....	27,769,262	49	1.765	112	233	105	125	101	71	159	111	136	91	287	129	77
California, Idaho, and Nevada.....	115,278,527	364	3.158	103	113	154	120	104	55	198	76	133	79	82	115	112
Colorado.....	4,826,619	66	1.343	116	156	104	122	104	78	118	85	100	103	106	175	104
Georgia and North Carolina.....	576,324,387	743	1.289	116	104	106	136	97	83	110	112	120	108	129	103	104
Illinois.....	160,643,738	237	1.475	101	75	132	95	95	96	109	122	158	125	130	113	123
Indiana.....	130,204,739	154	1.183	119	65	89	119	105	111	105	100	82	88	138	119	107
Iowa.....	94,700,947	146	1.542	103	103	92	112	79	176	103	103	112	115	101	79	133
Kansas.....	226,446,647	253	1.070	102	106	87	113	123	115	206	94	111	157	192	169	160
Kentucky.....	70,550,517	77	1.096	105	94	93	138	73	222	168	145	64	76	155	98	93
Maryland.....	24,053,670	27	1.122	107	156	54	38	153	41	73	220	89	119	77	95	127
Michigan.....	74,146,866	68	0.917	100	58	70	151	135	41	64	78	83	73	115	82	202
Missouri.....	30,263,670	62	2.049	100	56	146	69	125	106	126	98	86	84	133	120	107
Montana.....	40,365,997	73	1.779	81	101	1,665	127	145	116	106	212	205	243	160	205	1,346
New Mexico.....	6,546,859	11	1.680	43	106	125	154	48	35	82	98	126	89	141	98	141
North Dakota.....	300,430,075	523	1.741	93	106	125	136	84	95	81	98	125	102	112	127	114
Ohio.....	62,465,471	107	1.712	143	468	94	138	113	136	149	116	168	166	117	163	61
Oklahoma.....	1,922,874	3	1.560	222	147	122	93	101	91	104	102	103	99	98	148	96
Oregon.....	1,751,757,422	2,239	1.257	121	98	122	93	101	91	104	102	103	99	98	148	96
Pennsylvania (bituminous).....	109,880,340	131	1.192	402	67	117	106	115	61	105	50	119	82	79	156	91
South Dakota.....	52,049,774	26	5.000	151	39	71	231	19	47	20	158	86	161	121	175	52
Tennessee.....	35,313,961	82	2.322	97	108	86	137	80	173	153	95	157	166	121	123	177
Texas.....	108,574,993	224	2.063	172	168	46	62	111	97	108	83	71	42	52	57	78
Utah.....	40,430,690	95	1.922	118	73	99	100	365	131	133	153	113	90	66	165	149
Washington.....	782,752,955	1,637	2.091	114	104	97	177	159	102	132	117	103	95	125	137	130
West Virginia.....	69,910,154	1,160	2.289	94	102	73	178	98	90	112	110	112	130	112	108	476
Wyoming.....	5,167,464,344	7,944	1.537	127	112	123	123	112	97	112	106	102	112	118	139	125
Total (bituminous).....	1,784,241,275	2,942	1.649	125	113	104	114	97	101	100	97	117	95	96	96	91
Pennsylvania (anthracite).....	6,958,686,262	10,888	1.564	126	112	118	114	108	98	109	103	113	100	111	129	116

TABLE 64.—United States: Number of men killed per 1,000 300-day workers employed in mineral industries

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Coal mines.....	4.46	4.70	4.66	4.44	3.93	4.25	3.94	4.27	3.78	4.19	4.89	4.39
All metal mines.....	4.09	3.72	3.85	3.80	3.62	4.44	3.57	3.47	3.46	3.70	3.54	3.01
Copper mines.....	4.53	4.08	3.85	3.72	3.64	5.88	3.47	3.54	3.43	3.70	3.00	3.11
Gold and miscellaneous metal mines.....	4.32	3.83	4.06	3.79	4.05	4.03	4.27	4.41	4.20	3.29	5.35	3.63
Iron mines.....	3.96	3.29	3.78	3.88	3.41	3.54	3.41	3.00	2.34	3.04	3.00	2.28
Lead and zinc mines (Mississippi Valley).....	4.28	3.90	4.32	5.37	3.14	4.09	3.58	4.13	2.37	2.58	2.64	2.73
Nonmetallic mineral mines.....	1.66	3.02	3.72	2.43	3.00	2.48	1.67	1.65	3.60	1.98	2.99	2.67
All quarries (including outside work).....	2.27	2.10	2.64	2.80	2.26	1.83	2.11	1.93	2.31	2.00	1.92	1.68
Cement-rock quarries.....	3.48	2.99	3.95	1.80	2.38	2.99	2.14	1.81	2.75	1.91	2.27	1.67
Granite quarries.....	1.87	1.47	3.36	2.27	1.86	1.54	2.10	1.81	2.06	2.57	1.42	1.90
Limestone quarries.....	2.19	2.13	2.72	1.70	2.36	1.79	1.74	1.97	2.53	1.97	1.87	1.87
Marble quarries.....	2.48	1.81	2.72	1.00	1.16	.99	2.14	1.51	.76	1.49	1.43	.59
Sandstone and bluestone quarries.....	1.16	1.32	1.45	.93	1.28	.90	3.36	.78	.66	1.25	1.10	.48
Trap-rock quarries.....	2.62	3.03	2.99	2.02	2.62	1.31	4.47	1.78	1.49	1.40	3.12	2.13
All quarries (excluding outside works).....	3.08	2.40	2.49	3.46	4.45	2.61	4.47	2.56	2.81	2.88	3.30	3.37
All quarries (outside works only).....			2.49	2.17	2.32	2.00	2.10	2.29	2.81	2.22	2.33	1.97
Metallurgical plants:				1.05	2.15	1.53	1.98	1.34	1.59	1.68	1.38	1.26
One-dressing plants.....		.99	1.51	1.57	1.41	1.93	1.55	1.48	1.95	.50	1.09	1.55
Smelters.....		1.93	1.02	1.05	1.73	1.05	.92	1.09	1.66	.99	.77	1.55
Auxiliary works.....					.89	.94	.85	.31	1.08	1.08	1.21	.94
All coke ovens.....		1.97	2.12	1.21	1.32	2.14	2.06	1.92	1.64	1.23	1.50	1.76
Beehive coke ovens.....				.65	1.29	1.30	1.16	1.92	1.00	1.76	1.66	1.68
By-products coke ovens.....				1.75	1.35	3.13	2.84	2.55	1.92	1.09	1.57	1.79
Grand total.....					3.87	3.77	3.45	3.63	3.38	3.64	3.98	3.60

TABLE 65.—United States: Number of men injured per 1,000 300-day workers employed in mineral industries

	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
Coal mines ^a	190.11	179.59	211.87	248.56	250.64	240.97	237.09	233.60	242.02	249.68	268.48	275.41
All metal mines.....	258.42	230.80	312.19	322.01	319.58	313.35	322.12	309.60	323.20	317.53	320.78	349.09
Copper mines.....	93.04	70.37	126.90	201.49	190.79	172.51	185.18	191.29	204.82	172.51	226.46	298.87
Gold and miscellaneous metal mines.....	241.81	268.31	224.07	233.51	240.17	272.54	185.45	202.35	200.49	210.91	177.44	150.23
Iron mines.....	158.29	133.51	189.01	238.27	263.09	272.99	319.54	292.28	327.97	379.67	219.47	495.65
Lead and zinc mines (Mississippi Valley).....	66.40	84.86	99.75	107.78	144.70	123.58	104.69	139.27	161.88	215.47	247.51	212.47
Nonmetallic mineral mines.....	69.82	88.81	114.92	117.30	175.62	185.14	147.07	144.20	145.51	174.54	171.93	176.04
All quarries (including outside works).....	139.59	207.99	226.20	148.25	248.83	277.73	238.65	231.58	182.49	213.50	191.08	213.71
Cement-rock quarries.....	44.87	69.60	109.21	96.72	143.99	189.73	109.68	124.70	130.53	134.09	147.20	177.99
Limestone quarries.....	79.98	89.05	114.23	127.43	176.10	175.52	141.34	134.05	143.11	178.54	177.72	169.30
Marble quarries.....	42.35	68.67	121.31	93.80	125.20	100.20	58.02	75.26	91.98	100.87	127.76	127.88
Sandstone and bluestone quarries.....	45.26	74.36	69.08	66.56	127.86	118.89	148.04	131.96	100.56	156.22	100.63	119.42
Slate quarries.....	15.01	18.81	28.61	33.08	85.00	112.04	96.29	98.51	108.20	135.18	127.40	149.11
Trap-rock quarries.....	68.89	87.77	152.56	232.85	237.84	222.92	205.17	186.45	208.89	229.92	258.01	228.47
All quarries (excluding outside works).....	.....	.....	.....	127.57	158.63	162.95	148.29	146.65	139.62	167.09	177.16	178.11
All quarries (outside works only).....	.....	.....	.....	96.90	206.06	223.81	145.03	140.28	154.04	185.79	164.76	173.05
Metallurgical plants:	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ore-dressing plants.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Smelters.....	122.38	94.19	175.44	109.65	135.66	121.12	139.54	122.21	156.07	151.05	179.51	168.44
Auxiliary works.....	174.71	174.71	175.44	157.69	195.61	152.88	148.40	141.46	136.37	149.89	143.71	130.71
All coke ovens.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Beehive coke ovens.....	.....	107.73	103.06	90.78	142.10	169.33	139.63	101.29	113.92	138.54	120.26	132.37
By-product coke ovens.....	.....	.....	.....	39.84	153.49	188.59	219.64	145.66	114.13	133.62	93.77	101.18
Grand total (except coal).....	.....	.....	.....	140.00	217.09	300.06	298.06	158.33	120.04	137.50	92.15	92.95
Grand total.....	.....	.....	.....	.....	208.33	204.01	198.22	181.85	182.62	197.98	201.12	203.62

^a Injury rates not available.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS

JANUARY, 1925

ALABAMA

Name	Designation	Address
-----	Superintendent of insurance, ex-officio compensation commissioner.	Montgomery.
Charles H. Nesbitt.....	Chief mine inspector.....	421-425 Lincoln Life Bldg., 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. M. Thompson.....	Assistant mine inspector, district No. 4.....	Helena.
W. L. Neill.....	Assistant mine inspector, district No. 5.....	Birmingham.
William Goodwin.....	Assistant mine inspector, district No. 6.....	Do.
Eugene A. Smith.....	State geologist.....	University of Alabama, University.

ALASKA

B. D. Stewart.....	Supervising mining engineer, U. S. Bureau of Mines.	Anchorage.
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ARIZONA

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

T. A. Wilson.....	Commissioner, bureau of labor and statistics.....	State Capitol, Little Rock.
Jesse Redyard.....	State mine inspector.....	413-414 First National Bank Bldg., Fort Smith.
George Branner.....	State geologist.....	University of Arkansas, Fayetteville.

CALIFORNIA

John A. McGilvray.....	Chairman industrial accident commission.....	State Bldg., Civic Center, San Francisco.
Chas. R. McDonald.....	Chief statistician.....	Do.
Edward C. Sheibley.....	Chief engineer and superintendent.....	Do.
G. Chester Brown.....	Engineer, mining division.....	Do.
J. Wesley Gebb.....	Mining engineer.....	Do.
Lloyd L. Root.....	State mineralogist.....	Ferry Bldg., San Francisco.

COLORADO

William I. Reilly.....	Chairman industrial commission.....	State Capitol, Denver.
	Metal mines	
John T. Joyce.....	Commissioner, bureau of mines, State of Colorado.	Do.
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.
Robert Innes.....	Inspector, district No. 4.....	Montrose.
	Coal mines	
James Dalrymple.....	Chief inspector of coal mines.....	State Capitol, Denver.
Henry King.....	Deputy inspector.....	Do.
James W. Graham.....	do.....	Lafayette.
Sam Andrews.....	do.....	Walsenburg.
W. M. Laurie.....	do.....	Trinidad.
Hugo H. Machin.....	do.....	Aguilar.
Russell D. George.....	State geologist.....	University of Colorado, Boulder.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

CONNECTICUT

Name	Designation	Address
Frederic M. Williams...	Chairman board of compensation commissioners.	Room 4, county courthouse, Waterbury.
Henry H. Robinson.....	Superintendent State geological and natural history survey.	Yale University, New Haven.

DELAWARE

Walter O. Stack.....	President industrial accident board.....	Ford Bldg., Wilmington.
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GEORGIA

H. M. Stanley.....	Chairman industrial commission.....	Atlanta.
S. W. McCallie.....	State geologist, State geological survey of Georgia.	Do.

FLORIDA

Herman Gunter.....	State geologist, Florida State geological survey...	Tallahassee.
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IDAHO

Lawrence E. Worstell...	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. Scanlan....	Chairman industrial commission.....	303-318 City Hall Square Bldg., Chicago.
Martin Bolt.....	Director, department of mines and minerals....	Springfield.
A. D. Lewis.....	Assistant director.....	Do.
S. E. Redpath.....	Member, State mining board.....	214 North Eighteenth St., Springfield.
F. M. Devlin.....	do.....	West Frankfort.
M. S. Coleman.....	do.....	Harrisburg.
James Needham.....	do.....	Chicago.
William Hall.....	President miners' examining board.....	Springfield.
Robert Clem.....	Member, miners' examining board.....	Herrin.
John Mulligan.....	Secretary miners' examining board.....	Decatur.
Joseph C. Viano.....	Member, miners' examining board.....	Coal City.
Patrick Gillen.....	Mine inspector.....	1435 South Lincoln Ave., Springfield.
Walter A. Waite.....	Mine inspector, district No. 1.....	422 East Erie St., Spring- valley.
William E. Kidd.....	Mine inspector, district No. 2.....	609 West Armstrong Ave., Peoria.
Thomas P. Back.....	Mine inspector, district No. 3.....	321 West Locust St., Canton.
Thomas Hunter.....	Mine inspector, district No. 4.....	129 North English Ave., Springfield.
Joseph Haskins.....	Mine inspector, district No. 5.....	Catlin.
John G. Milhouse.....	Mine inspector, district No. 6.....	Box 254, Litchfield.
Henry D. Thompson.....	Mine inspector, district No. 7.....	Collinsville.
James R. Richards.....	Mine inspector, district No. 8.....	214 North Twelfth Street, Belleville.
Frank Rosbottom.....	Mine inspector, district No. 9.....	Duquoin.
E. J. Hoey.....	Mine inspector, district No. 10.....	Christopher.
Thomas English.....	Mine inspector, district No. 11.....	Harrisburg.
A. W. Plumlee.....	Mine inspector, district No. 12.....	Cambria.
W. L. Morgan.....	Special mining investigator.....	Greenville.
Ed S. Smith.....	Fluorspar division.....	Rosiclare.
M. M. Leighton.....	Chief, State geological survey.....	Urbana.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

INDIANA

Name	Designation	Address
Mining board		
William Johnson.....	President, mining board.....	Vincennes.
John Templeton.....	Member, mining board.....	Terre Haute.
John Hessler.....	do.....	Do.
William Mitch.....	do.....	Do.
.....	Secretary, mining board.....	Room 421, State Capitol, Indianapolis.
Inspection force		
A. C. Dally.....	Chief mine inspector.....	Room 421, State Capitol, Indianapolis.
S. J. Wilton.....	Deputy inspector.....	Carbon.
John Ellison.....	do.....	Winslow.
John Stevely.....	do.....	Clinton.
Thomas Gillespie.....	do.....	Bicknell.
Dixon Bynum.....	Chairman, Industrial Board of Indiana.....	432 Statehouse, Indianapolis.
W. N. Logan.....	State geologist, department of geology and natural resources.	125 Statehouse, Indianapolis.

IOWA

A. B. Funk.....	Industrial commissioner, workmen's compensation service.	Statehouse, Des Moines.
John Caldwell.....	President, State board of examiners.....	518 North Eighth Street, Centerville.
W. E. Holland.....	Inspector, district No. 1.....	509 East Clark Street, Centerville.
R. T. Rhys.....	Inspector, district No. 2.....	Ottumwa.
Edward Sweeney.....	Inspector, district No. 3.....	Des Moines.
George F. Kay.....	Director, Iowa Geological Survey.....	Iowa City.

KANSAS

James Sherwood.....	State mine inspector.....	Pittsburg.
William Glennon.....	Deputy State mine inspector.....	Do.
Joe Clark.....	do.....	Girard.
Ernest Shaw.....	do.....	Coal Valley.
J. R. Morris.....	do.....	Scranton.
Mine rescue department		
James Sherwood.....	Ex-officio superintendent rescue stations.....	Pittsburg.
Robert Morrison.....	Superintendent central rescue station.....	Do.
William Hislop.....	Superintendent Arma rescue station.....	Arma.
Judge J. H. Crawford.....	Court of industrial relations.....	Topeka.
Raymond C. Moore.....	State geologist.....	University of Kansas, Lawrence.

KENTUCKY

Felix S. Dumas.....	Chairman, workmen's compensation board.....	Frankfort.
W. H. Jones.....	Chief inspector of mines.....	Lexington.
J. E. Boettger.....	Assistant inspector of mines, district No. 1.....	DeKoven.
John Cates.....	Assistant inspector of mines, district No. 2.....	Central City.
J. F. Brown.....	Assistant inspector of mines, district No. 3.....	Hillsboro.
J. A. Dixon.....	Assistant inspector of mines, district No. 4.....	Pineville.
.....	Assistant inspector of mines, district No. 5.....	.....
J. B. Thompson.....	Assistant inspector of mines, district No. 6.....	McRoberts.
G. W. Rose.....	Assistant inspector of mines, district No. 7.....	Prestonsburg.
D. W. Hogan.....	Assistant inspector of mines, district No. 8.....	Pikeville.
W. R. Jillson.....	State geologist and director Kentucky Geological Survey.	Frankfort.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

MAINE

Name	Designation	Address
Arthur L. Thayer.....	Chairman, industrial accident commission.....	Augusta.

MARYLAND

Robert H. Carr.....	Chairman, State industrial accident commission.....	Equitable Bldg., 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.....	Kitzmiller.
State mine examining board		
G. M. Gillette.....	Representing operators.....	Frostburg.
Lawrence Dunn.....	Representing miners.....	Midland.
J. J. Rutledge.....	Representing State, chairman ex officio.....	Baltimore.
Edward B. Mathews.....	State geologist.....	Johns Hopkins University, Baltimore.

MASSACHUSETTS

William W. Kennard...	Chairman, industrial accident board.....	Room 272, Statehouse, Boston.
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MICHIGAN

James A. Kennedy.....	Chairman, department of labor and industry...	517 Cedar Street, 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.

MINNESOTA

Henry McColl.....	Chairman, Minnesota industrial commission....	612 Bremer Arcade, St. Paul.
Frank E. Hoffman.....	Chief, division of workmen's compensation....	Do.
Ed. Smith.....	Mine inspector for St. Louis County.....	Eveleth.
W. J. Trescott.....	Mine inspector for Itasca County.....	Coleraine.
August Swanson.....	Mine inspector for Crow Wing County.....	Brainerd.
F. A. Wildes.....	Superintendent of State mines.....	1748 Hague Avenue, St. Paul.
W. H. Emmons.....	Director, Minnesota Geological Survey.....	University of Minnesota, Minneapolis.

MISSISSIPPI

E. N. Lowe.....	Director, Mississippi Geological Survey.....	Jackson.
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MISSOURI

J. E. Roberts.....	Chief inspector.....	Kirkville.
W. H. Castle.....	Deputy inspector.....	Fulton.
F. G. Fenix.....	do.....	Joplin.
Tolbert Hensen.....	do.....	Perryville.
Evert Richardson.....	do.....	Granby.
H. A. Buehler.....	State geologist.....	Rolla.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

MONTANA

Name	Designation	Address
Jerome G. Locke.....	Chairman, State industrial board.....	Helena.
George N. Griffin.....	State coal-mine inspector.....	Roundup or Helena.
William Maxwell.....	State metal-mine inspector.....	Butte or Helena.
	State geologist.....	University of Montana, Missoula.

NEBRASKA

Luther B. Frye.....	Secretary of labor and compensation commissioner.....	State Capitol, Lincoln.
E. H. Barbour.....	State geologist.....	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.
Alex. Baird.....	do.....	Ely.

NEW JERSEY

Andrew F. McBride.....	Deputy commissioner of labor, department of labor.....	Statehouse, Trenton.
Augustus Munson.....	State mine inspector.....	P. O. Box 311, Dover.
H. B. Kummel.....	State geologist.....	Trenton.

NEW MEXICO

Warren Bracewell.....	State mine inspector.....	724 North Fourth St., Albuquerque.
R. W. Ellis.....	State geologist.....	Do.

NEW YORK

James A. Hamilton.....	State industrial commissioner.....	124 East Twenty-eighth St., New York.
James L. Gernon.....	Director of inspections.....	Do.
E. B. Patton.....	Chief statistician, State department of labor.....	Albany.
W. W. Jones.....	Mine inspector, State department of labor.....	Do.
	Inspector of mines and tunnels, State department of labor.....	124 East Twenty-eighth St., New York.
Gustav Werner.....	Tunnel inspector, State department of labor.....	Do.
John M. Clarke.....	State geologist.....	University of the State of New York, Albany.

NORTH CAROLINA

M. L. Shipman.....	Commissioner of labor and printing.....	Raleigh.
Brent S. Drane.....	State geologist.....	P. O. Box 406, Raleigh.

NORTH DAKOTA

Joseph A. Kitchen.....	Chairman, workmen's compensation bureau.....	Bismarck.
A. G. Leonard.....	State geologist.....	University.
John P. Mellon.....	State mine inspector.....	Bismarck.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

OHIO

Name	Designation	Address
T. J. Duffey	Chairman, industrial commission	Columbus.
H. R. Witter	Director, department of industrial relations	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.
T. P. Williams	Deputy inspector, district No. 10	Belmont.
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	Lore City.
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

Harry C. Myers	Chairman, industrial commission	State Capitol, Oklahoma City.
Ed. Boyle	Chief mine inspector (mines, oil and gas)	Do.
Robert H. Brown	Assistant mine inspector, district No. 1	Coalgate.
W. G. Roberts	Assistant mine inspector, district No. 2	Dow.
John D. Almond	Assistant mine inspector, district No. 3	Henryetta.
C. N. Gould	Director, Oklahoma Geological Survey	Norman.

OREGON

D. A. Elkins	Chairman, State industrial accident commission	Salem.
Henry M. Parks	Oregon Agricultural College	Corvallis.

PENNSYLVANIA

R. H. Lansburgh	Chairman, industrial board	Harrisburg.
T. Henry Walnut	Chairman, workman's compensation board	Do.
George H. Ashley	State geologist, topographic and geological survey	Do.
Joseph J. Walsh	Secretary of mines, department of mines	Do.
Frank Hall	Deputy secretary of mines, department of mines	Do.
Anthracite inspectors		
P. J. Moore	Mine inspector, first district	Do.
L. M. Evans	Mine inspector, second district	Do.
Jenkin T. Reese	Mine inspector, third district	Do.
S. J. Phillips	Mine inspector, fourth district	Do.
David T. Williams	Mine inspector, fifth district	Do.
Augustus McDade	Mine inspector, sixth district	Do.
Edwin C. Curtis	Mine inspector, seventh district	263 North Main St., Taylor.
John B. Corgan	Mine inspector, eighth district	Do.
T. J. Williams	Mine inspector, ninth district	Do.
D. T. Davis	Mine inspector, tenth district	Do.
Frank Kettle	Mine inspector, eleventh district	Do.
	Mine inspector, twelfth district	Wilkes-Barre.
	Mine inspector, thirteenth district	Simon Long Bldg., Wilkes- Barre.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

PENNSYLVANIA—Continued

Name	Designation	Address
Anthracite Inspectors—Continued		
David J. Roderick	Mine inspector, fourteenth district	Hazleton.
J. J. Stickler	Mine inspector, fifteenth district	Do.
Isaac M. Davies	Mine inspector, seventeenth district	Lansford.
E. G. Evans	Mine inspector, eighteenth district	Coaldale.
M. J. Brennan	Mine inspector, nineteenth district	Pottsville.
P. C. Fenton	Mine inspector, twentieth district	Mahanoy City.
William Reid	Mine inspector, twenty-first district	Centralla.
B. I. Evans	Mine inspector, twenty-second district	Mount Carmel.
P. J. Friel	Mine inspector, twenty-third district	Shamokin.
Charles J. Price	Mine inspector, twenty-fifth district	Lykens.
Bituminous inspectors		
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	Dubois.
Richard Maize	Mine inspector, fifth district	Uniontown.
Thomas D. Williams	Mine inspector, sixth district	Johnstown.
Joseph Knapper	Mine inspector, seventh district	Phillipsburg.
Silas S. Hall	Mine inspector, eighth district	Connellsville.
Joseph Williams	Mine inspector, ninth district	Altoona.
J. J. McDonald	Mine inspector, tenth district	Greensburg.
T. J. Lewis	Mine inspector, eleventh district	Punxsutawney.
J. I. Thomas	Mine inspector, twelfth district	Trust Bldg., Johnstown.
David Young	Mine inspector, thirteenth district	Freeport.
W. B. Wardrop	Mine inspector, fourteenth district	Barnesboro.
W. H. Howarth	Mine inspector, fifteenth district	Brownsville.
John I. Pratt	Mine inspector, seventeenth district	777 Lyman St., Pittsburgh.
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.
Edward E. Girod	Mine inspector, twenty-third district	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	Bridgeville.
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 St., Pittsburgh.
C. H. Crocker	Mine inspector, thirtieth district	Johnstown.

RHODE ISLAND

Charles W. Brown	Superintendent, Natural Resources Survey of Rhode Island.	Providence.
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SOUTH CAROLINA

Stephen Taber	Acting State geologist	Columbia.
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SOUTH DAKOTA

Irwin D. Aldrich	Ex officio industrial commissioner	Sioux Falls.
Otto Ellerman	State mine inspector	Lead.
Freeman Ward	State geologist, State geological and natural-history survey.	Vermilion.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

TENNESSEE

Name	Designation	Address
Ed. M. Gillenwaters.....	Commissioner.....	Nashville.
Harry L. Nelson.....	Superintendent, Division of workmen's compensation.	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.
Wilbur A. Nelson.....	State geologist, Tennessee State Geological Survey.	Nashville.

TEXAS

J. H. Fowler.....	Chairman, industrial accident board.....	Austin.
N. M. Bullock.....	State mine inspector.....	Rockdale.
J. A. Udden.....	Director, bureau of economic geology and technology.	Austin.

UTAH

O. F. McShane.....	Chairman, industrial commission.....	State Capitol, Salt Lake City.
B. W. Dyer.....	Chief mine inspector for the commission.....	Do.
John Crawford.....	Coal mine inspector for the commission.....	Do.
E. A. Hodges.....	Metal mine inspector for the commission.....	Do.
William G. Peterson.....	State geologist, Agricultural College of Utah.....	Logan.

VIRGINIA

John Hopkins Hall, jr.	Commissioner, bureau of labor and industry....	Richmond.
A. G. Lucas.....	State inspector of mines, bureau of labor and industry.	Do.
William Boncer.....	do.....	Do.
Bolling H. Handy.....	Chairman, industrial commission.....	Do.
Albert W. Giles.....	Acting Director and State geologist, Virginia Geological Survey.	Charlottesville.

VERMONT

John S. Buttles.....	Commissioner of industries.....	Montpelier.
George H. Perkins.....	State geologist, University of Vermont.....	Burlington.

WASHINGTON

C. Bowman.....	Chairman, industrial welfare committee, department of labor and industries.	Olympia.
William R. Reese.....	Chief mine inspector.....	408 Maynard Bldg., Seattle.
John Parker.....	Deputy mine inspector.....	Do.
Richard Prescott.....	do.....	Roslyn.
Solon Shedd.....	Supervisor of geology.....	Pullman.

STATE MINE OFFICIALS AND COMPENSATION COMMISSIONS—
Continued

JANUARY, 1925—Continued

WEST VIRGINIA

Name	Designation	Address
Lee Ott.....	Commissioner, State compensation commission..	Charleston.
R. M. Lambie.....	Chief, department of mines.....	Do.
C. W. Stuart.....	Mine inspector, district No. 1.....	Thomas.
W. H. Sandridge.....	Mine inspector, district No. 2.....	Grafton.
Evan L. Griffiths.....	Mine inspector, district No. 3.....	Clarksburg.
William Moore.....	Mine inspector, district No. 4.....	Morgantown.
W. B. Riggelman.....	Mine inspector, district No. 5.....	Fairmont.
A. E. Lafferty.....	Mine inspector, district No. 6.....	Moundsville.
Thomas Jarrett.....	Mine inspector, district No. 7.....	Weston.
V. E. Sullivan.....	Mine inspector, district No. 8.....	Charleston.
Eli J. Mason.....	Mine inspector, district No. 9.....	Do.
Zac Evans.....	Mine inspector, district No. 10.....	Handley.
J. E. Hamilton.....	Mine inspector, district No. 11.....	Eskdale.
J. A. Porter.....	Mine inspector, district No. 12.....	Gauley Bridge.
Robert R. Fields.....	Mine inspector, district No. 13.....	Hinton.
Robert Lilly.....	Mine inspector, district No. 14.....	Mount Hope.
W. L. McGinnis.....	Mine inspector, district No. 15.....	Beckley.
C. C. Rumburg.....	Mine inspector, district No. 16.....	Matoaka.
Thomas Stockdale.....	Mine inspector, district No. 17.....	Freeman.
W. D. Lee.....	Mine inspector, district No. 18.....	Maitland.
W. H. Prentice.....	Mine inspector, district No. 19.....	Iaeger.
S. T. Lambert.....	Mine inspector, district No. 20.....	Matewan.
J. F. White.....	Mine inspector, district No. 21.....	Logan.
C. E. Foster.....	Mine inspector, district No. 22.....	St. Albans.
C. O. Morris.....	Director mine rescue stations.....	Charleston.
J. D. McCune.....	Inspector sand mines, clay pits, quarries, etc.....	Martinsburg.
I. C. White.....	State geologist, West Virginia Geological Survey.	Morgantown.

WISCONSIN

Fred M. Wilcox.....	Chairman, industrial commission.....	Madison.
R. McA. Keown.....	Engineer, industrial commission.....	Do.
Arthur H. Findelsen.....	Mine inspector, industrial commission.....	Do.
W. O. Hotchkiss.....	Director, geological and natural history survey...	Do.

WYOMING

J. M. Snyder.....	State treasurer, workmen's compensation department.	Cheyenne.
Arthur Calverley.....	Assistant deputy and department manager.....	Do.
Pete Patterson.....	Coal-mine inspector, district No. 1.....	Quealy, Rock Springs.
L. A. Norman.....	Coal-mine inspector, district No. 2.....	P. O. Box 396, Sheridan.
A. B. Barlett.....	State geologist, Geological Survey of Wyoming...	Cheyenne.



